JPO, Vol. 4(2), 30-36

Journal of Policy Options · RESDO

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

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Abstract

This study explores the impact of motivation and hygiene factors on the research performance of faculty members at a Turkish Foundation University, focusing on the number of articles published in the Science Citation Index (SCI) and Social Science Citation Index (SSCI). Understanding these factors is crucial for enhancing research output and fostering a supportive academic environment. Motivation factors, including recognition, achievement, career advancement, and intrinsic enjoyment of research, directly enhance job satisfaction and drive higher performance. Hygiene factors, such as salary, work environment, job security, and institutional policies, prevent dissatisfaction but do not necessarily increase performance. The study, conducted with a sample of 150 academics, ensures that research performance aligns with high academic and international standards. The findings offer insights for academic institutions in Turkey and beyond to implement policies that foster academic excellence. Results indicate that faculty members perceive hygiene factors—including salary, job security, company policies, administration, supervision, interpersonal relations, and working conditions—as generally contributing positively to research performance, except for status, which was not seen as a significant driver. In contrast, motivation factors such as opportunities for growth, the nature of academic work, responsibility, achievement, advancement, and recognition were viewed as strong drivers of research performance. These findings highlight the role of extrinsic and intrinsic factors in shaping academic productivity. While hygiene factors ensure a stable work environment, motivation factors play a crucial role in driving research performance. Universities should focus on enhancing working conditions and providing professional growth opportunities, recognition, and career advancement to optimize faculty motivation and improve research productivity.

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 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

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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. The study by Imran et al. (2021) examines global regulatory perspectives on artificial intelligence in autonomous vehicles, stressing challenges in harmonizing standards, ensuring safety, and addressing ethical concerns. It highlights that coherent frameworks not only enhance safety and public health but also indirectly support remittances by improving migrant workers' mobility and transport reliability.
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 data in Table 1 provides key insights into the perceived importance of various motivation and hygiene factors influencing research productivity among academics, categorized in line with Herzberg's Two-Factor Theory. The descriptive statistics show high mean scores across both categories, indicating general agreement among respondents regarding the significance of these factors in their academic work.
Among the motivator factors, *work itself* recorded the highest mean score (M = 4.6295, SD = 0.74120), suggesting that the nature of academic work is intrinsically satisfying and plays a vital role in enhancing research productivity. This is closely followed by *recognition* (M = 4.5987), *achievement* (M = 4.5647), and *responsibility* (M = 4.5043), all of which have also been identified in prior studies as strong internal motivators contributing to performance and output (Islam & Ali, 2013; Tella, Ayeni, & Popoola, 2007). These findings are consistent with Herzberg's argument that intrinsic factors are central to job satisfaction and performance.
In terms of hygiene factors, *supervision* (M = 4.5620) and *salary* (M = 4.5830) were rated particularly high, implying that supportive supervision and fair compensation remain essential to preventing dissatisfaction, aligning with Herzberg's framework. Interestingly, *job security* (M = 4.4812) and *working conditions* (M = 4.5505) were also highly valued, which supports the notion that environmental stability and comfort are prerequisites for researchers to focus on and engage in productive academic work (Malik, Nawab, Naeem, & Danish, 2010).
Conversely, *status* received the lowest mean score among hygiene factors (M = 4.0235, SD = 1.21687), indicating that while still relevant, hierarchical position or prestige might not be as influential in driving research productivity as compared to factors like the quality of work, interpersonal support, or recognition.
Overall, the results reaffirm the applicability of Herzberg's Two-Factor Theory in the academic context, with both hygiene and motivator elements playing distinct but complementary roles. Institutions aiming to improve research performance should therefore invest in supportive administrative structures and policies while also fostering environments that recognize individual achievements and offer opportunities for professional growth.

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
Supervision	Hygiene	150	4.5620	0.78612	0.06419
Job security	Hygiene	150	4.4812	0.82735	0.06755
Work itself	Motivators	150	4.6295	0.74120	0.06050
Salary	Hygiene	150	4.5830	0.74867	0.06114
Recognition	Motivators	150	4.5987	0.78952	0.06445
Growth of possibility	Motivators	150	4.5024	0.80230	0.06546
Advancement	Motivators	150	4.4948	0.71991	0.05879
Achievement	Motivators	150	4.5647	0.75986	0.06206
Interpersonal relations	Hygiene	150	4.3224	0.90913	0.07423
Responsibility	Motivators	150	4.5043	0.82801	0.06756
Working condition	Hygiene	150	4.5505	0.70429	0.05748
Status	Hygiene	150	4.0235	1.21687	0.09934
Company policy and administration	Hygiene	150	4.4590	0.86221	0.07038

The one-sample t-test results in Table 2 highlight statistically significant differences between the sample mean and the test value for nearly all variables, aligning with Herzberg's motivation-hygiene framework. The extremely low p-values (Sig. 2-tailed = 0.000) for most factors confirm the respondents' strong agreement on their importance in influencing research productivity among academics.

Among the motivator variables, *work itself* shows the highest t-value ($t = 10.527$, $p < 0.001$) and a mean difference of 0.6295, reinforcing its critical role in enhancing academic motivation and performance. This aligns with Herzberg's view that meaningful and engaging work is one of the most powerful internal motivators. *Recognition* ($t = 9.211$) and *achievement* ($t = 9.101$) also show strong effects, indicating that when academics feel recognized for their efforts and experience a sense of accomplishment, they are more likely to increase their research output—a finding consistent with the work of Robbins and Judge (2017) and Herzberg et al. (1959).

Similarly, hygiene factors such as *salary* ($t = 9.706$) and *supervision* ($t = 8.765$) are perceived as essential elements of a supportive research environment. While these do not inherently motivate, their absence may lead to dissatisfaction. The significance of *job security* ($t = 7.145$) and *working conditions* ($t = 9.679$) further underscores the need for a stable and comfortable institutional environment to enable academic productivity, as echoed in the findings of Malik et al. (2010).

Interestingly, *status* was the only factor with an insignificant result ($t = 0.380$, $p = 0.705$), with a confidence interval crossing zero. This suggests that hierarchical rank or prestige may not significantly influence research motivation in this context, diverging from traditional assumptions about extrinsic motivators.

Overall, these results strongly validate Herzberg's theory, highlighting that both intrinsic motivators and hygiene factors must be addressed by institutions seeking to enhance the research performance of academic staff.

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

Name of variables	Kind of factor	t-value	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference
Supervision	Hygiene	8.765	0.000	0.5620	0.4342 – 0.6898
Job security	Hygiene	7.145	0.000	0.4812	0.3487 – 0.6137
Work itself	Motivators	10.527	0.000	0.6295	0.5108 – 0.7482
Salary	Hygiene	9.706	0.000	0.5830	0.4627 – 0.7033
Recognition	Motivators	9.211	0.000	0.5987	0.4712 – 0.7262
Growth of possibility	Motivators	7.711	0.000	0.5024	0.3712 – 0.6336
Advancement	Motivators	8.385	0.000	0.4948	0.3789 – 0.6107
Achievement	Motivators	9.101	0.000	0.5647	0.4415 – 0.6879
Interpersonal relations	Hygiene	4.463	0.000	0.3224	0.1771 – 0.4677

Name of variables	Kind of factor	t-value	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference
Responsibility	Motivators	7.499	0.000	0.5043	0.3697 – 0.6389
Working condition	Hygiene	9.679	0.000	0.5505	0.4366 – 0.6644
Status	Hygiene	0.380	0.705	0.0235	-0.1725 – 0.2195
Company policy and administration	Hygiene	6.623	0.000	0.4590	0.3204 – 0.5976

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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