Application Engineering and Development - Design Assignment

Team: BFC

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Summary

Problem Statement:
Performance Measurement Solution that allows the Universities to track and measure the quality of the education they provide to their students.

Solution: Applying performance measurement metrics to every stage of a student's journey at the University as well as after graduating. This can be accomplished by utilizing the following metrics:

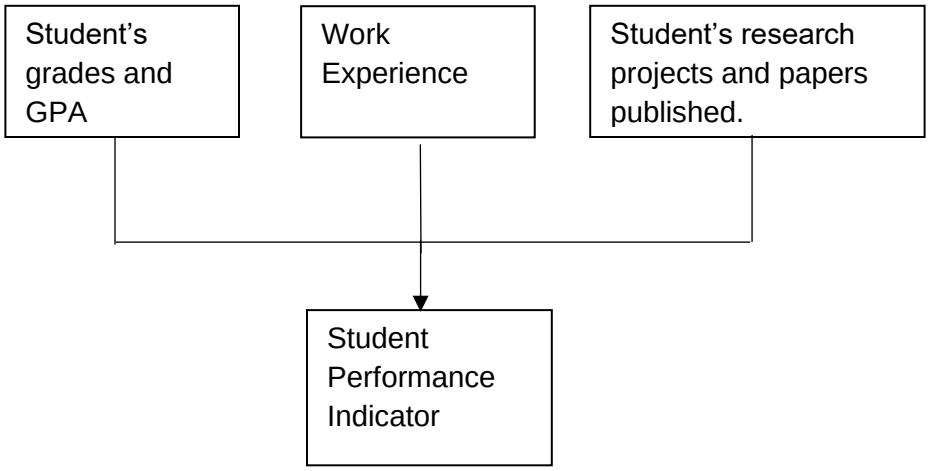
1. Student Performance Indicator
2. Professor Performance Indicator
3. Employer Student Performance Indicator
4. University Performance Indicator

Even after graduation, the student's performance is tracked through Employment performance measurement from the employer throughout a period of time. The most relevant courses can be tracked by the proposed solution, and this would help the university tweak existing course offerings or introduce new courses

Performance Metrics

1. Student Performance Metric (SPM) :

This measures the student's performance at the University and is based on the student's grades, research papers published, and projects created.



The performance of a student is based on the following factors:

1. Grades/ GPA
2. Research Projects
3. Research Papers published

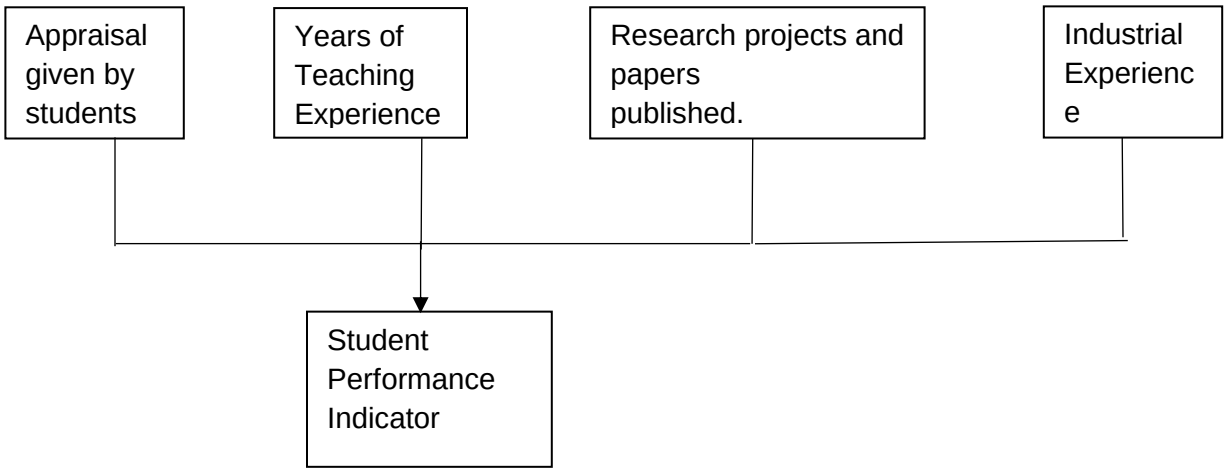
Calculation of SPM:

$$SPM = \frac{(GPA*2 + 2) + \text{Research Papers marks} + \text{Research Project marks}}{3}$$

GPA	3.8	**3.8 * 2 + 2 = 9.6**
Research Papers Published	Paper 1: 10/10 Paper 2: 8/10	**(10+8)/2 = 9**
Projects	Project 1: 8/10 Project 2: 9/10	**(9+8)/2 = 8.5**
Overall Student PI	**Average of all metrics**	**(9.6 + 9 + 8.5) / 3 = 9.033**

2. Professor Performance Metric:

Measures the performance of the performance of the professor of the student which indicates the quality of education the student has received.



The performance of the professor is measured using the following diagrams.

1. Appraisal providing by students.
2. Years of Teaching Experience.
3. Research projects and papers
4. Industrial Experience

Calculating

calculateProfessorKPI(professorID,funding,researchPapers,studentRating,getempStudentRating)

i. Appraisal providing by students: Awarded by students after course completion. Can be between 0 - 10.
ii. Research work at the university:

0-2 Projects	2.5 Points
3-5 Projects	5 Points
6-8 Projects	7.5 Points
Over 9 Projects	10 Points

iii. Years of Teaching Experience: A score is awarded by the department head based on the professor's past teaching experience; score can be between 0-10.

0-2 years	2.5 Points
3-5 years	5 Points
6-8 years	7.5 Points
Over 9 years	10 Points

iv. Industrial Experience: This score is provided based on the years of relevant work experience the professor has acquired in the subject the professor teaches.

0-2 years	2.5 Points
3-5 years	5 Points
6-8 years	7.5 Points
Over 9 years	10 Points

Appraisal providing by students	82 percent good reviews	8.2
Research work at the university	7 Projects	7.5
Years of Teaching Experience	9 years	10
Industrial Experience	4 years	5
Overall Professor Performance Metric (PPM)	Average of all metrics	(8.2 + 7.5 + 10 + 5)/4 = 7.675

3. Courses taken/scheduled Metric:

This metric measures the relevance of the subjects the student has taken based on the career path the student has chosen.

Career Paths:

a. Data Scientist
b. Full Stack Developer
c. Data Analyst

Courses available:

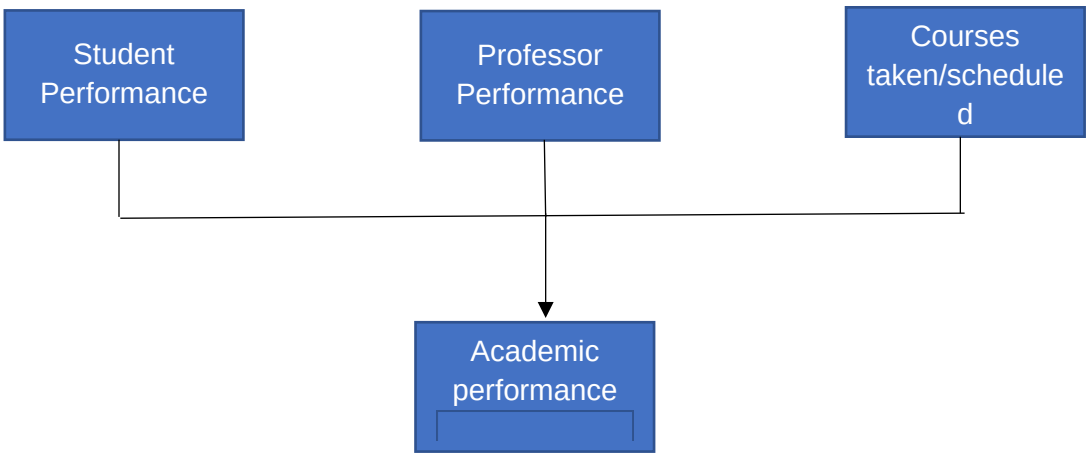
i) Data Science Engineering with Python. (Relevant for Data Scientist, Analysts)
ii) Data Science Engineering Methods and Tools (Relevant for Data Scientist, Analysts)
iii) Web Design and User Experience Engineering (Relevant for Full Stack)
iv) Data Management and Database Design (Relevant for Data Scientists, Analysts)
v) Business Analysis and Information Engineering (Relevant for Data Analysts)
vi) Data Warehousing and Business Intelligence (Relevant for Data Scientists, Analysts)
vii) Web Development Tools and Methods (Relevant for Data Scientists, Analysts)
viii) Program Structure and Algorithms (Relevant for Data Scientists, Analysts)

If the student has taken up subjects relevant to his/her career path, a relevance score of 10 is taken. If not, a relevance score of 5 is taken.

Subjects taken	Relevance
Data Science Engineering with Python	10
Data Management and Database Design	10
Business Analysis and Information Engineering	5
	(10+10+5) / 3 = 8.34

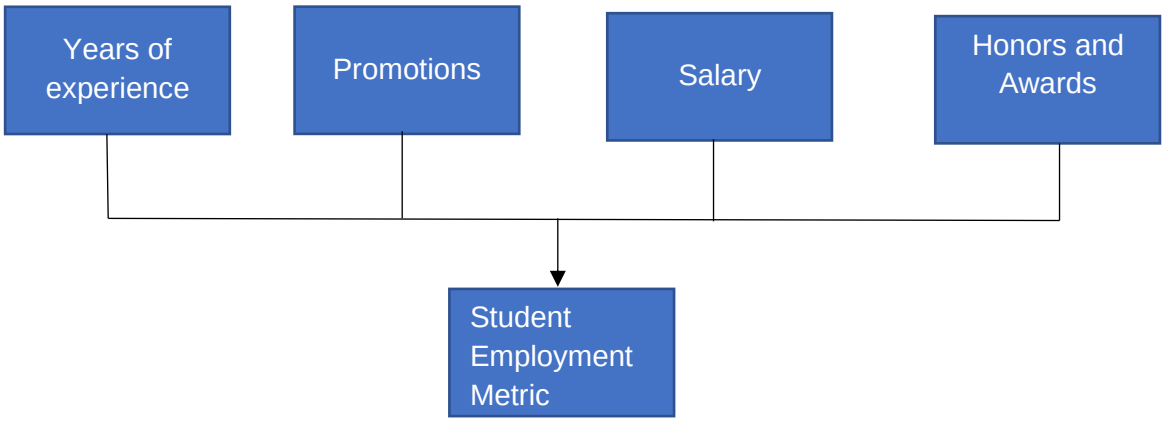
4. Academic Score

The Aggregate Score is calculated based on the average of Student Performance Metric, Professor Performance Metric and Courses taken/scheduled Metric.



5. Career Growth Metric

This metric measures the weightage of the student's experience as a professional which indicates how well the university has contributed to student performance during work.



i. Years of Experience:

0-2 years	2.5 Points
3-5 years	5 Points
6-8 years	7.5 Points
Over 9 years	10 Points

ii. Promotions:

0 promotions	2.5 Points
1 promotions	5 Points
2 promotions	7.5 Points
3 promotions	10 Points

iii. Salary

70k – 80k	2.5 Points
80k – 90k	5 Points

90k – 130k	7.5 Points
130k+	10 Points

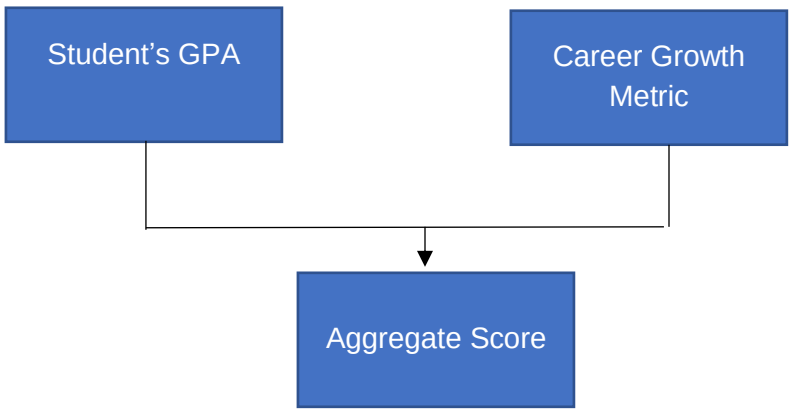
iv. Honors and Awards

1-2	2.5 Points
3-4	5 Points
5-6	7.5 Points
7+	10 Points

Years of Experience	4 years	5
Promotions	1 promotion	5
Salary	95k	7.5
Honors and Awards	5	7.5
Overall Career Growth Metric (CGM)	Average of all metrics	(5+5+7.5+7.5)/4 = 6.25

5. Industrial Success

This is the aggregate of the student's academic and career growth metrics. This indicates the overall performance of the student over the period of the 5 years as well as the weightage of the student's GPA and career growth metric.



$$\text{Aggregate Score} = \frac{\text{Student's GPA} + \text{Career Growth Metric}}{2}$$

$$= \frac{(3.8 * 2 + 2) + 6.25}{2} = 7.925 \text{ out of } 10$$