

Enhancing Faculty Performance Measurement through HR Analytics: A Multi-Dimensional Model for Teaching, Research, and Service in Higher Education

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Abstract

This research aims to evaluate faculty quantitatively in KPK universities; it states seven objectives in performance evaluation along the lines of teaching effectiveness, research contributions, grant funding, service and leadership activities, professional development, peer evaluations, and student outcomes. A gap exists in performance measurement literature focused on KPK, Pakistan. The aim of this study is faculty performance, considered a key indicator of the efficiency of contributions made by faculty. Given the objectives of the study, primary data will be collected using structured questionnaires administered to faculty across KPK universities. Representation would be secured from different departments and faculty ranks through stratified random sampling, thus increasing the reliability of the findings. Seven hypotheses will be tested, explaining the basic relationships between exogenous and endogenous variables of the study. This study has much bearing on the new age of human resource analytics in higher education. The goal of these researches regarding data-powered decision-making would be to deliver higher quality to faculty evaluation and developmental programs for better educational outputs, consequently. The discovery would thus help to guide resource allocation strategically, which could foster a culture of continuous improvement amongst faculty. Future research projects could explore longitudinal studies to measure the change in faculty performance over time, with a larger sample including a wider range of institutions. Interviews or focus-group conversations could add qualitative insights toward a better understanding of faculty experiences. In addition, the impact of the developing technologies on HR analytics, including AI and Machine Learning, may provide guidance regarding refining faculty performance evaluation methods. Pursuing these avenues could allow the next iteration of

research to have a real impact on the optimization of frameworks for evaluating faculty performance within higher education.

Keywords: *Faculty performance, teaching effectiveness, student evaluations, course completion rates, research contributions, publications, citations, grant funding, service and leadership activities, community engagement, professional development, workshop attendance, peer evaluations, student outcomes, graduate success.*

Background of the Study

Measuring university faculty performance refers to the dimension that extent in terms of quality and success at higher education institutions. With the emphasis on accountability and improvement of educational outcomes, measurement systems for faculty performance have increasingly been established in most developed countries. Emergence of interest in faculty measuring has been stimulated by the call for transparency in the case of higher education, and from the other end, increasing expectations about the productive investment's pay off by students, parents, and government bodies.

Effective faculty performance connects with student learning outcomes and retention rates while simultaneously boosting institutional reputation through recent studies. Research indicates that academic institutions which adopt structured faculty performance measurement mechanisms demonstrate noticeable advancements in student satisfaction and academic achievement (Baker et al., 2023). Within this context, HR analytics emerges as a transformative entity in faculty performance evaluation which enables institutions to apply data-driven insights for highly logical decision-making.

HR analytics is all about collecting and looking at data on how faculty are doing in areas like service, research, and teaching. More universities in developed countries are using HR analytics to create better ways to measure performance than just the old-fashioned methods. This trend is really noticeable in places like the US, Canada, and the UK, where schools are using advanced analytics tools for a deeper look at how faculty are performing (Johnson & Lee, 2023).

Using HR analytics in performance evaluations helps spot trends that you might miss with traditional methods. For example, analytics can reveal a connection between better teaching and faculty engaging in professional development, which can lead to targeted support that helps boost faculty skills (Chen et al., 2024). Also, predictive analytics gives schools a heads-up on faculty performance based on historical data. This lets them take proactive steps to retain faculty and ensure their growth. Utilizing HR analytics helps the universities focus not only towards better faculty performance but also meeting the desired objectives. It encourages institutions to come up with strict performance metrics that will assist in linking what the faculty do to what the university wants to achieve hence creating accountability and improvement culture (Miller & Thompson, 2023). Such a connection becomes vital during the present competition for funding and students.

This has now brought in HR analytics for most institutions, especially for universities. Adoptive has brought universities to favor new types of teaching methodologies, including online courses and hybrid classes. Institutions review the way things are done in performance measures-how it

will affect student success with reduced faculty engagement in hybrid courses (Garcia et al., 2022). They will become very important in helping universities make critical decisions, considering both human resources and faculty performance.

Research and policies around faculty performance are being examined in higher education across the US, Europe, and Asia. Each region has its own methods to assess and improve how faculty perform, reflecting its unique educational needs and goals. In the US, schools are increasingly using a mix of quantitative and qualitative measures for evaluating faculty. This often includes peer reviews, research output, and student evaluations. Studies show that universities with solid evaluation systems generally see better faculty satisfaction and student outcomes (Baker et al., 2023). The use of HR analytics is growing, allowing institutions to analyze data on faculty contributions, research, and teaching effectiveness, leading to a more accountable environment (Johnson & Lee, 2023).

In Europe, the Bologna Process has influenced how universities evaluate faculty performance. Many institutions now link financial support to measurable outcomes, like research output and student achievement. This has led to a more competitive atmosphere, especially in places like the UK and Germany, where performance metrics play a bigger role in hiring and promotions (Miller & Thompson, 2023). European universities have also had to refine their evaluation methods to meet international standards due to the focus on global collaboration and research impact (Chen et al., 2024).

In Asia, the approaches to faculty evaluation vary greatly. Countries like China and Japan really value research output, often measured by publications in top journals. Chinese universities have strict systems that prioritize research funding based on faculty productivity (Garcia et al., 2022). In contrast, India focuses more on student engagement and teaching effectiveness, with institutions increasingly adopting feedback systems to help faculty improve (Kumar & Singh, 2023). As technology and data analytics become more common in performance evaluations, universities can make smarter decisions about faculty development and resource use.

Problem Statement

In recent years, there's been some progress in how colleges and universities assess their faculty, especially in places like the US and Europe. These regions have rolled out performance evaluation programs that mix peer reviews with numbers like research output and student feedback. On the other hand, evaluating faculty performance in Pakistan hasn't really kept up. It's still pretty basic, mainly looking at things like how many hours they spend teaching and handling some admin tasks. A handful of universities in Pakistan are trying to set up more formal performance reviews that also take research contributions and student feedback into account. But there's no consistent approach across these schools, and things can be a bit hit or miss. Even though some pilot programs have started to include peer reviews and research output, a solid framework for evaluating faculty performance is still mostly missing.

What Is Currently Being Done

Colleges in Pakistan are starting to realize that they need better ways to review their faculty. Some universities are looking into using HR data to get a clearer picture of how professors contribute.

While it's still a work in progress, there are efforts to collect and analyze information on research output and teaching effectiveness (Ali & Zafar, 2023). There's also a push for professional development programs aimed at helping faculty improve their research and teaching skills.

Despite these efforts, many schools are still stuck with outdated evaluation methods that don't capture the full range of what faculty do. Just relying on student feedback can lead to biased results that miss the bigger picture of faculty roles and teaching quality (Ali & Zafar, 2023). The Higher Education Commission (HEC) in Pakistan has suggested several reforms to improve how teachers are evaluated in higher education. For starters, having standard performance metrics for research, teaching, and service could simplify evaluations (HEC, 2021). Using HR analytics can help identify trends and growth opportunities in faculty performance (HEC, 2022). Offering rewards for good research and teaching may also motivate academics and support HEC's goal for research excellence (HEC, 2023). They recommend that professional development programs should be made mandatory to boost research and teaching methods and encourage continuous growth (HEC, 2021). Finally, regular performance reviews that include feedback from both peers and students could lead to a more effective evaluation process and better quality in higher education (HEC, 2022).

What Is Left to Be Done

Evaluating how faculty perform in Pakistan has its challenges. Many institutions don't have standard ways to assess their staff, which can lead to inconsistencies and bias. Right now, there's a strong focus on numbers, so important parts of teaching and service contributions often get ignored. Also, colleges aren't taking full advantage of data analysis for evaluations since it's still a new thing for them. Plus, contributions to the community, which are really important for growth, don't get the recognition they deserve.

Research Objectives

The researcher is looking to get a good picture of how well the faculty is doing by looking at a mix of things like their service projects, research efforts, and teaching skills.

- To investigate how well teaching impacts overall faculty performance.
- To analyze research output to see how it plays into faculty performance.
- To analyze how much research funds faculty have secured and how many grants they've successfully applied for to see if that helps their performance.
- To look at leadership roles and community service to find out how these activities influence how faculty do their jobs.
- To investigate how attending training programs relates to improvements in research and teaching, figuring out whether professional development really makes a difference.

Finally, to analyze feedback from colleagues to see how it ties into overall performance metrics and what role peer evaluations play in faculty performance.

Significance of the Study

This study is important because it can help improve how faculty performance is evaluated in universities in Pakistan. By looking at what affects faculty performance, it can provide useful insights that colleges need for improvement and to enhance educational quality.

First, this research fills a gap in what the researcher knows about faculty performance in Pakistan. While there has been quite a bit of research on faculty evaluation in developed countries, not much has been done on the unique challenges and opportunities faced by institutions in Pakistan (Khan & Ahmed, 2022). This study can help school leaders and policymakers learn about effective ways to assess faculty. Second, using HR analytics in faculty performance reviews is a step forward in how schools make data-informed decisions. This study will show that data insights can help improve both teaching and research practices and boost accountability (Ali & Zafar, 2023). The findings could help colleges develop strong assessment frameworks that align their performance metrics with international standards. The research sheds light on what affects how well faculty perform by examining things like their research work, teaching skills, and involvement in service activities. By seeing how these parts fit together, schools can build a better environment and boost educational results. Also, the study isn't just about grades or the university's reputation. By enhancing how they evaluate faculty performance, schools can improve teaching and keep students more engaged, which can make them more respected and competitive both nationally and globally.

Literature Review

Enhancing Faculty Performance

Improving how faculty perform really affects student success and how well the institution runs, so it's an important area to pay attention to in higher education. Teaching well, doing research, and contributing to the community are all part of what makes a good faculty member.

Good faculty performance is linked to better learning and more engaged students (Marsh & Roche, 2013). Schools that support faculty growth and recognize their achievements often see more collaboration and better morale among staff (Schimank & Möller, 2018). To keep up with the latest in education and boost their skills, faculty members should keep learning and developing professionally (Gonzalez et al., 2020).

Teaching Effectiveness

(Assessments-of-students)

One common way to check how well teaching is going is through student evaluations. Research shows that student feedback can give useful insights into teaching methods and how effective a course is. Standard evaluation forms help collect both numbers and comments, giving a better picture of teaching quality. Higher evaluation scores from students are linked to better performance by teachers in keeping students engaged and helping them learn.

(Rates-of-Course-Completion)

One way to gauge how well the teaching is going is by looking at course completion rates. When teaching methods and student support are working well, you often see more students finishing their courses (Miller & Thompson, 2023; Huang et al., 2022). Colleges can check out data from

their learning management systems (LMS) to spot patterns in student success and retention, which can help with faculty reviews (Baker et al., 2023; Chen et al., 2020).

H1: Good faculty performance tends to relate to higher course completion rates and better student evaluation scores.

Research Contributions

(Publications)

Research plays a big role in how one can evaluate faculty performance, especially with their publications. Faculty members who get published in reputable journals usually end up with better performance ratings McGrail et al., (2006) because it boosts the university's academic reputation (Johnson & Lee, 2023). In order to keep tabs on faculty publications using academic databases like Web of Science and Scopus (Hattie & Marsh, 2004; Baker et al., 2023).

(References)

Citation metrics give us another way to see how impactful a faculty member's research is. High citation counts for faculty members demonstrate that their research has gained recognition and utilization within the academic community according to Bornmann & Daniel (2008) and Garcia et al. (2022). Institutions can evaluate faculty research significance through resources such as Google Scholar (Hirsch 2005; Moed 2005).

H2: Faculty members who perform better in their academic roles usually produce more publications and achieve higher citation counts.

Grant Funding

(Records-of-Funding)

Faculty research and development relies heavily on available grant funding. Research shows faculty members with external funding tend to be perceived as more active and productive according to studies by Morley (2012) and Lee et al. (2013). Faculty performance evaluation becomes clearer by assessing both their total funding amounts and their grant application success rates (Gao et al., 2010; Barlow et al., 2018).

H3: Faculty performance shows improvement when they secure additional grant funding.

Service and Leadership

(Committee-Participation)

Committee membership and additional leadership roles play a crucial role in faculty performance evaluation. Research by Khan and Ahmed (2022) together with Galbraith et al. (2012) demonstrated that faculty members who take part in service projects experience higher job satisfaction and improved performance. According to the findings of Galbraith et al. (2012), faculty service project participation leads to greater job satisfaction and enhanced performance outcomes. Maintaining records of faculty committee participation helps demonstrate their true value to the university according to Baker et al. (2023) and Spooren et al. (2013).

(Participation-of-the-Community)

Faculty service includes community engagement as one of its essential elements. Faculty who take part in outreach programs experience better performance reviews while creating greater institutional impact. Department records enable us to measure faculty contributions by monitoring their service activities.

H4: Faculty performance improves when they participate in leadership and service activities.

Professional Development

(Workshop-Attendance)

Workshops and conferences are great ways for teachers to grow their skills and knowledge. When faculty take part in ongoing training, you can really see a boost in their teaching and research abilities. Schools can check how well their professional development programs are working by tracking these types of activities.

(Certifications)

Keeping a record of faculty credentials and certifications lets us assess their skills effectively. Faculty members with advanced certifications are often viewed as more competent, which can impact their performance.

H5: There is significant impact of bigger contribution in professional development activities and faculty performance.

Peer Reviews

(Colleague-Evaluations)

When it comes to the evaluations of faculty members, particularly with regards to their tenure and promotion, peer reviews are very important. They help in understanding how other faculty members are performing. With regard to the teaching and the research, having feedback can significantly improve its level. A well-defined peer review process can aid in making evaluation outcomes objective and precise.

H6: Best faculty performance be likely to go along with positive peer assessments.

Student Outcomes

To gauge how effectively faculty members are teaching and supporting students, researcher can examine data from alumni, such as their job placement rates and career advancements. When graduates succeed, it often reflects the quality of mentoring and instruction they've received, which can, in turn, enhance faculty performance.

(Graduate-Success)

Professors' and instructors' teaching and mentoring efficiency may be assessed based on the employment and career progression of alumni (Huang et al., 2022; Hattie, 2009). Graduates often correlate the effectiveness of faculty mentoring and teaching to their own achievements, which, in turn, enhances faculty performance evaluation (Baker et al., 2023; Chen et al., 2020).

H7: There is correlation between better faculty performance and success rates of graduates.

Supporting Theory

The Kirkpatrick Model of Training Evaluation provides a perspective on faculty performance, especially when analyzing data. It is straightforward to adjust this model for use within post-secondary schooling and it offers a strategic approach to determining the success of educational programs. The Kirkpatrick Model consists of four levels:

1. *Reaction:* Considered the most basic level, this one explores participants' perceptions of the training or instruction. It can center on student evaluation pertaining to the teaching methods of the course and the students' satisfaction with the course.

2. *Learning:* In this level, analyze the amount of learning that has taken place, or the skills acquired. Course attendance and grades can serve as benchmarks for successful teaching or improved student outcomes.

3. *Behavior:* This checks the extent to which the knowledge is applied practically in everyday life. There can be faculty evaluation of peers and open teaching observations for the active classroom engagement to assess the change in teaching and student participation.

4. *Results:* This focuses on the outputs of the program i.e. the graduation rates, overall performance of the students and the institution. It looks at the degree of influences by faculty on students and the school objectives.

Different types of evaluation such as peer evaluations, research, student participation, and community participation are integrated under the Kirkpatrick Model which serves to help faculty to have a uniform faculty appraisal system.

This model crafts a nuanced evaluation of the university faculty performance by identifying key features attention needs and assists schools to tailor the education they provide to students.

Literature to Support

The Kirkpatrick Model is one of the most reported approaches when conducting educational research on the efficacy of educational instruction or training programs (Kirkpatrick & Kirkpatrick, 2006; Phillips, 1997). Its adaptability is useful for appraising educator productivity in the context of higher education.

Model in Action

Faculty Performance Evaluation: Applying Kirkpatrick Model of Training Evaluation

The Kirkpatrick Training Evaluation Model encompasses four constituent levels which enable assessment of how well faculty perform.

1. *Reaction:* This considers results of student evaluations of teaching effectiveness as a measure of satisfaction and effectiveness of instruction.

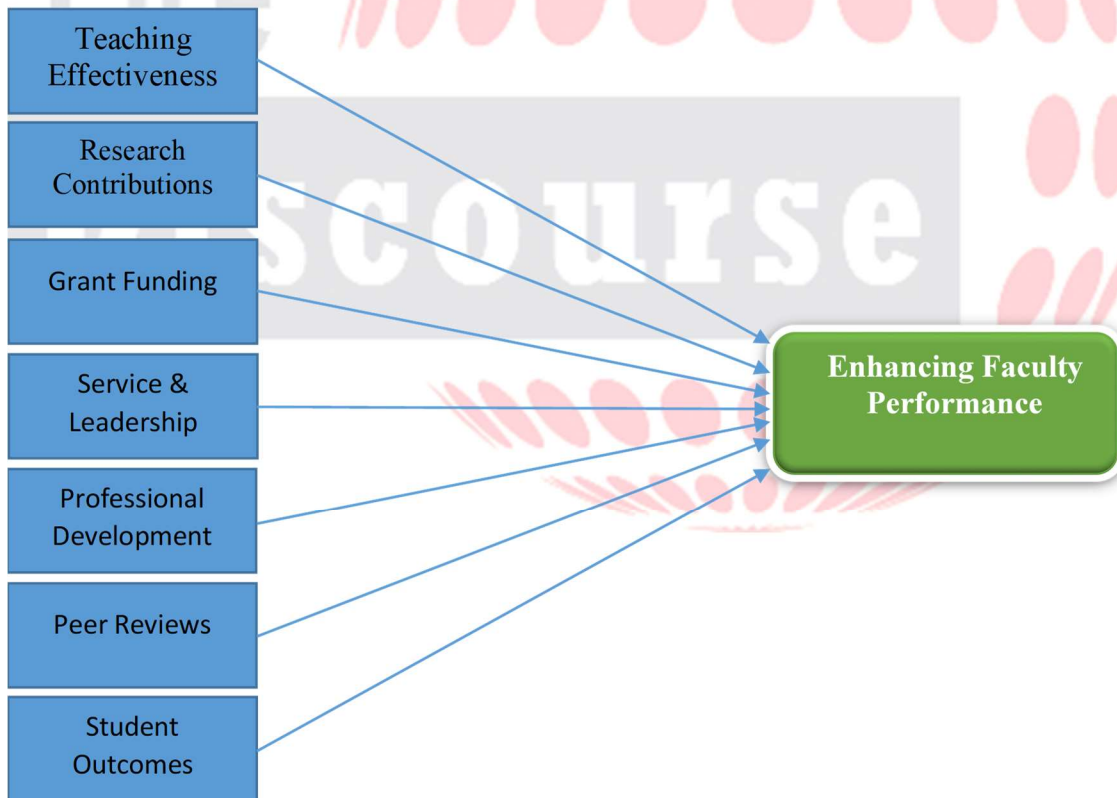
2. Learning: For this evaluation, rate of course completions as a measure of knowledge and skill acquisition is assessed. Also, participation in professional development activities provides evidence of faculty enhancement attendant to workshops and training aimed at improving teaching.

3. Behavior: This includes peer assessment of the extent to which there have been changes in the teaching practices and teaching engagements of the faculty. Also, there is evaluation of performance in the application of acquired skills in committees and community engagements by the faculty.

4. Findings: This looks at what faculty consider to be the results of the faculty’s functional activities: specifically, the number of research publications and citations and how this impacts performance and reputation of the institution. Also, the extent of grant funding that is obtained in relationship to the output of the research is evaluated.

In the end, evaluation of performance of students and their faculty, including the advancement of the students’ careers and the employment rate post-graduation.

Conceptual Framework



Proposed Research Methodology

Research Design

This research will analyze the impact of various factors on faculty performance through a quantitative research design. In this connection, survey research will be organized in which data will be collected from respondents at one point which is helpful in assessing performance levels.

Target population

The study focuses the faculty of higher learning institutions in KPK because of their attempts to enhance faculty performance evaluation as well as the educational service delivery.

Sampling Techniques

In order to obtain different views from different departments and ranks, we will conduct random sampling. This helps in drawing a sample from a wide pool of data which in turn increases the credibility of the findings.

Gathering Information

Data will be collected using a pretested structured questionnaire and these will include:
Teaching proficiency based on the assessment of learners and the completion of given courses.
Scholarly works done by a faculty member based on the number of citations and publications.
Information pertaining to grants that were awarded and those that were submitted.
Community service and committee service.
Participation in workshops and other professional activities.
Evaluation marks given by fellow staff members.
Evaluation marks during and after finishing university and data from the universities past students.
The electronically administered questionnaire to faculty members will improve response rates.

Data Analysis

Using SPSS software, a researcher will perform basic statistical analyses, like managing missing values, identification of outliers, check correlations, verify data reliability, and conduct other relevant procedures.

For comprehensive analysis and hypotheses testing, with the aim of exploring the interrelationships among factors using partial least squares structural equation modeling (PLS-SEM).

Steps for Data Analysis will include:

1. Descriptive Analysis: Provide a summary overview of the sample to describe the key variables.
2. Reliability Testing: Estimate the internal consistencies of the measurement scales to check their reliability.
3. Correlation Analysis: Identify the relationships between factors and performance in order to formulate hypotheses.
4. SEM-PLS: Fit the data to the model and test our constructs' validity.
5. Evaluate our model's relations to test the hypotheses proposed.

Conclusion of the study

This research explores the multifaceted performance of faculty members in KPK universities. It seeks to achieve seven specific objectives including evaluating the teaching and research productivity, funding, servicing, leadership, metacognitive professional development, peer appraisal and students' outcomes.

Measurable in this instance would be the performance of faculty members, which indicates their overall productivity.

To achieve the data distribution goal, a standardized self-administered questionnaire is going to be administered to all the faculties of KPK universities. A combination of stratified random sampling technique to ensure adequate representation of a mix of departments and faculty ranks will make the findings more robust. Accordingly, seven hypotheses prepared to investigate correlate the various facets with faculty performance.

Finally, the intention of this model is to provide a framework for further study and assist in the construction of strategies to enhance the faculty evaluation system in higher education.

Implications of the Study

The Advanced Era of HR Analytics

This research analyzes the KPK universities faculty members work activities. It pursues seven specific objectives on various aspects of the teaching performance of faculty members which include: research, grant acquisition, service, leadership, professional advancement, evaluation by colleagues, and learning outcomes.

The primary focus is and shall remain the measurement of faculty performance which provides insight on what level of faculty activities are being accomplished. In this case, researcher will be distributing a predetermined set of questions to staff working in KPK universities to obtain primary data. The selection of respondents will be done by means of stratified random sampling which will enhance the representativeness of department and academic rank diversity included in our study, thereby improving the overall outcome validity of the results.

In essence, this approach pertains to the design of the study as an evaluation model intended for refinement of research in relation to faculty performance in higher education institutions.

Future Directions

Long-Term Studies: There is a possibility for further research to focus on faculty activities longitudinally to understand the impact of various factors over time.

Bigger Sample Sizes: It is more beneficial to broaden the scope of participants to include more faculty members from different institutional settings. This will enhance the ability to establish differences in faculty performance across institutional types and geographic locations.

Intuitive Understanding: Incorporating interviews and focus groups would provide a fuller understanding of faculty sentiments regarding performance evaluations, which would serve to complement the quantitative data we collect.

Broader Focus

Moreover, a researcher should examine additional factors that could influence faculty performance, such as institutional culture, policies regarding work-life balance, or specific motivating factors. This would help develop a more comprehensive picture.

Collaboration

Collaborating with psychologists or specialists in instructional technology might provide novel approaches to evaluating faculty performance.

Connection to Academic Performance

Future research may explore the relationship between faculty performance and student outcomes, assessing how enhanced faculty performance contributes to better learning opportunities for students.

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