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Exploring the Drivers of Research Productivity: A Study of Motivation and Hygiene Factors Among Academics

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Abstract

The purpose of this study is to explore the impact of motivation and hygiene factors on the research performance of faculty members at a Turkish Foundation University, with a specific focus on the number of articles published in prominent academic indexes such as the Science Citation Index and Social Science Citation Index. Understanding how these factors influence academic productivity is crucial for enhancing the research output of universities and fostering a supportive academic environment. Motivation factors refer to elements that directly enhance job satisfaction and drive individuals to achieve higher levels of performance, such as recognition, achievement, career advancement, and the intrinsic enjoyment of research. On the other hand, hygiene factors include external conditions like salary, work environment, job security, and institutional policies that, if inadequate, may lead to dissatisfaction but do not necessarily motivate individuals to perform at higher levels. By examining the distinct roles of these factors, this study aims to uncover which aspects of the work environment and professional life have the most significant influence on academic performance, particularly in terms of research output. This insight can help university administrators and policymakers design strategies to enhance faculty motivation and improve overall research productivity. The study was conducted with a sample of 150 academics from the Turkish Foundation University, providing a diverse range of insights from faculty members across different disciplines. The focus on publications in the SCI and SSCI indexes ensures that the research performance being measured is of high academic and international standards. The results of this study could serve as a valuable resource for both academic institutions in Turkey and beyond, helping them better understand the drivers of academic success and implement policies that foster an environment conducive to research excellence. The study seeks to contribute to the broader discourse on academic productivity by identifying the key factors that influence the research output of university faculty members. By comparing the effects of motivation and hygiene factors, the study provides a nuanced perspective on how universities can optimize their resources and support systems to encourage greater research performance, leading to higher-quality academic contributions and enhanced institutional reputations. The study yielded several key results regarding the impact of hygiene and motivation factors on research performance among academics. First, it was found that the perception of academics toward the influence of hygiene factors—including salary, job security, company policies and administration, supervision, interpersonal relations, and working conditions—on their research performance is generally positive, with one notable exception: status. While most of these external factors were seen as contributing positively to research productivity, the perception of status did not align with this trend, indicating that academics do not perceive status as a significant driver of their research output. Second, the study revealed that academics had a consistently positive perception of the impact of motivators on their research performance. These motivators, which include opportunities for growth, the nature of the work itself, responsibility, achievement, advancement, and recognition, were all seen as influential in driving research productivity. This suggests that intrinsic factors, such as the personal fulfillment and professional development that come with academic work, are viewed by academics as strong motivators for achieving higher research performance. These findings highlight the importance of both extrinsic and intrinsic factors in shaping academic productivity, with a particular emphasis on how motivators can enhance research output. While hygiene factors such as salary and working conditions are important for maintaining a positive work environment, it is the motivators—like the sense of achievement and opportunities for growth—that appear to play a more crucial role in driving research performance among academics. This distinction can provide valuable insights for universities seeking to improve faculty research output by focusing on policies that enhance both the working environment and opportunities for professional development.

Keywords: Motivation Factors, Hygiene Factors, Academic Research Performance
JEL Codes: I23, M12, J28

1. INTRODUCTION

Throughout the world, various ranking systems are used to evaluate the performance of universities, and a key factor in these assessments is the research performance of academics. Research output, citations, and the impact of scientific papers are often seen as primary indicators of a university's overall quality and academic reputation. These rankings not only reflect the academic strength of institutions but also influence funding, partnerships, and the ability to attract top talent. Among the prominent global ranking systems, the Performance Ranking of Scientific Papers for World Universities, published by the Higher Education Evaluation and Accreditation Council of Taiwan (HEEACT), is one of the key measures of university research performance. The HEEACT ranking evaluates 500 universities globally based on criteria

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that focus on the volume of scientific papers, their impact, and performance output. Research productivity, which accounts for 20% of the ranking, is measured by the number of published articles over the last 11 years (10%) and the number of articles published in the current year (10%). Research impact, weighted at 30%, considers the number of citations accumulated over the last 11 years (10%), the number of citations in the last two years (10%), and the average number of citations over the last 11 years (10%). Research excellence, which forms 40% of the total score, takes into account the h-index of the last two years (20%), the number of highly-cited papers (15%), and the number of articles published in high-impact journals in the current year (15%). Despite the significance of research output in these global evaluations, Turkish universities are notably absent from the HEEACT ranking, indicating a gap in their research contributions on the global stage.

Another globally recognized system is the Academic Ranking of World Universities (ARWU), commonly referred to as the Shanghai Ranking. This ranking, developed by Shanghai Jiaotong University, uses a different set of criteria to compare universities worldwide. The ARWU considers factors such as Nobel Prizes and Fields Medals won by alumni (10%) and faculty (20%), the presence of highly-cited researchers in various subject categories (20%), the number of articles published in prestigious journals like Nature and Science (20%), and the number of publications indexed in the Science Citation Index and Social Sciences Citation Index (20%). The per capita research performance of an institution also contributes 10% to the overall ranking. Despite these varied and prestigious metrics, Turkish universities occupy some of the lowest ranks in the ARWU, further highlighting challenges in their research output and global competitiveness. Additionally, The World University Ranking system, another influential global ranking framework, attributes 30% of its total score to research performance. In this ranking, only three Turkish universities have secured places, though none are within the top 200. Bilkent University is ranked within the range of 201-225, while Istanbul Technical University and Middle East Technical University are placed between 276-300. These rankings reinforce the notion that, compared to global counterparts, Turkish universities face significant challenges in their research performance, both in terms of the quantity and quality of their scholarly output.

When considering these and similar global university ranking systems, it becomes evident that the research performance of Turkish universities is not in an advantageous position. This suggests a need for deeper investigation into the factors affecting research productivity within Turkish academic institutions. Understanding these factors could help Turkish universities bridge the gap with their global counterparts and improve their standing in international rankings. The purpose of this study is to examine the factors influencing research performance among academics in Turkish universities, specifically through the lens of Herzberg's Two-Factor Theory, which distinguishes between motivator factors and hygiene factors. Motivator factors are those intrinsic to the work itself, such as achievement, recognition, responsibility, advancement, and personal growth opportunities. These are thought to directly influence job satisfaction and drive higher performance, particularly in fields like academic research. On the other hand, hygiene factors are external conditions such as salary, job security, company policies, work conditions, and interpersonal relationships. While hygiene factors do not necessarily motivate higher performance, their absence can lead to dissatisfaction and hinder productivity. By focusing on the perceptions of academics regarding these motivator and hygiene factors, this study seeks to uncover how these elements contribute to or inhibit research performance. The study is conducted on a sample of 150 academics at a Turkish Foundation University, providing insights into the factors that play a crucial role in their ability to produce high-quality research outputs.

This research is especially relevant given the current standing of Turkish universities in global rankings. Improving research performance could help elevate these institutions in the global academic arena, attracting more international students, securing better research funding, and enhancing collaborations with other top-tier institutions. By identifying and addressing the motivators and hygiene factors that affect academic research productivity, Turkish universities can implement targeted strategies that not only improve individual academic performance but also bolster their overall research output and global reputation. The study aims to contribute to the understanding of how intrinsic and extrinsic factors affect research performance in the academic context. By exploring the unique challenges faced by Turkish universities, the findings may offer valuable insights into strategies for improving research productivity and ultimately enhancing the global standing of these institutions. Through this focus on Herzberg's framework, the study provides a comprehensive analysis of the factors that need to be addressed to foster a more productive and impactful research environment within Turkish universities.

2. LITERATURE REVIEW

Herzberg's theory, also known as the Two-Factor Theory or Motivation-Hygiene Theory, was proposed by Herzberg et al. (1959) as a framework for understanding employee motivation in the workplace. The central premise of this theory is that an employee's motivation to work is deeply connected to their attitudes towards their job. Through an extensive inquiry into employees' attitudes, Herzberg and his colleagues identified two distinct sets of factors that influence job satisfaction and dissatisfaction. The first set, which Herzberg referred to as motivators or job factors, are primarily related to the content of the job itself. These factors are intrinsic to the work and, when present, lead to positive feelings and job satisfaction. Motivators include elements such as recognition, achievement, opportunities for growth, advancement, responsibility, and the work itself. These factors contribute to an individual's personal development and fulfillment, making them feel satisfied and motivated to perform well in their roles. On the other hand, the second set of factors, which Herzberg termed hygiene factors or extra-job factors, are related to the context in which the job is performed. These factors do not directly contribute to job satisfaction but can cause dissatisfaction if they are inadequate or poorly managed. Hygiene factors include salary, interpersonal relations, supervision, company policies and administration,

working conditions, status, and job security. While the absence of these factors can lead to dissatisfaction, their presence does not necessarily lead to job satisfaction; rather, they simply prevent dissatisfaction.

A key insight from Herzberg's theory is that job satisfaction and dissatisfaction are not opposite ends of a single spectrum. Instead, they exist on two separate and distinct continua. According to Herzberg, the opposite of job satisfaction is not dissatisfaction, but rather a lack of satisfaction. Similarly, the opposite of job dissatisfaction is not satisfaction, but the absence of dissatisfaction, or "no dissatisfaction". This distinction means that improving hygiene factors in the workplace may eliminate dissatisfaction, but it will not inherently lead to job satisfaction or increased motivation. Conversely, the presence of motivators can drive job satisfaction, but their absence does not necessarily lead to dissatisfaction, only a lack of satisfaction. Herzberg's Two-Factor Theory underscores the importance of both sets of factors in understanding employee behavior, and it emphasizes that organizations need to address both motivators and hygiene factors to create a balanced and productive work environment. By applying Herzberg's theory, managers and organizations can gain valuable insights into how to improve employee motivation and satisfaction. For example, improving job content through recognition, opportunities for growth, and increased responsibility can enhance job satisfaction. At the same time, ensuring that hygiene factors such as fair compensation, good working conditions, and clear company policies are in place can prevent job dissatisfaction. This two-pronged approach helps create a work environment where employees feel both satisfied and supported, leading to improved performance and engagement.

Zainab (1999) defines research productivity as the process of reporting and publishing research findings in national or international journals, presenting research at conferences, registering patents, and being involved in impactful activities such as having high citation impact factors and reviews. Similarly, the University of Utah views research productivity as the number of cited publications, including journal papers and book chapters (Ransdell, 2001). Bloedel (2001) suggested that publication in leading journals should be given a higher weight compared to other research output indicators, as these journals often reflect the quality and impact of the work. Sax et al. (2002) measured research productivity as the average number of published research reports over the past two years. Gender differences have been observed in research productivity. Turner and Mairesse (2003) found significant disparities between males and females in the number of published articles and impact factors. These findings suggest that gender may play a role in determining the research output of academics, though the exact reasons for these differences remain a subject of further investigation.

Research publication is widely considered the primary indicator of academic productivity within universities. Publications provide essential information for societal growth, progress, development, and innovation, as noted by Usang et al. (2007). As research outputs contribute to knowledge advancement, they also serve as a key metric for measuring the effectiveness and contribution of academic staff in their respective fields.

Hill's (1986) study supported Herzberg's two-factor theory and demonstrated its applicability to academic staff in higher education institutions. Hill concluded that job satisfaction among academics is primarily related to intrinsic factors, particularly the opportunity to engage with students and the meaningfulness of the work itself. Conversely, dissatisfaction is often caused by extrinsic factors such as organizational policies or administrative duties. Moses (1986) expanded on this by concluding that tenured and well-paid positions provide satisfaction for lower-order needs, while prestigious and autonomous academic roles allow staff to satisfy higher-order needs like esteem and self-actualization. Other studies have examined the factors influencing academics' intention to leave their institutions. Manger and Eikeland (1990) found that interpersonal relationships with colleagues were the strongest predictor of academics' intention to leave, followed by overall job satisfaction. Interestingly, salary or economic benefits did not significantly influence whether academics intended to stay or leave, underscoring the importance of intrinsic job satisfaction in retaining faculty members.

Several factors have been identified as significant contributors to research performance, including personal characteristics, the specific area of research, access to funds and equipment, the support staff available, the academic work environment, the number of PhD students, administrative demands, and tenure status (Fiona Wood, 1990). In high-status business schools, research productivity is particularly valued and is often tied to rewards such as pay raises, tenure, and promotions (Konrad and Pfeffer, 1990; Pfeffer, 1993). These institutions tend to create an environment that encourages academic productivity, with greater incentives and pressures to publish (Beyer et al., 1995). Leadership characteristics also play a critical role in faculty research productivity. Dundar and Lewis (1998) identified faculty group size as one of the most significant predictors of research productivity, along with factors such as being at a private institution, having a larger number of full professors, and having a higher percentage of faculty actively publishing in peer-reviewed journals within a department.

Several models have been developed to measure and predict the research productivity of faculty members, with one of the most widely used being Bland et al.'s (2005) model. This model emphasizes three key components of a productive research organization: individual characteristics, environmental factors, and leadership qualities. According to Bland et al. (2005), all these features must be present and accessible for optimal productivity. The model suggests that a holistic approach—focusing on individual faculty members' traits, the institutional environment, and the quality of leadership—is essential to fostering high levels of academic research productivity. Research productivity is a complex concept influenced by a variety of factors, including intrinsic motivation, institutional support, leadership characteristics, and personal attributes. As universities strive to improve their research output, understanding these factors and developing strategies to address them is critical for fostering a culture of academic excellence and innovation.

3. METHODOLOGY

The sample for this study was drawn from a foundation university in Istanbul, consisting of a total of 150 academic staff members. The sample included individuals at various academic ranks, such as doctors, assistant professors, associate

professors, and full professors, providing a diverse representation of faculty members across different levels of experience and expertise. To investigate the factors affecting research performance, the study utilized a questionnaire designed based on Herzberg's Two-Factor Theory, focusing on both motivators and hygiene factors. The questionnaire was comprised of a 19-item scale aimed at assessing the specific factors that influence the research productivity of faculty members. Each item on the questionnaire was measured using a five-point Likert scale, where respondents rated their agreement with each statement, ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire was distributed to the sampled academic staff, who were given one week to complete and return it. This timeframe allowed participants ample opportunity to reflect on their experiences and provide thoughtful responses regarding the factors that impact their research performance. The use of the Likert scale provided a structured means of quantifying faculty perceptions, facilitating a deeper understanding of how both intrinsic and extrinsic factors, as identified by Herzberg, contribute to or hinder research productivity within the academic environment.

4. FINDINGS

The One-Sample Statistics in this study present the mean scores for the variables being examined. To determine whether the hypotheses are accepted or rejected, the test value is set at 4. If the mean of a variable is greater than this test value of 4, the corresponding hypothesis is accepted. Conversely, if the mean of a variable is not greater than the test value, the hypothesis is not accepted. To investigate the study's hypotheses, a t-test was applied, and the results are shown in Table 1 and Table 2. According to the results presented in Table 1, the means of all variables exceed the test value, indicating that the hypotheses for these variables are accepted. However, the mean score for variable twelve is only slightly above the test value, suggesting that this variable is borderline, and the hypothesis related to it is not strongly supported. The application of the t-test allows for a clear comparison of the means against the defined test value, providing a statistical basis for determining the significance of each variable's impact on research performance. The fact that most variables have mean scores higher than 4 indicates that the factors under consideration, as measured by Herzberg's motivators and hygiene factors, are perceived by the academic staff as significantly influencing their research performance. However, the near-test-value result for variable twelve suggests that this specific factor may require further investigation to better understand its role and importance in the context of research productivity.

Table 1: One-Sample Statistics with variables name and category according to Herzberg Theory

	Name of variables	Kind of factors	N	Mean	Std. Deviation	Std. Error Mean
1	Supervision	Hygiene	150	4,5867	,80424	,06567
2	Job security	Hygiene	150	4,5000	,84940	,06935
3	Work itself	Motivators	150	4,6533	,75961	,06202
4	Salary	Hygiene	150	4,6067	,75881	,06196
5	Recognition	Motivators	150	4,6133	,80089	,06539
6	Growth of possibility	Motivators	150	4,5200	,81693	,06670
7	Advancement Achievement	Motivators	150	4,5067	,73042	,05964
8	Interpersonal relations	Motivators	150	4,5800	,77086	,06294
9	Responsibility	Hygiene	150	4,3400	,91834	,07498
10	Working condition	Motivators	150	4,5200	,84122	,06869
11	Status	Hygiene	150	4,5733	,71744	,05858
12	Company policy and administration	Hygiene	150	4,0400	1,23092	,10050
13		Hygiene	150	4,4800	,87255	,07124

The table presents one-sample statistics for various variables categorized according to Herzberg's Two-Factor Theory, which divides job-related factors into "Hygiene" factors and "Motivators." Hygiene factors are typically associated with the work environment and are essential for preventing dissatisfaction, whereas Motivators are linked to intrinsic job satisfaction and actively contribute to an employee's sense of fulfillment and motivation. In the analysis, the Hygiene factors include aspects such as supervision, job security, salary, working conditions, and company policy. The data indicates that these factors generally receive high ratings from respondents, with mean scores indicating a strong level of satisfaction. For example, supervision, job security, and related aspects have a mean score of 4.5867, suggesting that employees are generally content with these aspects of their work. The standard deviation for this group is relatively low at 0.80424, indicating that most respondents have a similar perception of these factors. Another set of Hygiene factors shows a slightly lower mean score of 4.5000, with a standard deviation of 0.84940, which suggests a consistent yet slightly more varied level of satisfaction among the respondents. However, there is a notable exception with one of the Hygiene factors, where the mean score drops to 4.0400, and the standard deviation increases to 1.23092. This larger spread indicates that while many employees may still be satisfied, there is more diversity in their experiences, particularly concerning working conditions, where opinions are more varied.

In contrast, Motivator factors such as recognition, advancement, and achievement, which are crucial for fostering job satisfaction and motivation, also receive high ratings. The mean scores for these variables are generally above 4.5, indicating that employees feel positively about these intrinsic aspects of their jobs. For instance, one of the Motivator

factors has a mean score of 4.6533 with a standard deviation of 0.75961, reflecting a high level of satisfaction with relatively low variability in responses. This suggests that most employees share a similar level of satisfaction when it comes to factors that drive motivation and a sense of accomplishment. Other Motivator factors show similar patterns, with mean scores such as 4.6133 and standard deviations around 0.80089, indicating a consistent and strong satisfaction level among employees across these intrinsic factors. Overall, the data suggests that both Hygiene and Motivator factors are perceived positively by employees. Hygiene factors, while essential in preventing dissatisfaction, appear to be well-managed within this group, as indicated by their solid mean scores. However, it is the Motivator factors that seem to play a crucial role in enhancing overall job satisfaction and motivation. These factors consistently show high mean scores, suggesting that employees derive significant satisfaction from aspects of their job that relate to personal growth, recognition, and responsibility. The variation in responses, as indicated by the standard deviations, shows that while most employees are satisfied, there is some diversity in experiences, particularly with certain Hygiene factors like working conditions. This analysis highlights the importance of maintaining strong Hygiene factors to avoid dissatisfaction while also focusing on enhancing Motivator factors to boost overall job satisfaction and employee engagement.

Table 2: One-Sample Test with variables name and category according to Herzberg Theory

	Name of variables	Kind offactor	Test Value = 4			
					Lower	Upper
1	Supervision	Hygiene	8,934	,000	,58667	,4569,7164
2	Job security	Hygiene	7,209	,000	,50000	,3630,6370
3	Work itself	Motivators	10,534	,000	,65333	,5308,7759
4	Salary	Hygiene	9,792	,000	,60667	,4842,7291
5	Recognition	Motivators	9,379	,000	,61333	,4841,7426
6	Growth of possibility	Motivators	7,796	,000	,52000	,3882,6518
7	Advancement	Motivators	8,496	,000	,50667	,3888,6245
8	Achievement	Motivators	9,215	,000	,58000	,4556,7044
9	Interpersonal relations	Hygiene	4,534	,000	,34000	,1918,4882
10	Responsibility	Motivators	7,571	,000	,52000	,3843,6557
11	Working condition	Hygiene	9,787	,000	,57333	,4576,6891
12	Status	Hygiene	,398	,691	,04000	-,1586,2386
13	Company policy and administration	Hygiene	6,737	,000	,48000	,3392,6208

The table presents the results of a one-sample t-test for various job-related factors categorized according to Herzberg's Two-Factor Theory. The analysis compares the mean scores of these factors against a test value of 4, which represents a neutral or average level of satisfaction. The variables are categorized into "Hygiene" factors, which are essential for preventing dissatisfaction, and "Motivators," which actively contribute to job satisfaction. For the Hygiene factors, such as supervision, job security, salary, interpersonal relations, working conditions, status, and company policy and administration, the results indicate significant positive mean differences from the test value of 4 for most variables. For example, supervision shows a t-value of 8.934 and a mean difference of 0.58667, with a 95% confidence interval ranging from 0.4569 to 0.7164. This suggests that employees perceive supervision as significantly better than average, contributing positively to their overall work experience. Similarly, job security and salary also show substantial positive mean differences, with t-values of 7.209 and 9.792, respectively, indicating strong satisfaction in these areas. Working conditions and company policy also have significant mean differences, suggesting that these factors are perceived positively, though the variable "Status" does not show a significant difference (t-value = 0.398, p = 0.691), implying that employees may feel neutral about this aspect. The Motivators, including work itself, recognition, growth opportunities, advancement, achievement, and responsibility, all show significant positive mean differences as well. For instance, the factor "Work itself" has a t-value of 10.534 and a mean difference of 0.65333, indicating that employees find the nature of their work to be significantly more satisfying than neutral. Recognition and achievement also exhibit strong positive differences, with t-values of 9.379 and 9.215, respectively, underscoring the importance of these factors in contributing to overall job satisfaction. Growth opportunities and advancement show similarly significant positive results, indicating that employees perceive these opportunities as being better than average, which likely enhances their motivation and engagement at work.

The consistently positive and significant t-values across most variables suggest that both Hygiene factors and Motivators are viewed more favorably than neutral by the employees surveyed. This reflects a generally positive perception of the work environment and job roles, with employees expressing satisfaction with both the basic conditions of their work and the intrinsic aspects that drive motivation. The exceptions, such as the neutral response to the status factor, may indicate specific areas where employee perceptions are more balanced or where improvements could be targeted to enhance overall satisfaction. In sum, the one-sample t-test results indicate that employees generally perceive both the Hygiene and Motivator factors as contributing positively to their job satisfaction, with significant differences from a neutral baseline of 4. These findings highlight the importance of maintaining strong Hygiene factors to prevent dissatisfaction while also emphasizing the role of Motivators in driving higher levels of employee engagement and satisfaction.

5. CONCLUSIONS

This study demonstrates that the motivation factors influencing the research performance of academics, as explained by Herzberg's Two-Factor Theory, have been validated by the perceptions of faculty members at a foundation university in Turkey. Herzberg's theory posits that motivators—such as recognition, achievement, responsibility, opportunities for growth, and the intrinsic nature of the work itself—are key drivers of job satisfaction and performance. Through the application of Herzberg's framework, the study confirmed that these motivators play a significant role in enhancing the research productivity of academics. The faculty members' responses indicated that these intrinsic factors contribute positively to their engagement with research, leading to greater output in terms of publications, conference presentations, and other scholarly activities. This confirmation of Herzberg's theory by the academics' perceptions underscores the importance of creating an academic environment that fosters intrinsic motivation, recognizing that factors such as achievement and professional growth are crucial in driving research performance. The findings suggest that universities aiming to improve their research output should focus on strengthening these motivators, as they are integral to the satisfaction and productivity of academic staff. According to the study, academics generally perceive that hygiene factors—with the exception of status—have a positive effect on their research performance. These hygiene factors include salary, job security, company policy and administration, supervision, interpersonal relations, and working conditions. Academics believe that these external factors contribute to creating a conducive environment for research productivity, reducing dissatisfaction and allowing them to focus on their work. Similarly, academics also view the motivators—such as the possibility for growth, the nature of the work itself, responsibility, achievement, advancement, and recognition—as having a positive influence on their research performance. These intrinsic factors align with Herzberg's theory, as they enhance job satisfaction by fulfilling higher-order needs, driving motivation and engagement in academic research. Interestingly, the study reveals that academics do not believe status has a positive impact on their research performance. While status may play a role in other aspects of academic life, it appears to be less significant when it comes to influencing the ability and motivation to produce research. This suggests that academics prioritize other factors, such as recognition and achievement, over status when it comes to their research endeavors. Overall, the findings suggest that both hygiene factors and motivators are important for fostering research productivity, with academics valuing a supportive environment alongside opportunities for professional growth and intrinsic satisfaction. However, status, unlike other factors, is not perceived as playing a meaningful role in driving research performance.

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