

Faculty Work Assessment Progression Management System

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Abstract: *The Faculty Work Assessment Progression Management System (FWAPMS) is a comprehensive digital framework designed to streamline the evaluation and professional tracking of academic staff. In contemporary higher education, manual performance reviews are often fragmented and prone to subjective bias; FWAPMS centralizes these processes into a unified, transparent platform. The system facilitates the systematic recording of key performance indicators, including teaching load, research output, administrative contributions, and student feedback. By leveraging automated data collection, it provides real-time insights into faculty progression, enabling department heads to identify strengths and areas for professional development.*

Furthermore, FWAPMS supports institutional accreditation requirements by maintaining a verifiable digital trail of academic achievements and scholarly activities. The architecture includes modules for goal setting, periodic self-assessment, and multi-tier approval workflows, ensuring that evaluations are conducted with high levels of integrity and consistency. Advanced reporting features allow for the generation of longitudinal analytics, helping the administration make data-driven decisions regarding promotions, tenure, and resource allocation. Ultimately, the system aims to foster a culture of meritocracy and continuous improvement within the institution. By reducing administrative overhead, FWAPMS allows faculty members to focus more on core educational objectives while ensuring their professional growth is accurately measured and rewarded.

Keywords— Academic Analytics; Accreditation Compliance; Automated Evaluation; Faculty Performance; FWAPMS; Higher Education Management; Institutional KPIs; Meritocracy; Performance Progression; Software Development

I. INTRODUCTION

In modern academic environments, maintaining quality assurance (QA) requires a systematic approach to faculty evaluation. FWAPMS is designed to segment responsibilities into five distinct administrative and academic layers. It provides a digital audit trail that monitors daily reporting and monthly progress, ensuring that the final annual appraisal is based on verified, real-time data rather than subjective end-of-year memory.

PROBLEM STATEMENT

The core problem addressed by the **Faculty Work Assessment Progression Management System (FWAPMS)** is the lack of a centralized, objective, and transparent mechanism for evaluating academic performance and career growth. In many institutions, faculty assessment remains a fragmented, paper-heavy, or manually driven process that is prone to several critical issues:

Fragmented Data Silos: Information regarding teaching loads, research publications, administrative duties, and student feedback is often stored in disparate systems or physical files, making a holistic view of faculty contribution nearly impossible to achieve.

Subjectivity and Bias: Without a standardized digital framework, evaluations can become inconsistent, leading to perceptions of favoritism or unfairness during promotion and tenure reviews.

Administrative Inefficiency: The manual collection and verification of faculty achievements for annual reports or accreditation (like NAAC or NBA) consume excessive time and resources for both faculty and department heads.

Lack of Real-time Tracking: Faculty members often lack a clear, real-time "progression map," leaving them uncertain about their standing regarding institutional KPIs or eligibility for career advancement until the formal review cycle begins.

Difficulty in Performance Correlation: There is no streamlined way to correlate specific faculty activities with overall institutional growth, making data-driven decision-making difficult for college chairmen and deans.

FWAPMS aims to solve these challenges by providing a unified digital environment that ensures every academic milestone is recorded, verified, and mapped against

OBJECTIVE.

The conceptual framework of FWAPMS is informed by the **Faculty Performance Appraisal and Development System (FPADS)**.

Objective of Appraisal: The primary goal is to assess effectiveness in teaching, research, and service while providing feedback for improvement.

Scoring Parameters: The literature defines a 100-mark scale across categories including Teaching (10), Student Feedback (10), R&D (30), and Society Contribution (10) .

Actionable Outcomes: Scores are categorized to trigger specific administrative actions: Appreciation for scores >8, Remedial discussions for scores 5-8, and Management Action for scores

II. METHODOLOGY

The FWAPMS follows a **Three-Tier Architecture** and a specific data lifecycle:

A. Technical Stack

Frontend: HTML5, CSS3, and JavaScript (ES6+) for a responsive mobile and desktop UI.

Backend: Flask Web Application (Python 3.x) managing business logic and routing.

Database: Supabase (PostgreSQL) for structured data storage and secure file management.

B. The Workflow Progression

Faculty Submission: Entry of daily reports and monthly activities with evidence uploads.

HOD Verification: Real-time review; the HOD can either Approve (move to IQAC) or Reject (return to faculty).

IQAC Audit: Centralized validation of work-done against quality benchmarks.

Management Overview: The Principal accesses institution-wide analytics and generates final reports.

SYSTEM MODULES

Module	Description
Authentication	Multi-role login for Faculty, HOD, IQAC, Principal, and Admin.
Core Scope	15 monthly activities with logic-based percentage tracking.
Portfolio Mgmt	Covers Department-level (8 forms) and Institutional-level (17 forms) tasks.
Daily Reporting	Structured tables for Academics, Activities, and Achievements.
Verification	Dedicated dashboards for HOD and IQAC audit trails.
Document Mgmt	Secure file upload and structured storage for evidence.

Module	Description
Admin Control	Ability to lock/unlock submission windows and manage users.

EXPECTED OUTCOME & RESULT

The system generates quantitative and qualitative outputs based on the integrated FPADS logic:

Teaching Performance: Automatically calculates points based on class attendance ratios and Load Factors (\$LF\$) specific to the user's designation .

Research Analytics: Quantifies R&D contributions, including peer-reviewed papers (10 marks/paper) and patents.

Performance Reports: Generates comprehensive data exports in .xlsx and .pdf for physical filing and official records.

Accountability Logs: Maintains audit logs of every system interaction, ensuring data integrity.

II. SYSTEM DESIGN & HIGH-LEVEL ARCHITECTURE

This section explains the structural integrity of your project.

Three-Tier Model: FWAPMS is partitioned into the Presentation Layer (Client-Side), Application Layer (Backend Server), and Data Access Layer (Database).

Technology Stack:

Frontend: HTML5, CSS3, JavaScript (ES6+), and libraries like Chart.js for analytics and html2pdf.js for report generation.

Backend: Python 3.x using the Flask Framework, with Werkzeug and Gunicorn for server management.

Database: Supabase Backend utilizing a PostgreSQL protocol for robust data handling.

Security Layer: Implementation of Role-Based Access Control (RBAC) to ensure data privacy between Faculty, HOD, and IQAC roles. Another type of heading is the “component heading”, which is used for other components that aren’t part of the main text. These are usually your acknowledgments and your references, which you can see examples of below. These headings are not numbered. The correct styling for them can be applied using the “Heading 5” style, which is the same as the “Heading 1” style but without numbering.

DETAILED MODULE ANALYSIS

Expand on the specific functionality of each sub-system in FWAPMS.

Faculty Core Scope Module: Tracks 15 monthly activities and calculates completion percentages automatically.

Yearly Mandatory Scope: Provides designation-specific forms: 8 activities for Assistant Professors and 9 for Professors/Associate Professors.

Portfolio Management:

Department Level: 8 specific forms for departmental responsibilities.

Institutional Level: 17 forms with varying frequencies (weekly, monthly, yearly).

Document Management System: A secure module for evidence-based tracking where faculty must upload supporting documents for every claim.

DATA LOGIC & MATHEMATICAL MODELING

Using the **MIS Base Paper** as a reference, define how the system calculates scores.

Teaching Process (\$Points\$): The system automates the formula $\$Points = ((B/A) \times 10) \times LF\$$.

Load Factor (\$LF\$) Calculation:

Assistant/Associate Professor: $\$LF = (\text{Contact hrs/week}) / 16\$$.

Professor: $\$LF = (\text{Contact hrs/week}) / 14\$$.

HOD: $\$LF = (\text{Contact hrs/week}) / 10\$$.

Research & Development (R&D) Scaling: Marks scored out of 100 in R&D are converted to a 30-point scale.

Joint Publications: First authors receive 70% of the value, while joint authors receive 30%.

GOVERNANCE & AUDIT CONTROLS

Form Window Control: Administrators have the authority to lock or unlock submission windows for specific months to maintain data discipline.

Audit Logs: The system tracks every interaction (form opens, closes, edits) to ensure accountability and prevent unauthorized data tampering.

Multi-Tier Review Cycle:

HOD: Reviews work-done reports and departmental oversight.

IQAC: Conducts quality monitoring and document validation for QA standards.

Principal: Provides strategic oversight and faculty selection for institutional roles.

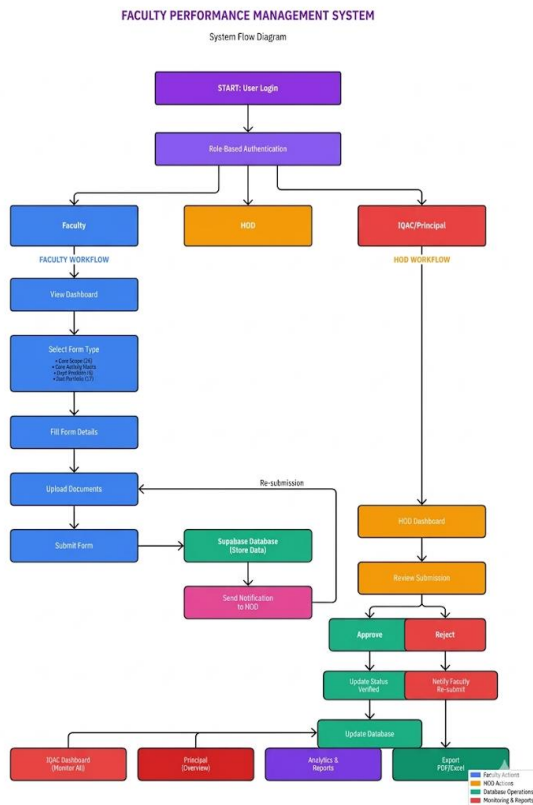
INSTITUTIONAL IMPACT & RESULTS

Digital Transformation: Replaces the manual distribution of appraisal forms.

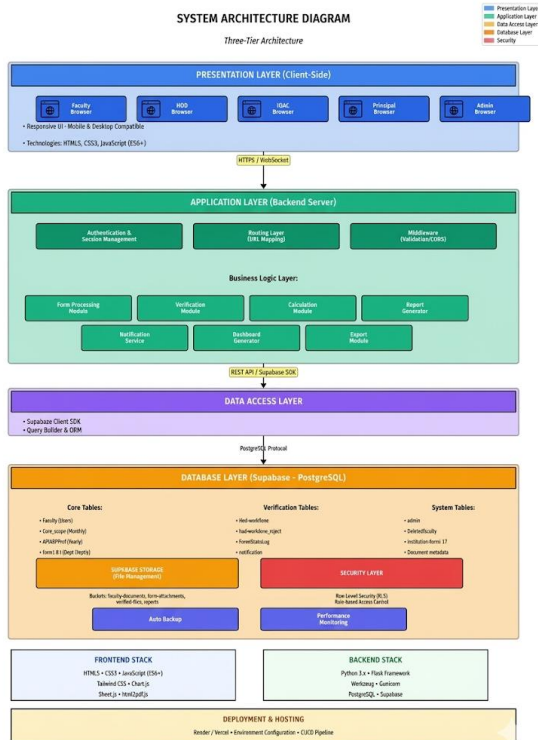
Real-time Analytics: Provides a dashboard view for management to make immediate decisions rather than waiting for year-end reviews.

Performance Outcomes: Based on the system-generated score, the Principal can recommend "Appreciation/Awards", "Remedial Action" or "Management Action".

SYSTEM FLOW DIAGRAM



SYSTEM ARCHITECTURE DIAGRAM



III. CONCLUSION & FUTURE SCOPE

The development of the **Faculty Work Assessment Progression Management System (FWAPMS)** marks a significant transition from traditional, fragmented evaluation methods to a centralized, data-driven framework. By integrating a three-tier architecture—utilizing a **Flask** backend and **Supabase** for robust data management—the system successfully addresses the challenges of transparency, administrative overhead, and manual error.

The implementation of role-based dashboards ensures that faculty members have real-time visibility into their progression, while HODs and the Principal can conduct objective, evidence-based reviews. Ultimately, FWAPMS not only streamlines the internal performance appraisal process but also ensures that the institution is consistently "audit-ready" for external accreditation bodies. This system serves as a scalable foundation for fostering a culture of meritocracy and professional accountability within the academic environment.

While the current version of **FWAPMS** provides a comprehensive solution for performance tracking, the following enhancements are proposed for future iterations:

AI-Driven Predictive Analytics: Implementation of machine learning algorithms to predict faculty promotion eligibility and suggest personalized professional development paths based on historical data.

OCR Integration for Document Verification: Integration of Optical Character Recognition (OCR) to automatically verify uploaded certificates and publications, further reducing the manual verification workload for HODs.

Mobile Application Development: Expanding the web-based platform into a dedicated cross-platform mobile app (iOS/Android) to provide push notifications for deadline reminders and instant approval alerts.

Automatic Publication Fetching: Developing API integrations with scholarly databases like **Google Scholar**, **Scopus**, and **ORCID** to automatically populate faculty research profiles without manual data entry.

Sentiment Analysis on Feedback: Utilizing Natural Language Processing (NLP) to analyze student and peer feedback, providing a deeper qualitative understanding of faculty impact beyond numerical scores.

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