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Enhancing Placements in Educational Institutes: A Novel Approach

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Abstract*—The ABC analysis is an established inventory control technique in the industry wherein the available inventory is divided into three categories. It is similar to the Pareto principle and provides a mechanism to segregate the material into different categories based on their values to the industries. This study presents a novel approach of extending the concept of ABC analysis to the companies visiting the institutes for conducting the campus interview. The primary objective of this study was to enhance the quality and number of placements in the institute by classifying the industries as per the ABC analysis. The data of 268 companies visiting the institute over a period of eight years was documented and analyzed. After careful deliberations, a formula was established to determine the value of each company offering placements. The percentage value obtained for every company was used to segregate the companies into A, B and C categories. For calculations, the study has considered only the number of placements and average package offered by the visiting companies. Thereafter certain initiatives were undertaken by the institute for engaging with the industries. The motive was to enhance the quality of placements and to increase the industry-institute interactions in the institute. It was observed that the implementation of various initiatives led to an increase in the number of placements, average and maximum package. Within a year, the placements increased by 121 while the maximum package increased to 4.6 Lakhs. Pro-active engagement with the 'A' category companies have also resulted in additional benefits such as scholarships for needy students, increase in internships for students and increase in footfall of the industry experts and establishment of Centre of Excellence. The present study is a unique attempt to enhance the quality and number of placements in educational institutions. It represents a logical extension of a simple and commonly used technique in a different domain. This approach can be applied to any educational institute with suitable modifications for increasing the industry-institute interactions.

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I. INTRODUCTION

THE struggle for the educational institutes has been robust in two major areas namely student admission and campus placement. A biggest challenge for any Educational Institute is identifying the best possible way to enhance the campus placements (Inamdar, 2021). Furthermore, one of the essential criteria for Generation Z students while taking the admission in an elite institution is campus placement. Student perception regarding initiatives undertaken by the institutes towards placement activities is inevitable (Dhingra and Kundu, 2020). Considering the above concerns, this work has focused on enhancing campus placement through a novel approach of classifying companies visiting the institute. This approach, based on ABC classification, delves into identification of companies associated with an institute from the past eight years.

The application of ABC analysis has been predominant in the field of inventory management at manufacturing, retail service and other industries. This technique divides the inventory into three categories namely A, B and C in a descending value. It is a technique used by companies internally for the classification of materials based on the principle that a small portion of the items may represent the huge amount of money value of the total inventory consumed in the production process, although a relatively large number of items may form a minor part of the money value of a production system (Saravanan et. al., 2021). Many Small and Medium Scale Industries deploy the ABC analysis at their stores for proper utilization of available resources (Mahant, et al, 2012).

The contribution of Pareto Principle in the analysis of ABC techniques is essential. It depicts that results come from only 20% of efforts or causes in any system. So, based on Pareto's rule (80/20), ABC analysis identifies the 20% of goods that can deliver about 80% of the value. The first application of ABC analysis at stores, made the companies realize its benefits in terms of cost (Flowers and O'Neill, 1978). The basic ABC analysis is done by classifying 'A' category items

as goods that are regarded as the highest value in terms of annual consumption. These goods contribute to the top 70 to 80 percent of the yearly consumption value and come from only about 10 to 20 percent of the total inventory items. Whereas, 'B' category items are considered under medium consumption, which total to about 30 percent of the total inventory and around 15 to 20 percent of annual consumption value. Finally, 'C' category items are less consumed in value whilst they account for less than 5 percent of the annual consumption value and nearly 50 percent of the total items. The formula for the categorization of these items is as shown below:

(Annual number of items sold) x (Cost per item) = (Annual usage value per product) (1)

ABC analysis is a basic concept being applied in industries. However, the extension of its application in the education field at placement cell has provided a wide scope to strategize the placement activities. This method has been extended to categorize the industries visiting the institute with an aim of improving the qualitative and quantitative placements. This approach has created an impact on the overall education system by boosting placement and admissions.

II. LITERATURE REVIEW

Improving placements and finding ways to bridge the gap between industry and institute is the focal point of any educational institute. Ensuring right placement for the right candidate with the right package is the concern for the institutes. It may be noted that Darwin's Theory of Survival of the fittest holds true for the educational sector. Much work has been carried out to study the problems faced by the institutes in campus placement. In the past decade, the companies were finding it difficult to search a suitable candidate from the college graduating students (Vishwanatha and Venkatachalam, 2016). This concern introduced a changing trend in placement by shifting to more campus placement. An essential requirement of placement cells for the educational institutes became an essential part of the system (Diana et al., 2021). After establishment, SWOC (Strength, Weakness, Opportunities and Challenges) analysis of the placement cell is very essential (Shahabadkar et al., 2021). Another eminent problem is about the students' perception on campus placement. The criticism is on professional culture and on the efforts taken by the institutions regarding placement activities for building their brand worth and attracting more students (Dhingra and Kundu, 2020). Increasing the employability skills of students through their participation in various curricular and co-curricular activities is also an essential step by the institutes to create an effective impact on placements (Lele, et al., 2021).

To improve the employment ratio of campus placement various solutions have been adopted by institutes. The approach towards campus placement is being redefined. Shenoy and Aithal (2016) introduced an online or e-recruitment model to define the new face of hiring and placement in the education domain. This new model has been designed to save time and familiarize the job seeking students with job requirements of the company. Samuel, et al., (2015) has identified notable campus recruitment parameters that could enhance the placement cell activities. The vital parameters being salary and the sector according to the requirement of the talent were reflected.

There are numerous examples of the application of ABC analysis in the industry. To manage the extensive inventory at companies the best suggested solution has been ABC analysis (Kiyak, et al., 2015; Viswanathan and Bhatnagar, 2005). It increases productivity levels, saves time and cost. A brief on various ways of application of ABC analysis has been observed. For instance, Nallusamy, et al., (2017) has elaborated the essentials of creating a periodic review policy based on the ABC classification for efficient use of raw materials. Furthermore, Jayakumaran, et al., (2020) has elucidated the use of ABC analysis in efficiently managing inventory in the retail industry. The application has also been observed in the field of pharmaceuticals. A study by Deressa, et al., (2022), revealed that approximately 10% of pharmaceuticals consumed 70% of total pharmaceutical expenditures.

Overall an effective management of the stores and manufacturer with efficient resource prioritization, decision making with respect to purchase and distribution and strict supervision on important category items are the benefits of ABC application (Devnani, et al., 2010). There are various tools under the study of inventory management but the best applicable is ABC analysis (Pandya and Thakkar, 2016). ABC analysis tool minimizes the working capital needs, maximize efficiency of spending and reduce loses (Smith, 2011).

Apart from the traditional application, it has been observed that many researchers have used a modified version of ABC analysis. To illustrate Lung, (2007) introduced a model that converts all the criteria measures into a scalar score that are calculated and analyzed. Similarly, Douissa and Jabeur, (2016) depicted ABC analysis as an assignment problem. A novel classification based on the most similar characteristics and service- cost analysis was established. Ravinder and Misra, (2014) made an attempt to consider multiple criteria during the application of ABC analysis for better management of inventories and create a competitive position in the market. They marked a difference in traditional and novel approach towards ABC analysis.

The previous work in different areas has paved the path for the implementation of ABC analysis in the educational area for enhancing the campus placement. It has been observed that most of the earlier research has been in different areas other than placements in educational institutes. In this article, an attempt has been made to extend the commonly used ABC analysis tool to the companies associated with the institute. There is a slight variation in the percentage of items grouped under the 'A', 'B' and 'C' category. In the present study, companies accounting for 65% have been grouped under 'A' category, those accounting for 25% under 'B' category and

those accounting for 10% have been grouped under 'C' category.

This novel approach has helped the institute in several ways such as increasing the number of placements, effective decision making with regard to placements, enhancing the placement package and gaining other benefits.

III. OBJECTIVES

The primary objective of this study is to enhance qualitative and quantitative placements in technical institutes. The broad objectives of the study are as follows:

1. To enhance the number and quality of placements.
2. To segregate the companies visiting the institute into 'A', 'B' and 'C' categories and start engaging with the industries according to their value.
3. To strengthen the bond with 'A' category companies by enhancing industry institute interaction for mutually beneficial coexistence.
4. To improve the value of companies falling in the 'B' and 'C' category by increasing their package and also the number placements by the companies

IV. METHODOLOGY

There are different inventory control techniques that help to determine the value of the inventory based on their significance. Considering the characteristics of the inventory management techniques and the nature of the study, ABC analysis has been employed to categorize the companies visiting the institute in an effort to enhance the quality and number of placements in the institute. This study was conducted in an engineering institute located in the western part of Maharashtra State, India. The institute under consideration runs undergraduate, postgraduate and doctoral programs in engineering. Besides these courses, the institute also offers MBA and MCA courses. However the scope of this study is confined to the industries visiting the institute for undergraduate engineering courses.

Data Collection:

A number of companies visit the institute for placements on a regular basis. At the same time efforts are made to induct some new companies every year. A list of 300 industries visiting the institute over a period of eight years and the number of students selected by these companies along with their package was collected from the Training and Placement Cell of the institute. Segregation of companies visiting the Institute has been done for A.Y. 2020-21 and A.Y. 2021-22. Out of the 300 industries, 268 industries were considered for the ABC analysis. Remaining 32 industries were involved in providing only internships to students and hence were excluded from the analysis.

Applying ABC Analysis:

A novel approach of assigning a value to every company was established. The value for every company is calculated as follows:

Total value of a company = Total number of placements for the last eight years * Average package offered by the company (2)

The Percentage value was obtained by dividing the total value by summation of total value of all companies and is given by the following equation:

Percentage value = (Total value for a company * 100) / Summation of total value (3)

A sample calculation for ABC categorization with the above formula for A.Y. 2020-2021 is provided in table I below:

TABLE I
CALCULATION FOR ABC CATEGORIZATION: A.Y. 2020-2021

Sr. No.	Company	Placements	Package (Rs. in Lakhs)	Total Value	Percent Value
1.	C1	185	11	2035	13.4
2.	C2	313	3.6	1126.8	7.4
3.	C3	277	3.8	1052.6	6.9
4.	C4	57	4	228	1.5
5.	C5	19	12	228	1.5
6.	C6	39	3.5	136.5	0.9
	"	"	"	"	"
	"	"	"	"	"
268.	C268	1	1.68	1.68	0.0
Total	**268**	**3939**	**903.47**	**15231.72**	**100**

Based on the above equations, percentage value was calculated for every company visiting the institute. The percentage value so obtained was used to segregate the companies into A, B and C category. Companies accounting for 65% of the total value were classified in group A, those accounting for 25% of the total value were classified in group B and companies accounting for 10% of the total value were classified as group C.

V. DATA ANALYSIS AND OUTCOME

Out of the 268 companies visiting the institute, 20 companies were classified under 'A' category contributing around 65% of the value of placements and 7.46% of visiting industries which require closely engagement and needs to be explored further for various industry-institute interactions. 74 companies were classified under 'B' category contributing 25% of the value of placements and 27.61% of the visiting industries. 174 companies were classified under the 'C' category contributing

10% of the placement value and representing 64.92% of the total number of companies.

The segregation of companies under A, B and C category is given in table II

TABLE II
SEGREGATION OF COMPANIES VISITING THE INSTITUTE

	A.Y. 2020-21		A.Y. 2021-22	
Category and placement value	**Companies accounting for total value**	**% of Companies**	**Companies accounting for total value**	**% of Companies**
A (65%)	20	**7.46**	28	**10.45**
B (25%)	74	**27.61**	77	**28.73**
C (10%)	174	**64.93**	163	**60.82**
No. of companies	**268**	**100**	**268**	**100**

The number of placements and average package for most of the companies has increased in the subsequent year thereby changing the total value of every company. As a result there is a rise in the number of industries under the 'A' and 'B' category in the subsequent year.

The cumulative percentage value of the companies visiting the institute is shown in figure 1:

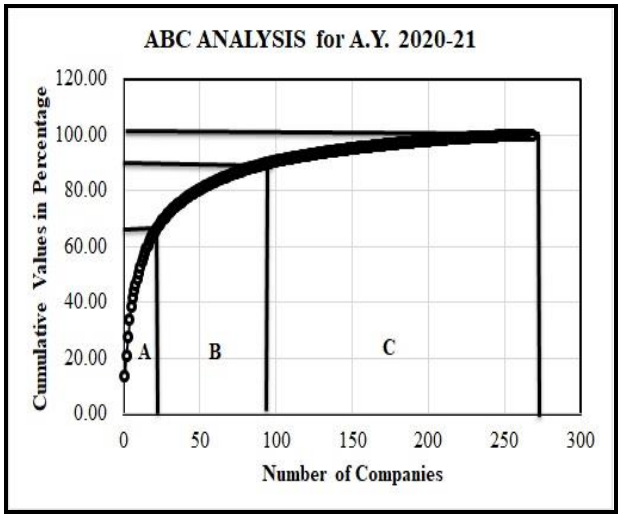

Fig.1. Cumulative value of companies visiting the institute during A.Y. 2020-21

Initiatives undertaken by the institute:

After classifying the industries into ABC analysis, few initiatives were taken for enhancing the number of placements and quality of placements. The primary motive was to enhance the quality of placements of 'A' category and improve the ratings of those placed in the 'B' and 'C' category. These initiatives have been discussed below.

a. Initiatives for 'A' category companies

- Industry visits by institute leaders were arranged and to design the training programs to train the students for company specific from the first year itself.
- Industry leaders of 'A' category companies were invited for different activities such as CEO Connect, CTO Connects, expert talks, as judges in project competitions and as an examiner for project examinations. Few industry leaders were included as Board of Study Members.
- Space was provided to these companies to display their products for better visibility.

b. Initiatives for 'B' category companies

- Alumni working in these types of companies were identified and more study was done about the company and its requirements
- Students were well trained for these type of companies so that number of placements will increase
- Quality of students available for placements were shared with the companies well in advance and negotiations were carried out with respect to early placement slot and package

c. Initiatives for 'C' category companies

- These types of companies were doing the selection through campus interviews randomly not every year. Through regular visits and power point presentations, such companies were made aware about the advantages of campus selections and its benefits
- Senior staff were assigned to these types of companies for continuous interaction

Outcome of the initiatives undertaken by the institute:

The initiatives undertaken by the institute with the industries based on ABC classification had a positive effect on the overall number of placements and quality of these placements. Some more profounding initiatives undertaken were:

- Empowering students and faculty with more opportunities for interaction with the industries
- Providing better infrastructural amenities such as labs for conducting exams
- Identification of gaps in students' performance and companies expectations
- Connecting to the companies through CEO meet, while bridging the gap and ascertaining the areas/skills needed by students to meet their expectations
- Hands-on training to the students on the basis of inputs taken and improving their skills
- Making students Industry-ready for improving placements

The number of placements in the first year increased by 121 while the maximum package increased to 4.6 Lakhs. Centre of Excellence were started by some 'A' category of companies.

One 'A' category company came forward and extended scholarship worth Rs. 10 Lakhs through its Corporate Social Responsibility (CSR) fund to few meritorious and financially need students. This helped the students to pay the college fees while few other 'A' category companies provided paid and unpaid internships to the meritorious students. The footfall of the 'A" category also increased through their participation in CEO Meet and expert lectures. It was noticed that the increase in the average package during the first year was marginal.

The change in total number of placements and maximum package is shown in table III.

Table III
CHANGES IN PLACEMENTS AND MAXIMUM PACKAGE

Academic Year	Total Placements	Maximum annual package in lakhs (Rs.)
2020-21	431	11
2021-22	552	15.6
2022-23*	565	18

* Placements for A.Y. 2022-23 were still ongoing at the time of compilation of the data

VI. CONCLUSION

In this paper the concept of ABC analysis has been applied for the first time in the educational institutes for analyzing the industries visiting the college for campus placements. It has been noticed that the initiatives undertaken by the institute after the analysis has made a positive impact on the number and quality of the placements. Within a year, the institute was able to increase the number of placements by 121 and the maximum package to 4.6 Lakhs.

The pro-active and close engagement with the 'A' category companies also led to certain additional benefits such as establishment of Centre of Excellence, scholarships for meritorious and financially needy students, increase in the number of paid and unpaid internships and increase in the footfall of the industry experts in the institute.

This novel approach can be extended to enhance the qualitative and quantitative placements of other educational institutes with suitable modifications.

The present study has considered only the number of placements and average package offered by the visiting companies for calculating the values of companies. Authors feel that future study should aim for inclusion of some additional factors such as regularity of the company in visiting the institute and retention ratio of the selected students for ABC analysis.

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