

# A Study on Student Result Analysis with Special Reference to Select Performance Parameters

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## **Introduction:**

Results analysis system is mainly use to maintain the information about student marks in various semesters and batches. This system is mainly used in educational institutions like schools and colleges to evaluate the performance of students. Results analysis is helpful to the management of institutions to know the management performance as well as student performance in the college. Based on the results analysis the college management understand the performance in each year compared to the past years results. regularity plays a vital role in order to justify the academic outcome of a student.

## **Need For The Study:**

Result analysis is useful in generating the student's performance report according to year, branch and subject wise and present in visual form using visualization tools, which is very difficult and time-consuming process in every college. It also helps the teacher to analyse the result and generate its report by just one click and it also allow the students to see their academic performance subject, year or semester wise. It also helps Head of the department to see the pass percentage of the students through visualization form which can be categorized by subject wise and overall performance of single student result Teachers can know the increase or decrease in the student's performance, based on these results, the department can take the appropriate decisions.

## **Objectives Of The Study:**

1. To study the overall performance of MBA students in all 4 semesters for all the three batches (2018-2020, 2019-2021, 2020 – 2022).
2. To conduct descriptive analytics on student's performance.
3. To analyse student performance based on 2 parameters: Attendance / Regularity, offline / online teaching methodology.
4. To make an effective visual representation of the students' performance.

## **Scope Of The Study:**

The purpose of analysis helps the teacher as well as organization to analyse the result and generates its report by just one click and it also helpful to calculate performance of each student. The student results analysis can be helpful to calculate the performance of each student in different semesters and also helpful to the institution to develop their education system according to the performance of each class results in past 3 years. The scope of the present study is that, the data can be analysed using different statistics and mathematical tools in Ms-excel. The data is visualized to represent in graphical formats like pie charts, bar charts, column graphs etc. Considering few more parameters can make the analysis more effective.

## **Review Of Literature:**

**Ammar Alma Sri, Erbug celebi and Rami S. Alkhaldeh (Feb 24<sup>th</sup> 2019)** has developed “EMT (Ensemble Meta-Based Tree Model) for predicting student performance”. In this model the researchers using educational data mining techniques and ensemble approaches to predict the student performance. In recent decades, predicting the performance of students in the academic field has revealed the attention by researchers for enhancing the weaknesses and provides support for future students. In order to facilitate the process researchers, use educational data mining (EDM) techniques are utilized for constructing prediction models built from student academic historical records. In this research the contributions comprise three questions they are as follows:

- (1) To Studying different features extracted from student historical academic records and analysing the correlation and relationship between features and their student performance.
- (2) To Several ML techniques from different theoretical families are used to predicting the student performance that indicate how diversity is using these techniques and to what extent they help to improve the performance.
- (3) Proposing the EMT technique for predicting the student performance.

**Result:** The purpose of the research is to improve the quality of education in institutions by using predictive models they are mainly use to predict the students’ performance. EMT technique is provide a superior result compared to other techniques.

**Deepshikha Aggarwal, Deepti Sharma (Dec 22<sup>nd</sup> 2018)** has developed an “Application of Clustering for Student Result Analysis”. This analysis is mainly concern for universities and colleges of higher learnings. There is a need for the system to analyse the result of the students in order to understand the how effective current education system. In this study we have analysed students’ performance by using clustering techniques and different statistical tools and techniques. Following are the research objectives to analyse the student result:1. To identify the categories of students as per the performance in exam.2. To identify the factors affecting the student’s performance in each area of academics.3. To perform gender wise analysis of the student result. In this study analysed the student result in order to formulate the future teaching system on the basis of student performance. This study is proved that female students have better academic performance as compared to male students.

**Snehal Kekane, Dipika Khairnar, Rohini Patil, Prof. S.R.Vispute, Prof. N. Gawande (6<sup>th</sup> Feb 2018)** has developed “Automatic Student Performance Analysis and Monitoring”. This study is help to understand the existing system and algorithms and analyse the student’s performance and guide them by displaying areas where they need improvement. The list of objectives of this system are as follows:

- (1) To develop a system for student performance analysis.
- (2) To develop a student monitoring tool.
- (3) To assist faculty in keeping track of the students’ progress throughout the semester wise and to generate a score card to the same.
- (4) To identify factors affects the students’ performance.

In future the system can be extended to analyse and predict the performance of the student to guide them for recruitment and higher studies. The proposed system will display results of student performance on a single click action by the user, thus inducing automation and reducing efforts of staff in analysing student performance manually.

**B.H.Hema Malini, L.Suresh and Mayank Kushal (2019)** has developed “Comprehensive Analysis of Students Performance” by applying Machine Learning techniques. Predicting the performance of students becomes more interesting due to the increase in the number of students opting for engineering courses and parents’ inclination to see their wards becoming engineers and getting placed in outstanding companies with good packages. This research aims at performance analysis of students by applying different machine learning techniques. The collected data contains the students’ personal information, family background, friends, study time and other information which contains 45 questions. Various classifiers like Random Forest, SVM and Logical Regression were applied on the collected data by hard-coding in Python using Jupyter Notebook. Based on the classification algorithms, statistics are generated and comparison of all three classifiers is made so as to envisage the truthfulness and to discover the finest acting algorithm. Random Forest classifier gives 96% accuracy, Logistic Regression gives 86% accuracy and SVM classifier gives 84% accuracy. So, the best result is shown by Random Forest classifier.

**Amirah Mohamed Shahiri, Wahidah Husain and Nur'Aini Abdul Rashid (2017)** has developed “A Review on Predicting Student's Performance Using Data Mining Techniques”. Predicting student performance becomes more challenging due to the large volume of data in educational databases. Currently in Malaysia, the lack of existing system to analyse and monitor the student progress and performance is not being addressed. There are two main reasons of why this is happening. First, the study on existing prediction methods is still insufficient to identify the most suitable methods for predicting the performance of students in Malaysian institutions. Second is due to the lack of investigations on the factors affecting student achievements in particular courses within Malaysian context. Therefore, a systematic all literature review on predicting student performance by using data mining techniques is proposed to improve student achievements. The main objective of this paper is to provide an overview on the data mining techniques that have been used to predict student performance. This paper also focuses on how the prediction algorithm can be used to identify the most important attributes in a student data. We could actually improve student achievement and success more effectively in an efficient way using educational data mining techniques. It could bring the benefits and impacts to students, educators and academic institutions.

## **Research Methodology**

### **Sources of Data**

**Secondary Data:** The data required for the study is mainly based on the secondary data. Student university examination results, semester wise attendance and offline and online conduct of the classes data is collected from the department records.

**Sample Unit:** Students of MBA 2018-2020, 2019-2021 and 2020-2022 batches

## **System Design**

### **Creation of Database**

The database which contains the students results of all semesters and it contains three years of students result database in the form of excel sheets.

### **Visualized Screens**

In this student results analysis system visualized screens plays a vital role because the user should be at ease in entering the information into the screen and understand the details whenever he/she refers the report. Keeping this in view the visual screens are designed. Screens are like bar chart, column chart, pie chart, line chart, Gantt chart and graphs etc.

<https://doi.org/10.5281/zenodo.7448944>

### Designing Reports

In this system database is designed by using MS-Excel. Data has been entered in excel sheets. The student data has been analysed based on various aspects like marks, grade and attendance. The result is generated based on the marks provided by database. These marks have been updated using excel sheet provided by college. For each batch separate sheet is maintained. Various methods are used to find total, average, grades etc. First reports are created on the basis of information which is divided semester wise, batch-wise, grade wise. The first report contains 1<sup>st</sup> semester, 2<sup>nd</sup> semester, 3<sup>rd</sup> semester and 4th semester results of one year. In the same manner next two years results of the students are entered.

**Analysis tools and Techniques-**Using attendance and marks obtained by student in every semester, reports are generated and analysed using various visualization tools like MS- EXCEL, POWER BI, Gantt Chart, Cluster column Chart, Pie Chart etc.

Weighted average was calculated for converting grades into points

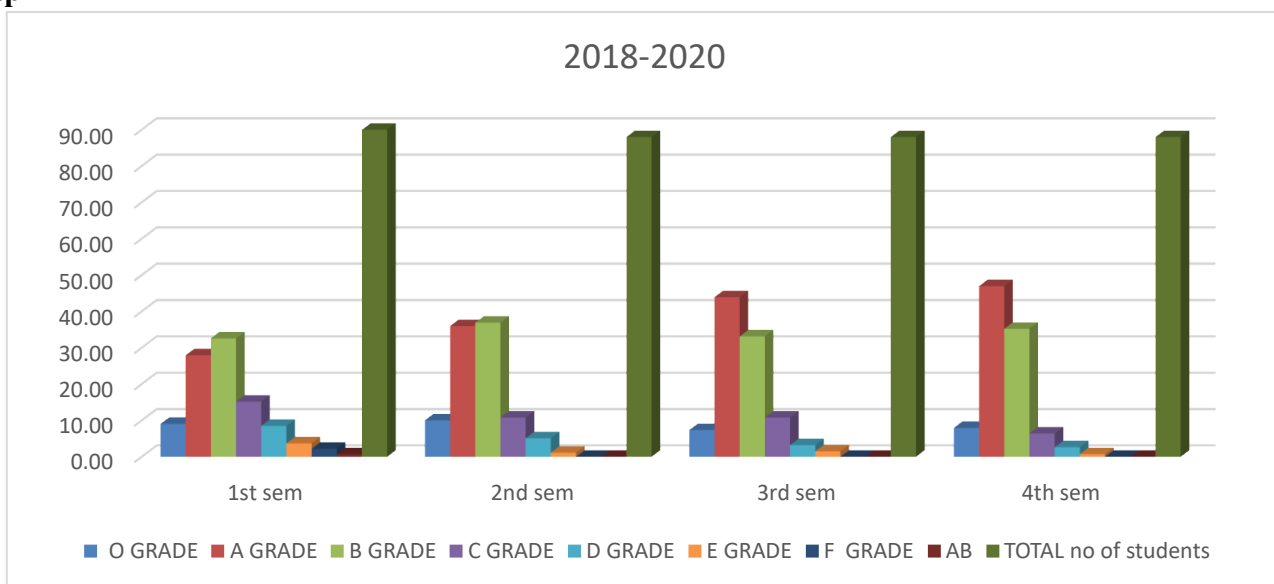
$$\text{Weighted Average} = (\text{Sum of grades} \div \text{Total no of grades}) \times 100$$

### Inference

Overall academic performance of 2018-2020 batch MBA students for 4 semesters based on university examination results

**Table: Overall Academic Performance of MBA Students (2018-2020 Batch)**

### Graph



### Interpretation

From the above table it is clear that, students of MBA 2018- 2020 batch

- In 1<sup>st</sup> semester 9.07% students secured O grade, 27.96% secured A grade, 32.59% secured B grade, 15.19% secured C grade, 8.52% secured D grade, 3.52% secured E grade, and 2.22% secured F grade in all 6 subjects. It is observed that 0.74% of the students were absent for the examinations.
- In 2<sup>nd</sup> semester, 10.04% students secured O grade, 35.98% secured A grade, 36.93% secured B grade, 10.80% secured C grade, 5.11% secured D grade, and 1.14% E grade in all 6 subjects. It is observed that there were no absentees for the examinations and also none scored F grade.

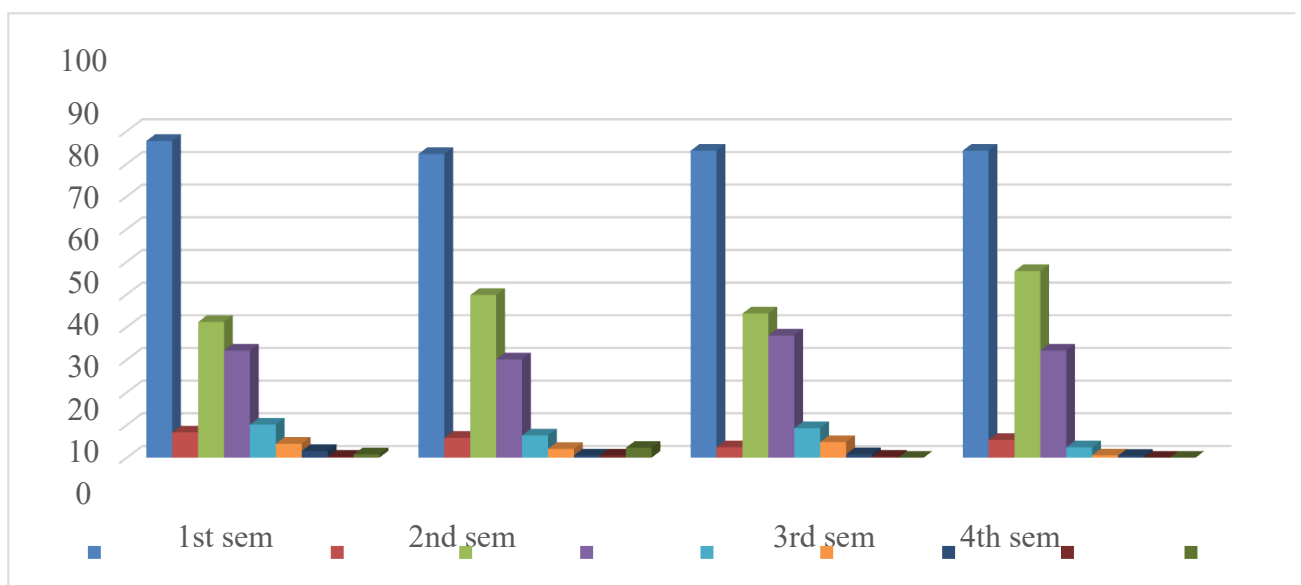
- In 3<sup>rd</sup> semester, 7.39% students secured O grade, 43.94% secured A grade, 49.43% secured B grade, 10.80% secured C grade, 3.22% secured D grade, 1.52% secured E grade in all 6 subjects. It is observed that there were no absentees for the examinations and also none scored F grade.
- In 4<sup>th</sup> semester, 7.95% students secured O grade, 62.31% secured A grade, 35.23% secured B grade, 6.44% secured C grade, 2.65% secured D grade, 0.76% secured E grade in all 6 subjects. It is observed that there were no absentees for the examinations and also none scored F grade.

**Inference**

Overall academic performance of 2019-2021 batch MBA students for 4 semesters based on university examination results

**Table: Overall Academic Performance of MBA Students (2019-2021 Batch)**

**Graph**



AB Total No. of Students, O Grade, A Grade, B Grade, C Grade, D Grade, E Grade, F Grade

**Interpretation**

From the above table it is clear that, in MBA 2019-2021 batch,

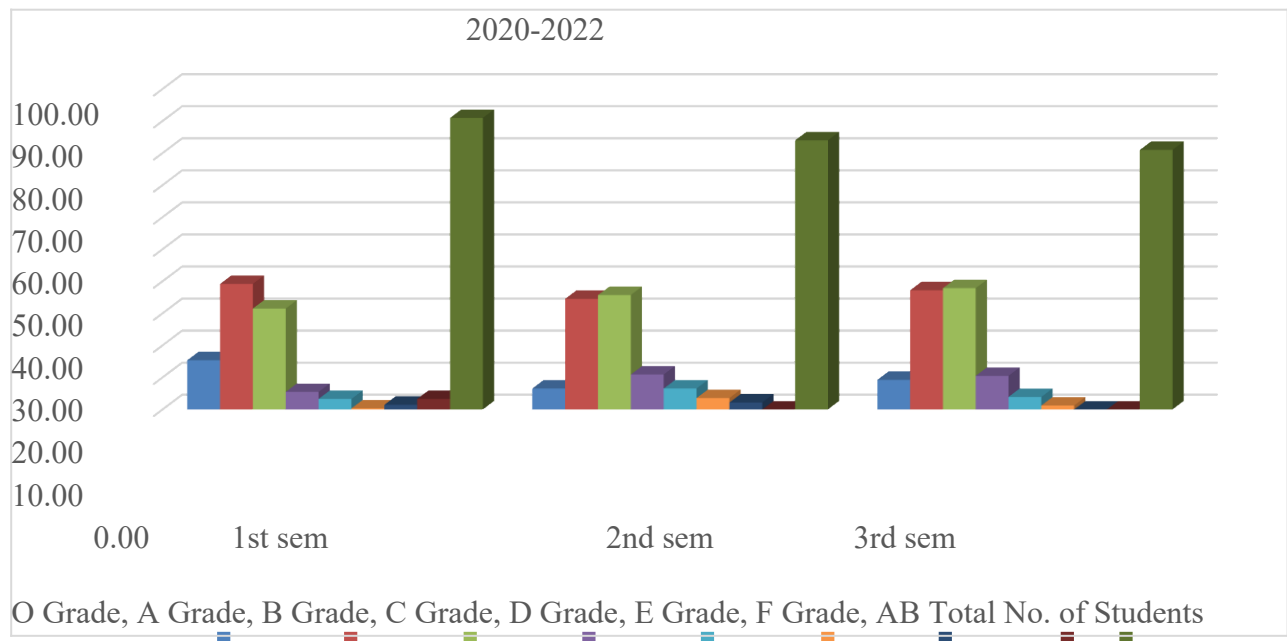
- In 1<sup>st</sup> semester, 7.73% students secured O grade, 41.41% secured A grade, 32.82% secured B grade, 10.14% secured C grade, 4.30% secured D grade, 2.06% secured E grade, 0.34% secured F grade in all 6 subjects. It is observed that 1.03% of the students were absent for the examinations.
- In 2<sup>nd</sup> semester, 6.09% students secured O grade, 49.82% secured A grade, 30.11% secured B grade, 6.81% secured C grade, 2.69% secured D grade, 0.72% secured E grade, 0.72% secured F grade in all 6 subjects. It is observed that 3.05% of the students were absent for the examinations.
- In 3<sup>rd</sup> semester, 3.19% students secured O grade, 44.15% secured A grade, 37.41% secured B grade, 9.04% secured C grade, 4.43% secured D grade, 1.06% secured E grade, 0.35% secured F grade in all 6 subjects. It is observed that there were no absentees for the examinations.
- In 4<sup>th</sup> semester, 6.38% students secured O grade, 66.67% secured A grade, 38.30% secured B grade, 3.72% secured C grade, 0.89% secured D grade, 0.71% secured E grade in all 6 subjects. It is observed that there were no absentees for the examinations and also none scored F grade.

**Inference**

Overall academic performance of 2019-2021 batch MBA students for 4 semesters based on university examination results.

**Table: Overall Academic Performance of MBA Students (2020-2022 Batch)**

**Graph**



**Interpretation**

From the above table it is clear that, in MBA 2020-2022 batch,

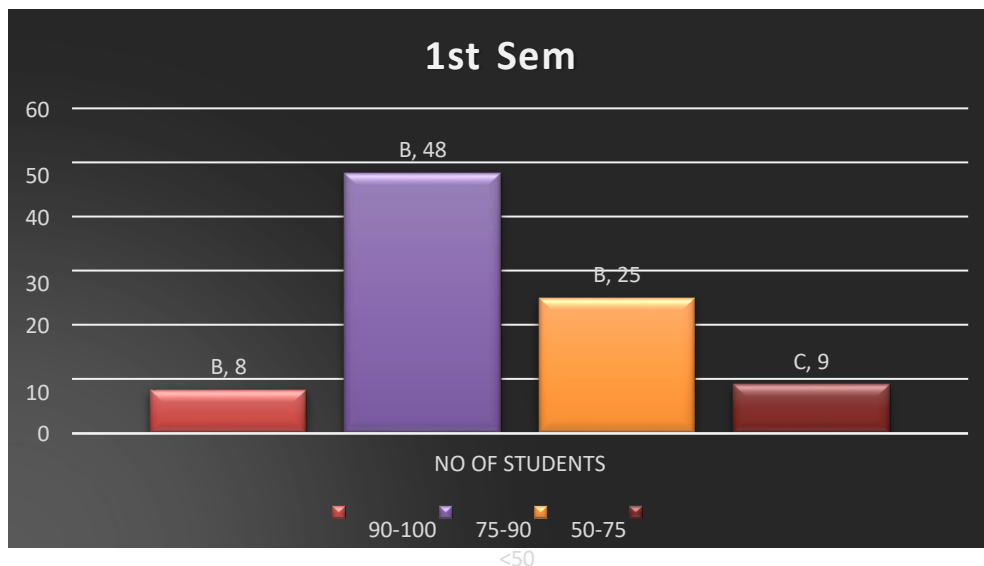
- In 1<sup>st</sup> semester, 13.19% students secured O grade, 39.19% secured A grade, 31.50% secured B grade, 5.49% secured C grade, 3.30% secured D grade, 0.37% secured E grade, 1.47% secured F grade in all 6 subjects. it is observed that there were 3.30% students are absentees for the examinations.
- In 2<sup>nd</sup> semester, 6.55% students secured O grade, 34.52% secured A grade, 35.71% secured B grade, 10.91% secured C grade, 6.55% secured D grade, 3.57% secured E grade, 2.18% secured F grade in all 6 subjects. it is observed that there were no absentees for the examinations.
- In 3<sup>rd</sup> semester, 9.3% students secured O grade, 53.5% secured A grade, 37.9% secured B grade, 10.5% secured C grade, 3.9% secured D grade, 1.2% secured E grade in all 6 subjects. It is observed that there were no absentees for the examinations and also none scored F grade.

**Inference**

Student academic performance analysis based on student’s regularity in attending classes, For 1<sup>st</sup> semester MBA (2018-2020 batch).

**Table: 1<sup>st</sup> Sem Result Analysis of MBA (2018-2020 Batch)**

**Graph**



**Interpretation**

From the above table it is clear that, in 1<sup>st</sup> Sem of MBA (2018-2020 Batch)

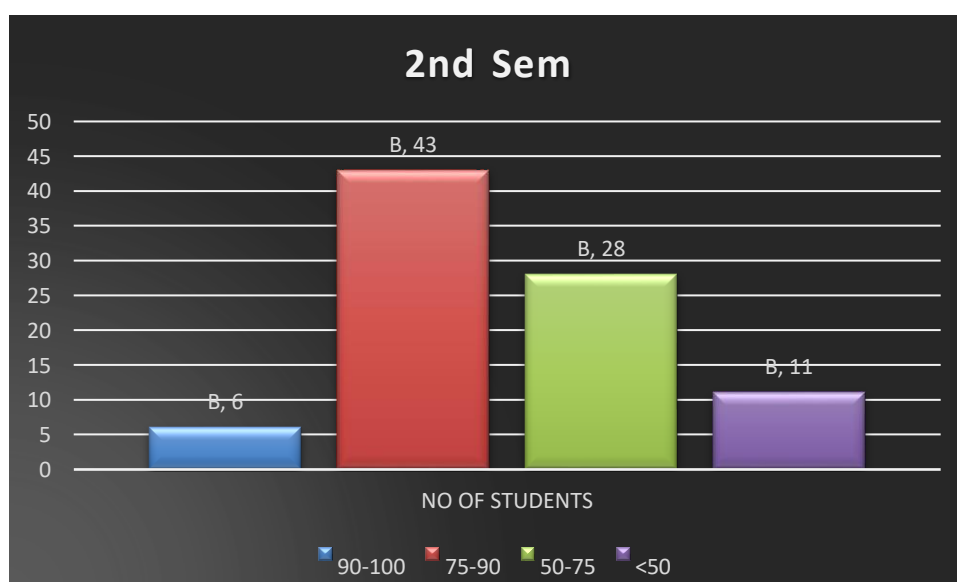
- 9% of students had 90-100% attendance, and their average grade secured is B.
- 53% of students had 75-90% attendance, and their average grade secured is B.
- 28% of students had 50-75% attendance, and their average grade secured is B.
- 10% of students had < 50% attendance, and their average grade secured is C.

**Inference**

Student academic performance analysis based on student’s regularity in attending classes, For 2<sup>nd</sup> semester MBA (2018-2020 batch).

**Table: 2<sup>nd</sup> Sem Result Analysis of MBA (2018-2020 Batch)**

**Graph**



**Interpretation**

From the above table it is clear that, in 2<sup>nd</sup> Sem of MBA (2018-2020 Batch)

- 7% of students had 90-100% attendance, and their average grade secured is B.
- 49% of students had 75-90% attendance, and their average grade secured is B.

<https://doi.org/10.5281/zenodo.7448944>

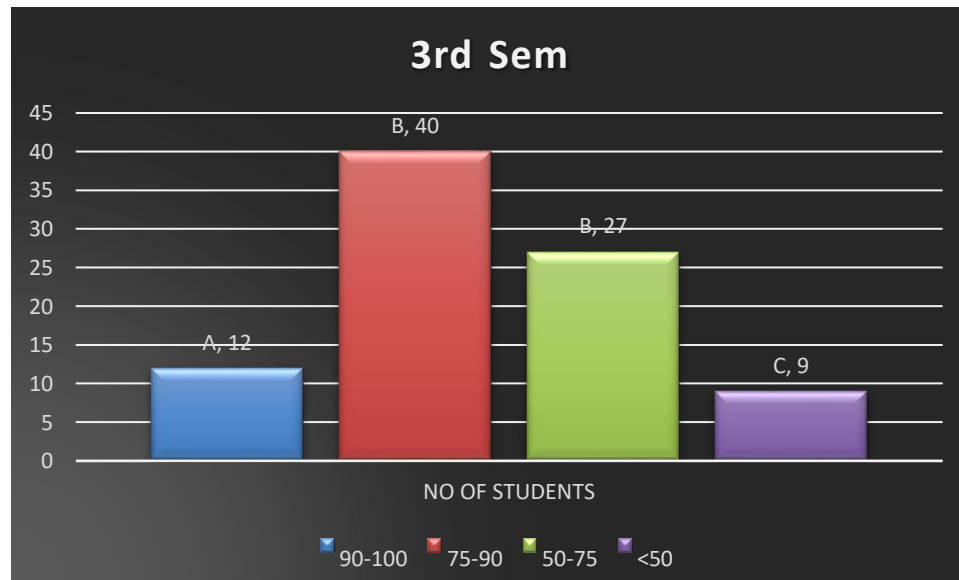
- 32% of students had 50-75% attendance, and their average grade secured is B.
- 12% of students had 90-100% attendance, and their average grade secured is B.

### Inference

Student academic performance analysis based on student's regularity in attending classes, For 3<sup>rd</sup> semester MBA (2018-2020 batch).

**Table: 3<sup>rd</sup> Sem Result Analysis of MBA (2018-2020 Batch)**

### Graph



### Interpretation

From the above table it is clear that, in 3<sup>rd</sup> Sem of MBA (2018-2020 Batch)

- 14% of students had 90-100% attendance, and their average grade secured is A
- 45% of students had 75-90% attendance, and their average grade secured is B.
- 31% of students had 50-75% attendance, and their average grade secured is B.
- 10% of students had < 50% attendance, and their average grade secured is C.

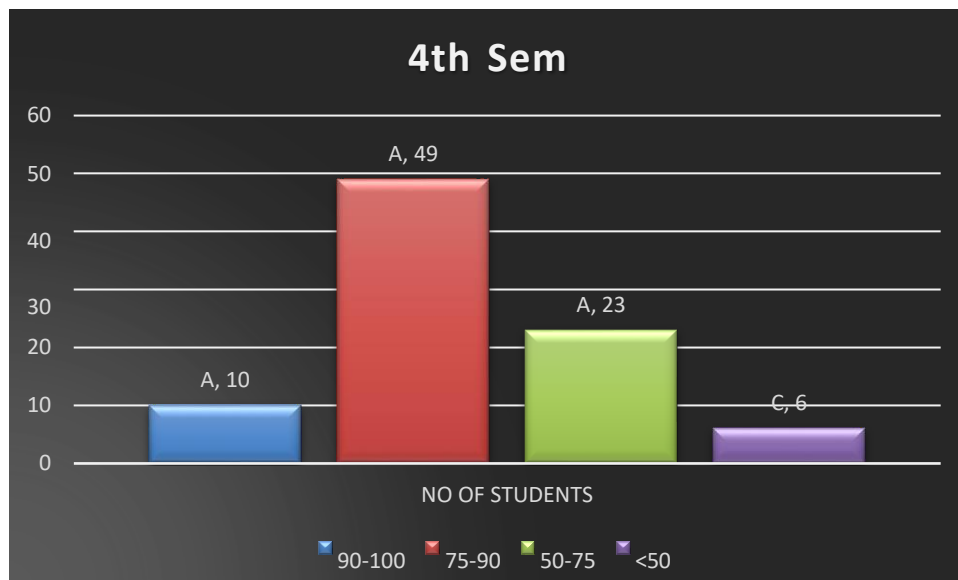
### Inference

Student academic performance analysis based on student's regularity in attending classes, For 4<sup>th</sup> semester MBA (2018-2020 batch).

**Table: 4<sup>th</sup> Sem Result Analysis of MBA (2018-2020 Batch)**

### Graph





**Interpretation**

From the above table it is clear that, in 4<sup>th</sup> Sem of MBA (2018-2020 Batch)

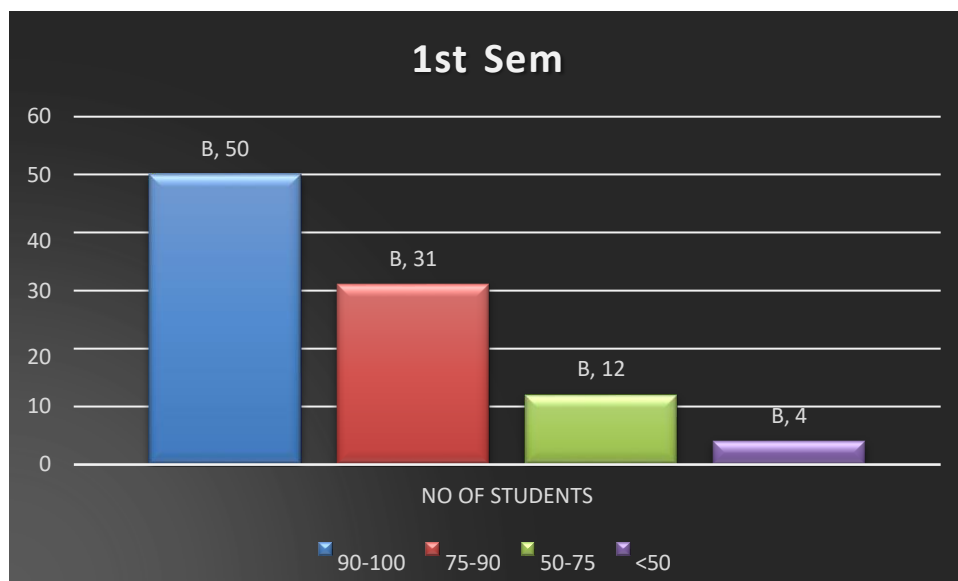
- 11% of students had 90-100% attendance, and their average grade secured is A.
- 56% of students had 75-90% attendance, and their average grade secured is A.
- 26% of students had 50-75% attendance, and their average grade secured is A.
- 7% of students had < 50% attendance, and their average grade secured is C.

**Inference**

Student academic performance analysis based on student’s regularity in attending classes, For 1<sup>st</sup> semester MBA (2019-2021 batch).

**Table: 1<sup>st</sup> Sem Result Analysis of MBA (2019-2021 Batch)**

**Graph**



**Interpretation**

From the above table it is clear that, in 1<sup>st</sup> Sem of MBA (2019-2021 Batch)

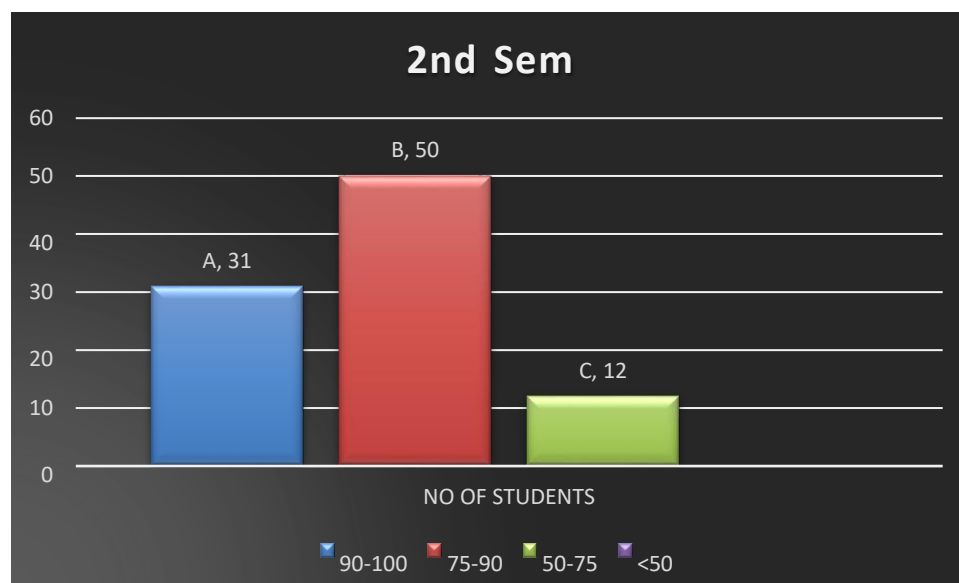
- 51% of students had 90-100% attendance, and their average grade secured is B.
- 33% of students had 75-90% attendance, and their average grade secured is B.
- 12% of students had 50-75% attendance, and their average grade secured is B.
- 4% of students had < 50% attendance, and their average grade secured is B.

### Inference

Student academic performance analysis based on student's regularity in attending classes, For 2<sup>nd</sup> semester MBA (2019-2021 batch)

**Table: 2<sup>nd</sup> Sem Result Analysis of MBA (2019-2021 Batch)**

### Graph



### Interpretation

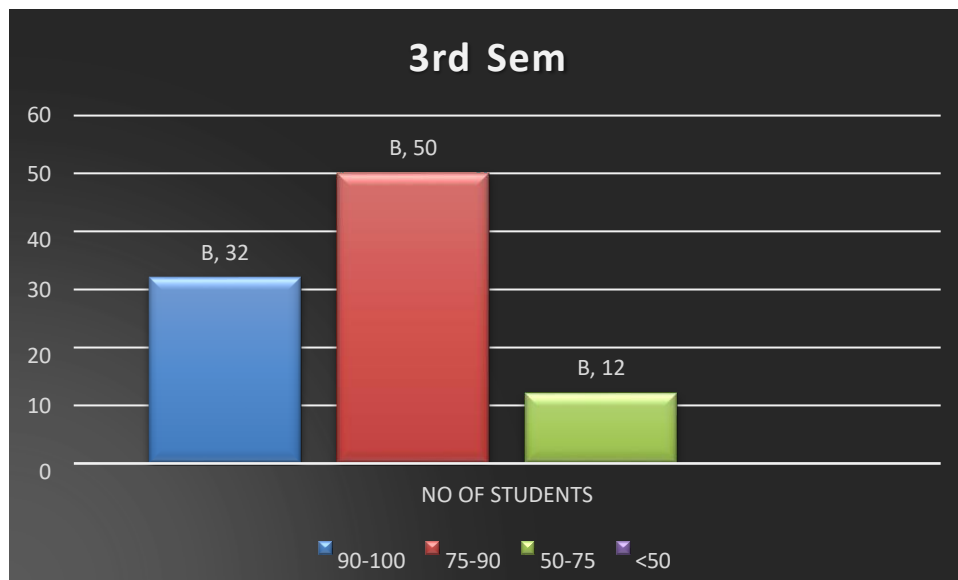
From the above table it is clear that, in 2<sup>nd</sup> Sem of MBA (2019-2021 Batch)

- 33% of students had 90-100% attendance, and their average grade secured is A.
- 54% of students had 75-90% attendance, and their average grade secured is B.
- 13% of students had 50-75% attendance, and their average grade secured is C.
- It is observed that there were none < 50% attendance.

### Inference

Student academic performance analysis based on student's regularity in attending classes, For 3<sup>rd</sup> semester MBA (2019-2021 batch).

### Graph



**Interpretation**

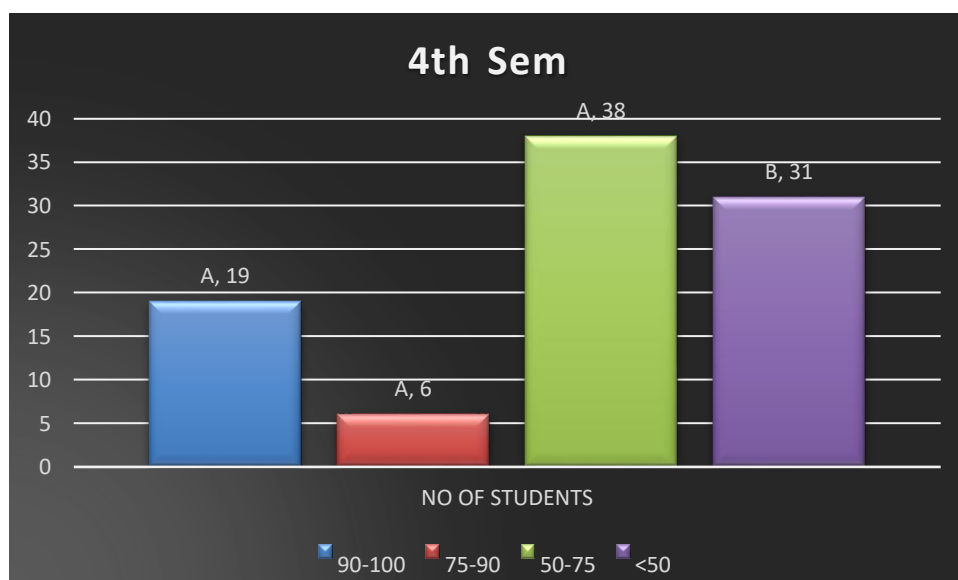
From the above table it is clear that, in 3<sup>rd</sup> Sem of MBA (2019-2021 Batch)

- 34% of students had 90-100% attendance, and their average grade secured is B.
- 53% of students had 75-90% attendance, and their average grade secured is B.
- 13% of students had 50-75% attendance, and their average grade secured is B.
- It is observed that there were none of students had < 50% attendance.

**Inference**

Student academic performance analysis based on student’s regularity in attending classes, For 4<sup>th</sup> semester MBA (2019-2021 batch).

**Graph**



**Interpretation**

From the above table it is clear that, in 4<sup>th</sup> Sem of MBA (2019-2021 BATCH)

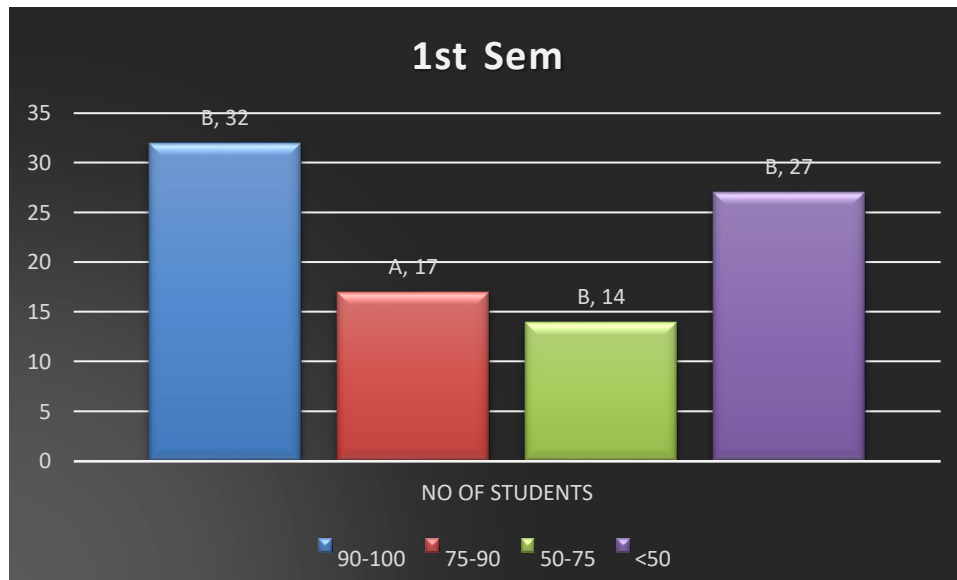
- 20% of students had 90-100% attendance, and their average grade secured is A.
- 7% of students had 75-90% attendance, and their average grade secured is A.

- 40% of students had 50-75% attendance, and their average grade secured is A.
- 33% of students had <50% attendance, and their average grade secured is B.

### Inference

Student academic performance analysis based on student's regularity in attending classes, For 1<sup>st</sup> semester MBA (2020-2022 batch).

### Graph



### Interpretation

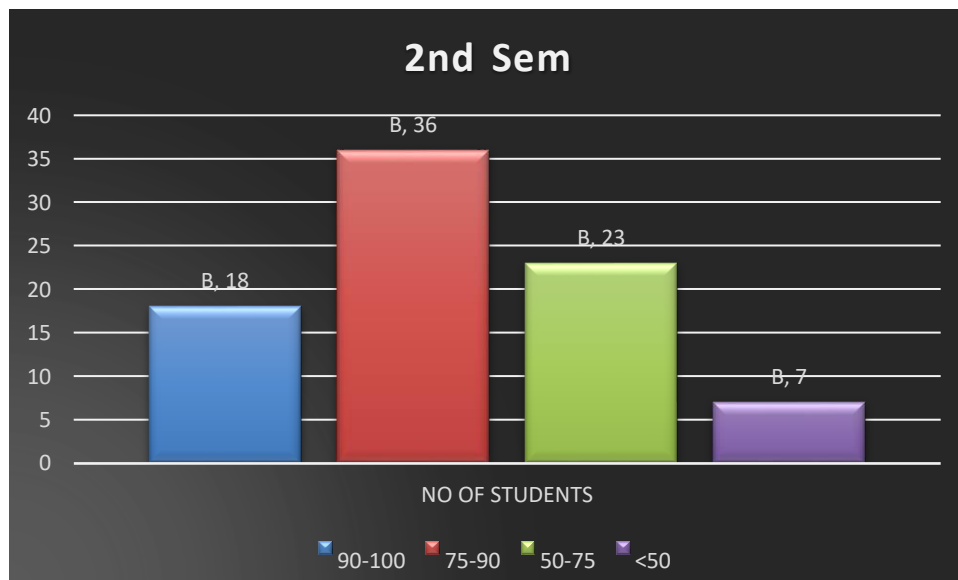
From the above table it is clear that, in 1<sup>st</sup> Sem of MBA (2020-2022 Batch)

- 35% of students had 90-100% attendance, and their average grade secured is B.
- 20% of students had 75-90% attendance, and their average grade secured is A.
- 15% of students had 50-75% attendance, and their average grade secured is B.
- 30% of students had < 50% attendance, and their average grade secured is B.

### Inference

Student academic performance analysis based on student's regularity in attending classes, For 2<sup>nd</sup> semester MBA (2020-2022 batch).

### Graph



### Interpretation

From the above table it is clear that, in 2<sup>nd</sup> Sem of MBA (2019-2021 Batch)

- 21% of students had 90-100% attendance, and their average grade secured is B.
- 43% of students had 75-90% attendance, and their average grade secured is B.
- 28% of students had 50-75% attendance, and their average grade secured is B.
- 8% of students had < 50% attendance, and their average grade secured is B.

### Research Findings & Conclusion

- In this study, we have observed that the result of student's performance increasing semester to semester in the three batches (2018-2020, 2019-2021, 2020-2022).
- From the above study in 2018-2020 batch, there is a constant increase in A grade semester to semester in 1<sup>st</sup> semester 27.96% students secured A grade, in 2<sup>nd</sup> semester 35.98%, in 3<sup>rd</sup> semester 43.94%, in 4<sup>th</sup> semester 62.31% secured A grade.
- In 2018-2020 batch, it is observed that there were no absentees for the examinations and also none scored F grade in 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> semester.
- From the above study in 2019-2021 batch there is a constant increase in A grade semester to semester in 1<sup>st</sup> semester 41.41% students secured A grade, in 2<sup>nd</sup> semester 49.82%, in 3<sup>rd</sup> semester 44.15%, in 4<sup>th</sup> semester 66.67% secured A grade.
- In 2019-2021 batch, it is observed that there were no absentees for the examinations and also none scored F grade in 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> semester.
- In 2020-2022 batch, it is observed that there were no absentees for the examinations in 2<sup>nd</sup> and 3<sup>rd</sup> semester.
- From the above study, it is clear that in 2018-2020 batch those students have 90-100% attendance their grades were in 1<sup>st</sup> & 2<sup>nd</sup> semester B and in 3<sup>rd</sup> & 4<sup>th</sup> semester A.
- In 2018-2020 batch, those students have < 50% attendance their grades were in 1<sup>st</sup> semester B and in 2<sup>nd</sup>, 3<sup>rd</sup> & 4<sup>th</sup> semester C.
- From the above study, it is clear that in 2019-2021 batch those students have 90-100% attendance their grades were in 1<sup>st</sup> & 3<sup>rd</sup> semester B and in 2<sup>nd</sup> & 4<sup>th</sup> semester A.
- In 2019-2021 batch, those students have < 50% attendance their grades were in 1<sup>st</sup> & 4<sup>th</sup> semester B, and it is observed that in 2<sup>nd</sup> & 3<sup>rd</sup> semester there is none under < 50% attendance.

- From the above study, it is clear that in 2020-2022 batch those students have 90-100% attendance their grades were in 1<sup>st</sup> & 2<sup>nd</sup> semester B and in 3<sup>rd</sup> semester A.
- In 2020-2022 batch, those students have < 50% attendance their grades were in 1<sup>st</sup>, 2<sup>nd</sup> & 3<sup>rd</sup> semester B.
- It is observed in the study that department has been effectively taking measures to support students in offline, online and blended modes. Students have been consistently improving in each and every semester. Comparing 3<sup>rd</sup> semester with all the 3 batches, it is found that every batch has shown excellence in academic performance.
- Experiential learning and practical orientation on business operations through Industrial Visit provides additional value to student and scope to improve their overall performance.
- Guest Lectures, Workshops, Seminars / Webinars, Club activities promotes greater learning enthusiasm as well as provides better insights to the students on management education. It is found that, department has been continuously organizing the above said in every academic year that also adds value and contributes to the overall performance of the student.

### Conclusion

This study enlightened the importance of student's regularity, additional support through industrial visits and organizing activities for improving student's overall performance during their course and also leads the student with confidence to score good grade. Faculty of this department excelled in all the modes of teaching (offline & online) that resulted in consistent results for the students during the time of study.

Students result analysis also highlighted the importance of co-curricular, extra-curricular activities that would impact student's overall performance.

The educational institutions can utilize automated educational data mining to examine the performance of students which can support the institution in recognizing the student's performance. Using analytics, clustering and classification techniques, institutions can analyse performance of students. There is further scope for evaluating student's performance using student result analysis application software. With the help of this students can know their progress in academics. Teachers can also identify slow learners and can take corrective actions to improve their performance. Based on the results analysis the college management can also know the performance in each year compared to the past year's results.

### Suggestions & Recommendations

The present study is all about the performance of students. college analysed the students results manually from the stored data, which is tedious process. From the past and present data of student results in various semesters are taken and presented in visual form using visualization tools. Predictive techniques can be rightly used considering all the parameters so that student's future performance can also be forecasted.

### References

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