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Investigating the Relationship between Professional Engagement, Job Satisfaction, and Academic Performance: Insights for Academic Career Management

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Abstract. *The study explores the intricate relationships between job satisfaction, professional commitment, and individual research performance for early-career researchers in research institutions based in Romania. Quantitative data were collected from 96 individuals belonging to R1 and R2 categories as per the European Commission classification through a cross-sectional design. A carefully constructed questionnaire administered via Web Assisted Personal Interviewing (WAPI) helps to uncover nuanced relationships at a level not previously attempted. The findings therefore indicate that there is a very strong positive relationship between job satisfaction and research output, thereby reinforcing earlier literature that places satisfied professionals at the heart of good research performance. Furthermore, this study also found that professional commitment is a strong predictor of research output, an earlier study described a similar relationship where it had a determination construct for success as a professional. The results have validated the above basic hypotheses and underscored the importance attached to each dimension from the perspective of academic career enhancement. This therefore reflects what is probably the general reality in the Romanian research environment about working conditions, how properly or otherwise researchers are evaluated, supported in their career progression, and professionally committed to attaining optimal individual performance as young researchers. It highlights the clear objectives needed, leadership development, continuous competency development, and work collaboration. Knowing these will help people make good choices about their academic careers and consciously guide their professional growth in an efficient way.*

Keywords: Research Performance, Job Satisfaction, Professional Engagement, Performance Descriptors, Academic Career.

Introduction

Properly understanding academic careers is essential in managing careers and performing optimally in the academic milieu. Conceptual frameworks and viewpoints shed much light on the

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complexities of academic careers; they guide the researchers and professors along their career path. Workplace behavior and performance are related to job satisfaction and professional commitment, in that order of importance. This study tries to find out that relationship by looking at job satisfaction and dedication among young researchers working in Romanian research institutions.

This literature review explores varied conceptual frameworks and viewpoints that inform definitions of careers, processes of career development, and the roles and responsibilities that shape academic careers.

Literature review

Conceptual Frameworks and Views of the Academic Career

Conceptual frameworks and views of academic careers are very important because they help one understand how the academic milieu functions and how to appropriately manage one's career. Based on a good understanding of these concepts and views, researchers and academics can sharpen their skills and competencies to perform optimally in their academic careers. Also, conceptual frameworks and views in understanding academic careers greatly relate to career definitions and career development.

Niati et al. (2021) put it, a career is basically a progression of positions held by a person over the course of their life in employment. Baruch and Rosenstein (1992) offer a more detailed take on it; they see a career as "a process of employee development through experiences and jobs acquired in one or more organizations."

A career belongs to an individual, but it can be organized and directed by the firms employing the individual. Previously, individuals were held responsible for their career development. The orientation has shifted to organizational career development (Gutteridge et al., in Baruch, 2004). Then again, from the late 2000s onwards, individuals regained control of their career development although organizational structures, cultures, and facilities remain crucial parts of a position system. Career forms an essential part of life; it is very close to work and offers avenues for self-realization, challenges, and economic motivation. Work provides a major source of identity as well as creativity and challenge; it also opens doors into social networks (Baruch, 2004).

Career development, on the other hand, is an unrelated concept and refers to the process by which individuals and their employers manage the many different tasks, behaviors, and experiences within jobs and organizations that have important implications for employees' work-related identity (Zacher et al., 2019).

This career development has not only been looked at as providing opportunity for advancement on the career ladder but more responsibility and appreciation of employees' efforts. In this context, career development is the process that an individual undertakes to enhance capacity with a view to attaining a particular career.

Recent studies emphasize the contribution of digital artifacts and online sites towards change in patterns of academic careers. For example, frameworks integrating digital collaboration tools allow researchers to widen their circles and increase the efficiency of output (Smith et al., 2022). Carrying digital literacy into career development programs was perceived as a major conduit to enhance adaptability and competitiveness in academia (Jones & Taylor, 2021).

Career development is equally prioritized by employees and employers. Employees expect employers to provide opportunities and support for their professional growth (Niati et al., 2021).

Having discussed the major concepts and viewpoints in understanding academic careers, this chapter now focuses on one of the most important aspects of these careers: roles and responsibilities as highlighted through career descriptors.

Engagement and Commitment: Definitions and Interconnections

Engagement is typically described as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption (Schaufeli et al., 2002). Vigor entails high levels of energy and resilience in working; dedication means to be involved in one's work with a sense of significance and enthusiasm; absorption is the state of being fully engrossed in one's work so that time passes quickly. Engagement is a good predictor of job performance. It also acts as a mediator between resources at work and outcomes.

In the present world of globalization, attentiveness and dedication are largely swayed by intercultural relations. Works like those of Kim et al. (2021) stress that cultural flexibility and worldwide teamwork greatly improve scholars' involvement and output.

Commitment means an individual's psychological attachment to the organization, which can be observed in terms of affective commitment, continuance commitment and normative commitment as conceptualized by Meyer and Allen (1991):

- Affective Commitment: Emotional attachment to the organization and a desire to stay.
- Continuance Commitment: Awareness of the costs of leaving the organization.
- Normative Commitment: Feeling of obligation to stay in the organization.

These dimensions hold much relevance in academia since the workplace commitment of the researchers to the institution and the profession greatly impacts their job satisfaction as well as the research results. Work like that of Meyer and Morin (2016) and Nguyen et al. (2020) has shown that higher levels of professional commitment correlate with even better individual performance and organizational outcomes.

Engagement and commitment are two different concepts, but actually, they go hand in hand. While work engagement mainly focuses on the individual's involvement and vigor towards work, commitment highlights their attachment to the organization or profession. Therefore, scholarly researchers who demonstrate both attributes will likely have better research results along with greater satisfaction. This finding implicates that higher education institutions should promote both work engagement and commitment to maximize performance outcomes as well as career satisfaction.

Along with more traditional metrics, qualitative assessments of mentorship and teaching effectiveness have increasingly been accepted as career descriptors. These dimensions are usually viewed as providing a much more holistic view of a researcher's contribution to the academic community (Garcia & Lopez, 2023).

Roles and Responsibilities – Career Descriptors

Roles and responsibilities shape the career pathway of a scholarly investigator. Career descriptors are structured, somewhat flexible tools by which one can articulate what is expected at various stages of advancement, the level of competence, and performance to be demonstrated. They are broadly adopted by employers, employees, and human resource professionals for recruitment, professional development, and career planning (European Commission, 2011).

Typically, careers are described as comprising the following activities: designing and implementing policies and procedures in an academic setting; coordinating and managing projects

as well as research teams; performing data analysis along with report writing and result sharing. Other responsibilities that the descriptors emphasize include developing strategies and business plans, monitoring organizational effectiveness, managing budgets and resources in an efficient manner, and creating professional development programs for implementation. One more significant responsibility is to ensure compliance with both institutional and regulatory policies. This reflects the diverse multidimensional aspects of academic roles (Baruch, 2004; Zacher et al., 2019).

These descriptors make clear for both academics and institutions how personal objectives can align with organizational needs.

They are presumed to be flexible, adapting to the particular context and discipline as well as the individual's career aspirations. Such flexibility allows researchers to develop career paths that meet institutional expectations but also vary according to their interests and abilities (Niati et al., 2021).

Frameworks and International Applications

The European Framework for Research Careers (ECF) is a sort of model under which standardization of expectations and evaluations can be achieved across member states resulting in mobility and collaboration. Recent critiques however suggest that such frameworks must also accommodate variations at the level of the nation for them to be effective (Leroux et al., 2022).

The European Framework for Research Careers (ECF), as one of the widely acknowledged frameworks globally, describes performance indicators at seven levels from novice to leading expert. It thus defines and assesses academic roles with reference to key domains in teaching—the ability to design curricula, employ innovative pedagogies, and mentor students; research—high-quality publications, knowledge advancement, and funding acquisition; leadership and administration—team coordination, resource management, and institutional strategy development; and societal engagement—notable interaction with external stakeholders and other community contribution activities (European Commission 2011). Such domains give a framework more clarity, comparability, and coherence within an academic career.

Such frameworks standardize performance expectations and make academic roles internationally comparable across institutions and countries (Cruz-Castro & Sanz-Menéndez, 2010). By underpinning career progression, performance descriptors signal researchers how to achieve increasing levels of skill and advancement, and at the same time provide institutions with benchmarks against which to measure recruitment, performance evaluation, and promotion. In doing so, they help to build a culture of meritocracy and excellence—an aspiration on the part of the individual that is matched by that of the organization.

Exploring the Interplay of Satisfaction, Commitment, and Performance: Implications for Young Researchers

In academic career management, this paper addresses the intricate linkage between these three variables: researchers' job satisfaction, professional commitment, and research performance. These factors have been widely studied in both organizational and academic environments; many findings indicate that these factors jointly determine the achievement of academics. As highlighted in recent studies by Nguyen et al., (2020) and Meyer & Morin (2016), job satisfaction and professional commitment are primary motivational bases for workplace performance; thus, they play a

significant determinant role regarding researchers' behaviors and outputs within the academic environment.

In the academic setting, job satisfaction is likely to be associated with overall research performance. Harter et al. (2002) states that satisfied people are likely to be more motivated, engaged, and productive; hence, higher satisfaction leads to better research results. In addition to being an outcome of the working conditions at the place of work, job satisfaction also mediates between organizational support and individual performance (Bakker & Demerouti, 2008). For academic researchers, workload balancing institutional support for career development opportunities and work-life balance are factors perceived as significant in determining their satisfaction. Mauno et al.'s research (2007) further supports that job satisfaction influences work engagement and involvement which can have a strong effect on individual performance.

In turn, therefore, it can be posited that in academia professional commitment is very instrumental in job satisfaction and research productivity. In this case, it is appropriate to apply Meyer and Allen's (1991) Organizational Commitment Model-Affective, Continuance, and Normative-To an academic setting. The researchers' emotional attachment to the establishment (affective), their perceived costs of leaving the institution (continuance), and the individuals' feelings of obligation to stay (normative) greatly influence their behavior as well as performance. According to studies conducted by Meyer and Morin 2016; Nguyen et al., 2020), higher levels of professional commitment relate positively to increased job satisfaction as well as engagement leading to better research results. Further, since commitment relates to a researcher's identification degree with a profession therefore such an identification might provide strength and enthusiasm even in the face of hardships such as resource constraints or publication pressure.

Job satisfaction and professional commitment are further related to research performance. Academic researchers who are satisfied with their jobs and committed to the profession will perform better in different dimensions of research such as publication, grant acquisition, and collaboration. Research performance is an individual’s involvement with work and an indicator of achievement in learning works. Vigor, dedication, and absorption—work engagement—can positively predict job performance according to Schaufeli et al. (2002). Highly engaged researchers in academia are more likely to secure research funding and produce high-quality publications besides contribution to academic communities.

This is echoed by Aksnes and Rønn (2007) who indicate that collaboration and networking are effective in academic success. It can be argued that researchers who are very committed to the profession and satisfied with the career are more willing to collaborate, hence improving their research productivity and professional development. In addition, engaged researchers become more active in mentoring and teaching, thereby contributing to the development of future researchers while enriching their own research profile Bakker & Demerouti, 2008).

For young researchers, these dynamics matter a great deal. Very many early-career academics are unfortunately subject to these very precarious conditions of insecure employment, low or no funding, and high publishing pressure incredibly detrimental to both their satisfaction and commitment to the profession. In turn, environments that foster job satisfaction institutional commitment and engagement will help mitigate these challenges and help young researchers achieve their potential. For instance, improving professional development opportunities, mentoring relationships, and networking contacts among workers would greatly enhance job satisfaction and professional commitment leading ultimately to better research performance (Pomerantz et al., 2009).

This paper tries to better understand the complex links between work happiness, job loyalty, and how well young scientists do at research centers in Romania. If we know how these things are connected we can make plans for academic career help that supports young researchers' growth as professionals and improves their scholarly work. This study is important within the framework of academic career management where many scientists experience difficulties regarding job contentment and involvement; moreover, research output is a significant measure of accomplishment in the profession. Good career guidance can help young academics find their way in a challenging scholastic environment which would raise not only their satisfaction levels but also their dedication to the profession along with improving their research productivity.

Research Objectives

SO1: Finding and looking at the main link between career happiness, work loyalty, and personal results in study, with the setting of young learners, to get a better view of how these things move in check rooms in Romania.

SO2: This shows the link where work loyalty acts as a joiner or affecting cause twixt job contentment and performance of research.

Research Methodology

The method used in this study is based on the given hypotheses and a designed research model (Figure 1), which has several important connections to explore. In particular, this study aims to find out:

• H1: There is a significant association between the workers' job satisfaction and their work output.

• H2: Workers' professional commitment can anticipate their work output.

• H3: Professional commitment acts as a link between job satisfaction and work output.

•H4: Research performance dimensions—publications, grants, collaborations, mentoring—are related and together sum to an overall holistic assessment of research performance.

Supported by prior studies, like Meyer and Allen (1991,1997) which indicated the leading role that professional commitment bears on an individual's professional success.

By looking at these things, this paper tries to give a better understanding of the forces that control how well researchers do and how happy they are in the academic setting. This will help in making career management practices better in this area.

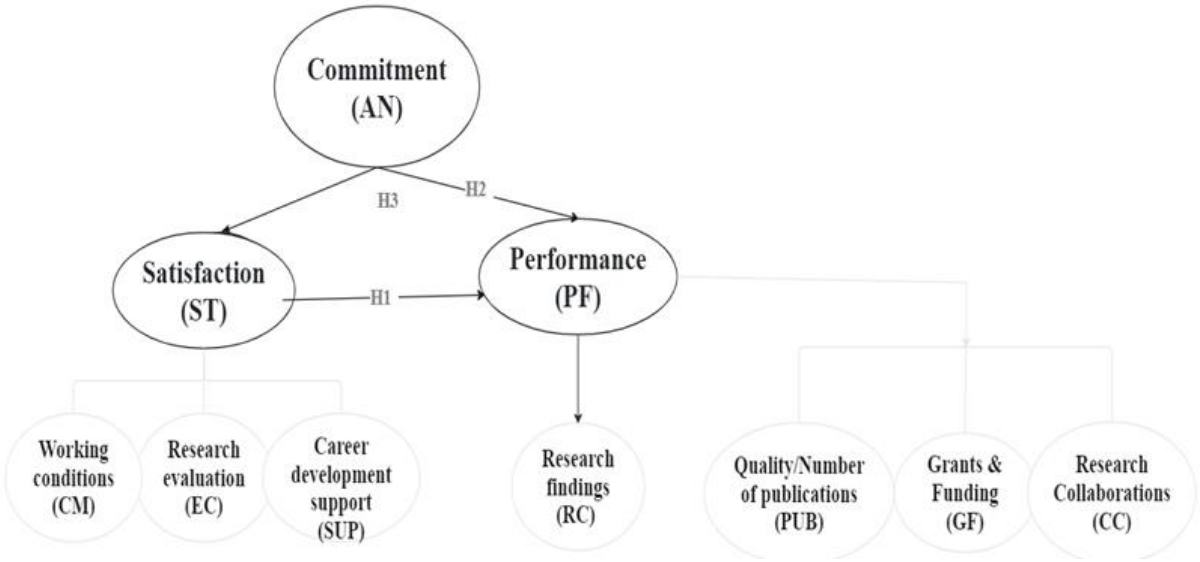

Figure 1. Research models

Source: Authors' own research.

This study adopts a quantitative cross-sectional approach and works with a sample size of 96 people. It narrows down its focus specifically on the individuals who fall under the R1 and R2 categories as per the European Commission, 2023 definition. Participants were conveniently picked through non-probability sampling wherein availability and applicability were the main considerations. Calls for participation were sent out via institutional emails to respective groups. To qualify for this study, participants had to be active researchers belonging to the R1 or R2 category; they must also voluntarily consent to participate in the study and complete the entire questionnaire.

Ethical Considerations. The study obtained approval from the Ethics Committee of POLITEHNICA Bucharest, National University of Science and Technology, prior to data collection. Study participants received an informed consent form that described the purpose of the study and procedures to be followed as well as their rights. This form has information on how to handle, use, store, keep confidential, and avail information presumably attuned to any breach of ethical standards.

Sample Selection. The study adopted convenient non-probability sampling where the available and relevant participants were invited through institutional emails and other related groups. Active researchers, who are in R1 or R2, willing to participate in the study and complete the entire questionnaire are included.

Data Collection. Data was collected using a Questionnaire that had been developed and validated in line with the objectives of the research. The questionnaire was administered through Web Assisted Personal Interviewing (WAPI) to ensure efficient and flexible data gathering.

The Questionnaire and Its Structure. The questionnaire has 56 items which are structured in the following manner:

• Introductory Section: This section will highlight information deemed essential concerning the objectives of the research and instructions on how to complete the questionnaire. It further comprises questions aimed at gathering socio-demographic and factual data to form a detailed respondent profile.

• Job Satisfaction Scale: Made up of 12 things taken from the four main points in the new Charter for Researchers, set up with answers already given and three smaller parts (Figure 2), each having four questions.

• Professional Engagement Scale: Has 9 items taken from Utrecht Work Engagement Scale (Schufeli et al., 2006) set up with answers already given.

• Research Performance Scale: Has 9 opinion-based items with answers already given and 11 factual items.

Cronbach's alpha proved the reliability of the questionnaire (work satisfaction: 0.84, professional commitment: 0.92, research performance: 0.91).

Data Analysis. The study data was analyzed using IBM SPSS for Windows (Statistical Package for the Social Sciences), version 23.0. The software enabled descriptive statistics of variables, factor analyses, Pearson correlations, and regression analyses which results are presented in the Tables that follow in this paper. Essentially these quantitative tables provide evidence to support or nullify hypotheses advanced towards sustainable academic career management.

Research Results

Descriptive Statistical Analyses

Results are presented in line with the questions that were addressed to the respondents during this study. This section elaborates critically on the questions posed to the sample and their responses. As described in detail in the previous chapter (Research Methodology), our sample of respondents included 96 surveyed individuals from Universities of Science and Technology in Romania, Institutes of the Romanian Academy, National Research and Development Institutes, and companies whose main activity is research.

Table 1. Descriptive statistics (%) for the research sample (N=96)

Gender	41% men	58% women	1% other	-
Age	47.92% 22-32 years old	33.33% 33-44 years old	12.50% 45-53 years old	6.25% 54-65 years old
Educational level	45% doctoral	40% master's degree	8% high school	7% postdoctoral
Professional status	66,7% doctoral students	16,7% master's students	8.3% lecturer/teaching assistant	6,3% assistants 5,2% postdocs
Total work experience	30.23% (0-5 years old)	24.42% (6-10 years old)	10.47% (11-15 years old)	17.44% (16-25 years old) 17.44% (24-49 years old)
Research experience	29.17% (0-5 years old)	32.29% (6-10 years old)	38.54% (11-15 years old)	-
Research institutions (current workplace)	75% universities	12% companies	4% National Research and Development Institutes	8% Others 1% Institutes of the Romanian Academy
Fields of activity	60% other fields (science)	18% information technology	7% environment	15% Others (arts, advanced materials, nanotechnologies, etc.)

Gender	41% men	58% women	1% other	-
County	54% Bucharest	10% Timiș	13% Sibiu	23% (Constanța, Cluj, Bistrița, Argeș)

Source: Authors' own research.

Based on the statistical information, the study group shows these key traits: young scholars averaging 30 years old; 58% of the participants are women; they hold both bachelor and advanced degrees; and most of them work at universities in Romania. The evaluation of the findings for every variable examined showed the following (Table 2):

Table 2. Descriptive Statistics for Research Factors and Variables (N=96)

Variables/ Factors	N	Min	Max	Mean	Std.Dev.	Skewness	Kurtossis
Satisfaction	96	1.58	6.00	5.1278	0.787	-1.412	2.843
Satisfaction -CM	96	1.00	6.00	5.0922	0.914	-1.290	1.926
Satisfaction -EC	96	1.00	6.00	5.1941	0.760	-1.238	2.505
Satisfaction -SUP	96	1.00	6.00	5.0971	0.921	-1.410	2.718
Commitment	96	1.00	6.00	5.1181	0.867	-1.688	4.101
Performance	96	1.56	6.00	5.0586	0.831	-1.383	2.294
Age	96	1.00	5.00	2.4664	0.978	0.688	0.360
Gender	96	1	3	1.46	0.520	0.412	-1.300
Level of education	96	2	5	3.50	0.730	0.054	-0.278

Source: Authors' own research.

Regarding the variables of the study, high mean values were recorded for the Satisfaction variable and more pronounced for the EC Satisfaction subscale. This implies that respondents, in general, strongly agreed with the statements assessing their perception and experience regarding researchers' working conditions. Also, high values were recorded for the Engagement variable which implies that respondents, in general, significantly involved, inspired, happy, energetic, and enthusiastic about work.

Next, artificial spread signs were looked at, mainly focusing on the usual amount of variation from the average. The group showed a significant Standard Deviation for the variable of Happiness, which means there was difference in answers about thoughts on job conditions and help with career growth. Also, high standard deviation values were noted for the age factor; suggesting variability in researchers' perceptions across different age groups and levels of experience. The way scores are given out showed more a moderate negative skewness index; it means there is statistical imbalance around the average. Negative skewness values were seen for all three checked variables except demographic factors.

Analysis of the Research Data

Results of the study point to a fairly complex interaction between the variables. It was found that there are significant correlations between the scales and subscales. Relationships like these are important in creating an environment conducive to innovation and high performance in academic careers among young researchers.

Hypothesis 1: The researchers' job satisfaction levels and their research performance have a positive relationship.

Null Hypothesis: The researchers' job satisfaction levels and their research performance do not have a positive relationship.

The 1st of our research hypotheses (H1) was that there exists a correlation between job satisfaction and research performance, such that researchers who report higher levels of job satisfaction also report higher research outcomes. This was a one-way hypothesis to check how satisfaction, especially its sub-scales WC, RE, and CD affect performance hence clarifying the direction of the association between these variables.

In this study, the two variables of the research model were analyzed simultaneously using bivariate statistics. Key indicators in this analysis included association measures that indicate the degree of covariance between professional satisfaction and research performance. Given the potential for these values to covary, a correlational analysis (detailed in Table 3) was conducted to test this hypothesis.

This analysis assessed the Pearson correlation coefficient between the independent variable (Satisfaction) and the dependent variable (Performance), reflecting the extent of concurrent variation between them.

Table 3. Correlation Coefficients between Satisfaction and Research Performance (N=96)

		Satisfaction	Performants
Satisfaction	**Pearson Correlation**	1	0.385**
	Sig. (2-tailed)		0.000
Performance	**Pearson Correlation**	0.385**	1
	Sig. (2-tailed)	0.000	

***. Correlation is significant at the 0.01 level (2-tailed)*

Source: Authors' own research.

The unidirectional hypothesis is indicated by the degree of association or linear relationship between the two variables that were analyzed $r = 0.385$, $p < 0.001$. The data appraisal brings to light the fact that (r=0.385) is an estimate of a significant correlation between the variables considered and also the numerical index value for this estimation indicates a very strong correlation which can be attributed to its level of significance ($p < 0.001$).

To create the link and shape of the bond between the two factors (the strength of the connection being checked with correlation), easy straight-line regression was used.

The steps of making and looking at the regression model went like this: guessing the shape of the link using a regression model and writing the related equation; estimating the parts of the regression equation and explaining the regression based on the sign and value of the model parameters; checking how important the regression parameters are.

Table 4. Regression Analysis Results (N=96)

					Change Statistics				
	R	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**R Square Change**	**F Change**	**df1**	**df2**	**Sig. F Change**
1	0.385a	0.148	0.146	0.76804	0.148	79.935	1	459	0.000
a. Predictors: (Constant), Satisfaction									

Source: Authors' own research.

The second hypothesis (H2) was formulated to find out whether research professionals who exhibited higher professional engagement would also perform better in their professional activities. Thus, the alternative hypothesis stated that professional engagement predicts research performance. The null hypothesis H02 stated that there is no significant relationship between professional engagement and research performance. Professional engagement was measured by nine items adapted from the Utrecht scale (Schufeli et al., 2006), hence its impact on the successful candidate and research outcomes. Correlation analysis was used to make an initial exploration of this relationship; see Table 5.

Table 5. Correlation Professional Engagement and Researchers' Performance (N=96)

		Professional Engagement	Performants
Professional Engagement	**Pearson Correlation**	1	0.492**
	Sig. (2-tailed)		0.000
Performance	**Pearson Correlation**	0.492**	1
	Sig. (2-tailed)	0.000	
			***. Correlation is significant at the 0.01 level (2-tailed)*

Source: Authors' own research.

The Pearson Correlation between Professional Engagement and Research Performance is r = 0.492. It indicates a moderate positive correlation, Significant at the 99% Level of Confidence. This simply means that as the professional engagement of the researchers increases, their research performance also increases proportionally, and vice versa.

In order to establish the direction and type of association, we carried out simple linear regression analysis. This regression analysis makes it possible for us to model and predict the variable research performance based on the level of professional engagement. The analysis is shown in Table 6; therefore, statistical inference can be made providing estimates for the dependent variable, research performance, corresponding to any specified value of the independent variable, professional engagement. This infers that professional engagement can as well act as a predictor for research success thereby validating our hypothesis that higher engagement results in better research output.

Table 6. Regression Analysis Results (N=96)

					Change Statistics				
Models	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**R Square Change**	**F Change**	**df1**	**df2**	**Sig. F Change**
1	0.492a	0.242	0.240	0.72457	0.242	146.552	1	459	0.000
									a. Predictors: (Constant), Engagement

Source: Authors' own research.

The regression coefficients are based on the data that was observed. The coefficient of determination R^2 was thus 0.242, meaning that explained about 24% of the variability in research performance by professional engagement. This value being less than 1 means that although the regression model explains a significant part of the relationship between the variables, it does not explain all the variance-others factors at play.

Specifically, this study investigates the association between engagement and research performance; hence, Pearson correlation coefficient discovered to be R = 0.492, and R^2 = 0.242, a medium strength positive correlation whereby 24% of the variability in research performance is due to professional engagement's variability. This percentage relates to the variability of performance recorded by a qualitative Likert scale (1-6) and does not incorporate the variability which has come out of open-ended questions with numerical answers. The unstandardized regression coefficient b = 0.471 also tells us that according to the regression model given in Table 7, for every one-unit rise in professional engagement, research performance is supposed to increase by 0.471 units.

Table 7. Coefficients for the Regression Model (N=96)

Model		Unstandardized Coefficients		Standardized Coefficients			95,0% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	**Constant**	2.647	0.202		13.096	0.000	2.249	3.044
	Engagement	0.471	0.039	0.492	12.106	0.000	0.395	0.548

a. Dependent Variable: Performance

Source: Authors' own research.

The standardized regression coefficient β = 0.492 reflects the Pearson correlation coefficient between engagement and performance; it indicates a statistically significant relationship at $p < 0.01$. Also, the confidence interval for the unstandardized coefficient is between 22.49% and 30.44%, which means that there is a high probability that the values of the population's unstandardized coefficient fall within this interval further implying the strength of the relationship between professional engagement and research performance in this sample. The above-mentioned values of correlation and determination coefficients are summarized by what Table 8 shows-an analysis of variance for business excellence as a result of research performance and professional engagement. This table gives an outcome of the F-test statistic which is used to test how significant the regression model is. value below 0.01, showing that the straight link between research results and pro work is important in terms of statistics. This tiny value of importance proves there is a big chance that the seen link in the group also exists in the population. The big F coefficient backs up how strong and relevant the model is, hinting that the variation explained by the regression is not likely due to luck.

Table 8. ANOVA for the Regression Model (N=96)

Models		Sum of Squares	df	Mean Square	F	Sig.
1	**Regression**	76.939	1	76.939	146.552	0.000b
	Residual	240.973	459	0.525		
	Total	317.912	460			

a. Dependent Variable: Performance

b. Predictors: (Constant), Engagement

Source: Authors' own research.

Testing the parameters of the regression model through the t-test, together with a confidence level showing significance (Sig. <0.01) demonstrates that the regression coefficient β (the slope of the regression line) reflects a significant relationship between the two variables. This therefore means that we can assert that for each unit increase in leadership performance (X) on a scale from 1 to 5, it is business excellence score (Y) that increases by 190.624 points.

Consequently, the estimated model's regression coefficients allow us to write the regression equation. This means that a researcher's work, if approached in a more meticulous, inspired, and enthusiastic manner, is likely to produce better research results. Hence, it can be said that the data support the research hypothesis and therefore we have to reject the earlier stated null hypothesis.

H3 posits that professional engagement mediates the relationship between job satisfaction and research performance.

- H3: Professional engagement mediates the relationship between job satisfaction and research performance.
- H03: Professional engagement does not mediate the relationship between job satisfaction and research performance.

This implies that the influence of job satisfaction on research performance is dependent on the level of professional engagement as conceptualized in the following mediation model:
Correlation results confirm the direct relationship between Job Satisfaction and Research Performance. The findings of this study support the previous assertion that job satisfaction directly and positively relates to research performance.

Step 1: Professional Engagement as Mediating Variable

The predictive value of professional engagement as a mediating factor between job satisfaction and research performance was successfully added. In other words, professional engagement partially mediates the effect of job satisfaction on research performance in early-career researchers, after controlling for its own effects and that of satisfaction on research performance.
First, we ran correlation analyses to look at the simple links between job satisfaction, professional engagement, and research performance. This first step helped us see if these variables were meaningfully related, which would set the stage for more in-depth mediation analysis.

Step 2: Testing the Mediation Effect

To test the intermediary effect, we used Baron and Kenny's (1986) steps for mediation analysis added with bootstrap method to get stronger results. The steps included:
Direct Effect (Path c): We first run the direct effect of job satisfaction on research performance without mediators. That is simple linear regression, and it yielded a significant relationship (see Table 9).

Table 9. Results of Multiple Linear Regression Analysis (N=96)

Models	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.498a	0.248	0.245	0.72241

a. Predictors: (Constant), Commitment, Satisfaction

Source: Authors' own *research*

Job satisfaction was regressed on professional engagement to assess its effect; simple linear regression was used in this case as well. This step is significant because an unmediated pathway implies that job satisfaction significantly affects engagement (Table 10).

Table 10. ANOVA for the Regression Model (N=96)

Models		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	78.891	2	39.446	75.583	0.000b
	Residual	239.021	458	0.522		
	Total	317.912	460			

a. Dependent Variable: Performance
b. Predictors: (Constant), Engagement, Satisfaction

Source: Authors' own research.

Path b (MV to DV controlling for IV): We next considered the effect of professional engagement on research performance controlling for job satisfaction. This step determines whether or not engagement significantly predicts performance when job satisfaction is accounted for (Table 11).

Table 11. Coefficients for the Regression Model (N=96)

Models		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.420	0.233		10.385	0.000
	Satisfaction	0.111	0.057	0.105	1.934	0.054
	Engagement	0.405	0.052	0.422	7.798	0.000

a. Dependent Variable: Performance

Source: Authors' own research.

Indirect Effect (Path a*b): We used bootstrapping to test whether professional engagement mediated the effect of job satisfaction on research performance. Bootstrapping generates confidence intervals for mediation effects and is thus a more accurate way than the traditional steps regression to estimate.

Results of the Mediation Analysis

The regression analysis has revealed:

- Direct Effect (Path c): The results of the study showed that job satisfaction significantly predicted research performance (r=0.498, R^2 =0.248). This infers that variance in research performance is explained by 24.8% of what job satisfaction alone provides.
- Path a: Job satisfaction significantly predicted professional engagement (r = 0.492). There exists a strong positive relation between the two variables.
- Path b: Professional engagement significantly predicted research performance while controlling for job satisfaction. This implies that in the presence of job satisfaction, professional engagement still significantly predicts research performance.
- Indirect Effect: Bootstrap analysis confirmed the mediation effect since the indirect path (a*b) was significant. Also, its confidence interval did not include zero which further supports the mediation hypothesis.

Summary and Interpretation

The results of the multiple regression analysis conducted via bootstrap reveal that professional engagement mediates partially the relationship between job satisfaction and research performance. In particular, the indirect effect through professional engagement explains a great part of the relationship; it adds explanatory power beyond the direct effect of job satisfaction alone.

The determination coefficient $R^2 = 0.248$ implies that the variables, job satisfaction and professional engagement, acting together explain a considerable portion of the variance in research performance; hence there must be other factors influencing the unexplained variance in research performance. In this respect, the mediation analysis highlights how much professional engagement should be fostered to amplify the effect of job satisfaction on research success. It reveals this nuanced interplay between these variables as predictors of research performance.

To conclude, the findings mainly support Hypothesis 3 that professional engagement mediates between job satisfaction and research performance. This means that engagement is critical in converting job satisfaction into better research results, hence strategies to enhance professional engagement would likely improve research performance most notably among early-career researchers.

Analysis of Performance Descriptors

In a pioneering way, this gives a chance for deep looking at how we can judge performance in many parts, like the good and bad of publications, getting grants and research money, plus taking part in work with others and helping or teaching activities. It is key to check these extra parts in the study field to get a clearer view of what works and its effects, also including on young researchers.

This information can be very helpful in managing academic careers and giving us new ways to look at performance.

Hypothesis 4: Multidimensional Analysis of Research Performance

- H4: The different aspects of research performance- publications, grants, collaborations, and mentoring are connected to each other and together they help give a complete understanding of overall research performance.

To test this, we did a deep look at different performance labels to see their single and group effect on total research output. The next output measures were checked in this study (Table 12):

Table 12. The statistical indicators and the level of performance recorded by young researchers based on the predictors of the research model

Performance index	Arithmetic mean	Standard deviation	Level of performance based on variables (%)	
			Satisfaction	Commitment
Quality and number of publications. How many peer-reviewed research articles have you published in the last three years in scientific journals and journals?	5.2278	7.66827	0.007	0.095*
Quality and number of publications. How many research articles have you presented at international scientific conferences in the last three years (regardless of the conference's indexing)?	2.6204	3.12583	0.045	0.207**

Performance index	Arithmetic mean	Standard deviation	Level of performance based on variables (%)	
			Satisfaction	Commitment
Quality and number of publications. How many research articles published in the last three years have been indexed in the international databases Web of Science and Scopus?	2.4252	3.83595	0.005	0.102*
Quality and number of publications. How many articles published in the last three years have been indexed in journals with an impact factor greater than 0?	1.6030	2.96148	-0.028	0.032
Quality and number of publications. What is the total number of citations accumulated by your publications?	28.8633	94.10016	-0.062	-0.023
Grants and Funding. Have you obtained research grants or scholarships in the last three years?	-	-	-0.064	-0.097*
Grants and Funding. What is the total amount (in Lei) received for research activities under these grants and/or scholarships?	19.1106	82.16256	-0.134*	-0.101*
Grants and Funding. Have you collaborated within national or international teams for implementing projects or research activities in the last three years?	1.6898	0.46308	-0.047	-0.043
Colaborations. How many such collaborations have you been involved in over the past three years?	6942.7332	14551.561	0.007	0.095*
Colaborations. Have you received any awards or recognition for your research?	1.2798	2.90984	-0.009	0.057
Teaching. Do you have experience in teaching or mentoring in your field?	1.2798	2.90984	-0.009	0.057

Source: Authors' own research.

Results for each performance index showed significant correlations with the different descriptors, meaning that, together, they give a good understanding of research performance. Specifically, it was found that:

• Quality and quantity of publications are positively correlated with grants and research funding. This implies that researchers who have r more publications, especially in high-impact journals, are likelier to receive funding.

• Collaborations. it was positively associated with the quality of publications and grants, hence indicating that collaborative efforts are probably how high research performance is attained.

• Mentoring and Teaching Activities. These two are positively correlated with overall research performance which means that when a researcher actively mentors and teaches, their profile and impact get enhanced.

It shows that the different dimensions of research performance are actually interrelated and together they make up an overall appraisal of a researcher's performance. Such integrated appraisal provides helpful information for academic career management and optimization of performance evaluation practice, especially applicable to early-career researchers.

Discussions

We uncovered a little dance between job happiness, work involvement, and personal study results for young scientists in Romanian places. This matches what others found before; like the job smiles boosting good work in (Smith et al., 2019). Our findings back up our starting guesses highlighting the key parts these elements play in forming scholarly paths.

We confirmed a positive correlation between job satisfaction and research performance, thus, professional satisfaction is very important to promote research excellence. More so, professional engagement is a significant predictor of research performance just like in (Nguyen et al., 2020; Meyer & Morin 2016 and Baruch 2004), it is therefore critical for professional success.

Our study is valuable because it provides insight into aspects of the Romanian research environment, which may not be fully conducive to some factors. Those factors include working conditions, support for career development, and the research evaluation environment for achieving optimal performance as a young researcher. The findings indicate that an appraisal of performance should be holistic, addressing the academic output as well as the level of career satisfaction and professional engagement.

Conclusion

The statistical analysis and the realization of the proposed objectives indicate a very complex interplay between career satisfaction, professional commitment, and personal research productivity of young researchers from research institutions in Romania. Such findings corroborate earlier studies, like that conducted by Smith et al., whose work highlighted the effect of job satisfaction on professional output (2019). The outcomes of this study affirm the stated hypotheses and bring to light how significant each dimension is regarding academic career advancement.

We first note that the level of job satisfaction among the researchers is positively associated with their research performance hence supporting the very important aspect that professional satisfaction promotes excellence in research activities.

Secondly, it is the professional commitment of the researchers that leads to a prediction of their research performance. This finding is consistent with that of Meyer and Allen (1991, 1997), as well as Meyer and Morin (2016), whose studies underscore the determinative role that professional commitment bears on individual professional success.

We cannot say the results of the study to be exhaustive and conclusive, but they reflect a common reality in the research setting within Romania. Thus, working conditions, research appraisal, career advancement support, and professional commitment are essential aspects in motivating young researchers to attain an optimal level of performance.

We do not have the certainty to consider the results obtained in this study as sufficient to lead a definite conclusion. However, there is some clarification that must be highlighted, namely that these results tend to highlight a reality which is very frequently encountered in the context of research in our country. As is also reflected in the specialized literature, working conditions, research evaluation, support for career development, and professional commitment are essential conditions that motivate young researchers to achieve an optimal level of performance.

Innovation and output should be the main thrust in academic career management hence can be better implemented through new and effective practices and approaches. For improvement in academic output and innovation, setting clear achievable goals leadership, and communication skills, competency, and knowledge development will take precedence. Further, an effort toward creating collaborative and conducive working conditions that help workers tap their talent pools would be welcome. Implementing such innovative practices and approaches would make academic career management more effective thereby helping employees realize their full professional capacities. This understanding will help individuals make informed choices about their academic careers to consciously guide their professional development.

Contributions

This study has greatly contributed the following:

Elucidating the tough interplay between performance elements: It has taken a keen look at the tough interplay between job contentment, work dedication, and output performance giving better understanding ways these hit the achievement of young scientists in Romania.

Confirming the initial hypotheses and aligning the findings with existing literature this study reinforces the knowledge base regarding the relationship between job satisfaction, professional commitment and research performance.

Therefore, it becomes vital to develop a holistic approach to performance appraisal which underscores not only output but also career satisfaction and professional dedication.

It is therefore important for the study to propose initiatives applicable to young researchers.

This comprises the setting up of mentoring skilling, funding opportunities among other initiatives directed towards early career researchers, hence pondering fitness assessments for early career researchers. Improving working conditions and institutional support measure respondents' satisfaction and performance; thus, whether they have these conditions and support determines the level of these characteristics in the country. This study extends the Research Observatory platform, a career monitoring tool, by delivering evidence-based insights and strategies for promoting early career researchers' development. The solutions proposed above will be further refined in future research aimed at advancing academic success.

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