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RESEARCH ARTICLE OPEN ACCESS

Perception of Engineering undergraduate students on Summer Internships: a questionnaire-based survey

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ABSTRACT
This questionnaire based survey was done to understand the students' perception about practical usefulness of internship programs. Sixteen questions were included in the survey. The anonymity of the respondents was maintained throughout the study. A total of 107 engineering students from various batches and universities participated in the survey. More than 90% felt the need for such internships and more than 95% of them were benefitted by such internships. Internships mould students more towards entrepreneurship. It also facilitates a better inter-personal relationship. Such programs make students technically more competent and enable them to work with better mental agility.

Keywords - internship, engineer, entrepreneurship, survey, questionnaire

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I. INTRODUCTION

The past two decades have witnessed a sudden surge in the number of engineering graduates in many parts of the world. There is a growing concern that engineering profession as a whole, loses out meritorious students to other disciplines (Caroline, 2000). With the use of modern technologies and an increase in the number of engineers working from home, the need for man-power has also noted a steep fall these days. When there is such gross disparity between the supply and demand, all major institutions and recruiting agencies prefer only those better-performing students be selected from their campus interviews. Thus, there is a gross disparity shown during job placements between those who had performed better during their undergraduate programs and those who had not. The ever-increasing difficulties faced by students in choosing a job of their liking have also been a major source of motivation for these students to do multiple internships.

II. OBJECTIVES

This questionnaire survey was done to understand the basic mind-set of the engineering students who undergo internship training programs. The other objectives are to assess the students' understanding of the need for an internship, to study the clinical usefulness of such internship programs, and finally to assess the problems faced by the students in undergoing the internship.

III. METHODOLOGY

An online questionnaire was circulated amongst engineering students of various universities. Feedback from students of first to final year who participated in the survey was included in the study. Those students who had not done any internship were excluded from the survey. The questions were of multiple choices type and the student has to pick up one most appropriate answer. The questionnaire was designed through a Google Form and the link sent to all the participants.

A total of 16 questions were included in the survey. These questions were divided into two sections. The first section containing 15 questions were related to the basic information of the participants and details of the internship. The second section contained 6 sub questions, all related to the various types of problems faced during internship. These sub questions needed a reply in the form of a psychometric scaling response and were asked to reply via a 5 point Likert scale. The anonymity of the participants was however assured and maintained throughout the study. The participants were selected by a convenience sampling method.

IV. OBSERVATIONS & RESULTS

A total of 107 participants took part in the questionnaire survey. The results obtained from the primary and secondary sets of data were subsequently analyzed. The majority of students who participated (50%), were from Computer Science and Mechanical engineering branches.

Table 1 illustrates the demographic data of the participants in our study.

Males were the major participants (70%) and a majority of them were doing their third year engineering education (84.1%). About 59% of students had an onsite experience by working in companies, while the majority of those who worked from home may be due to the lockdown during the COVID-19 pandemic crisis. While most of the students (54.2%) came to know about the internship from their batch mates or their seniors, faculties have been the main source of information for about 23% of the participants. While 39% of them underwent internship due to university compulsions, a near equal number (36%) preferred internship for better job opportunities.

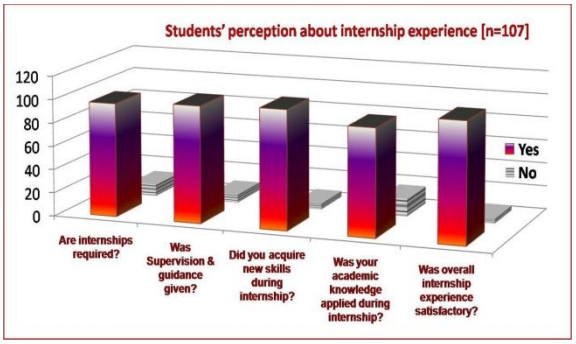

Fig 1 illustrates the overall perception of students in internship programs.

An overwhelming 91% of the students feel that an internship is very much needed. The majority of students (94%) did their internship under constant guidance and supervision from the industry. More than 95% of students felt that they have been benefitted by doing an internship and about 86% of them felt that their academic knowledge was very useful. More than three-fourths of the participants felt that they were overall satisfied with their training programs.

Table 2 illustrates the list of problems faced by the participants during the internship.

The questionnaire included 6 variables for which a 5-point Likert scale was given. Most of the students (71%) agreed that the assigned work during their internship was related to their branch of study. More than 90% of them were able to adhere to their suitable timings. While 75% of students were clear in mind and confident about what they should do, 25% of them felt shy and had their inhibitions in getting the job description known from their employer.

V. DISCUSSION

The benchmark and idea for this survey originated from a similar study done earlier by Hergert in 2009, who evaluated the students' perceptions of the value of internships in business education (Hergert, 2009). Though their survey concentrated mainly on the perceived value of the internship experience, our survey included various other parameters related to internship, including the problems faced during internship.

Internships are defined as student centred programs engaging them in service activities principally to offer them hands-on practice that augments their understanding of topics relevant to their particular areas of study (Furco, 1996). An internship is now an accepted and integral part of the engineering undergraduate program (Callanan, 2004). They indicate that such internships provide a 'risk-free' opportunity for the recruiting agencies to assess those prospective hires. This is a good opportunity for students as well, as the student gains practical experience by a clinical application of what they learned during their academic period. Various papers have discussed the merits and demerits of internship, highlighting the fact that such internships are indeed a boon to the engineering students (Shreenidhi, 2020).

Internships should be a structured and job-related work experience, obtained by engineering students before their completionof their academic course (Holyoak, 2013).Accordingly, the concept of learning through work is witnessing a resurrection that is way ahead of the traditional apprenticeship programs. Work Based Learning (WBL) also called as Experimental Learning and Career and technical education (CTE) are the changing trends that should benefit both the students and the recruiting institutions (Decker, 2019). Our study very well illustrates that most of the present-day interns get a 'real lifetime experience' from their internship programs. Mulcahy describes that the effectiveness of a good internship revolves around three independent variables: educator, learner, and the employer (Mulcahy, 1999). Only when the three of them synchronize, the internship becomes a meaningful one. AICTE and NBA ensure that the two major components namely, the educator and the learner are meeting up to the expected levels, while also ensuring to a certain extent that the employer also keeps in pace with the required standards, thereby making the three variables synchronize perfectly.

A similar study from Alagappa University also discussed the problems faced by engineering students during their internship programs (Dean, 2020). However in their study, short internship timings were found to be a major problem faced by their students. In one of the largest studies done in Ethiopia on 1040 students, a survey was done using a similar questionnaire (Gashaw, 2016). In their study, they observed that finding internship companies was the main constraint that the student faced while getting the financial grant was the next major prohibitive factor. Lack of close working relationship between the industry and the university was the major constraint in their study. However, in our study, we observed that nearly 60% of the internships were sponsored ones. This means that both the teaching institution and the leading companies take much interest in coordinating and arranging for internships for the students. Internships enable one to choose their career, provide a platform for one to develop and enhance their career skills, and ultimately facilitates in attaining a full-time job placement (Knouse, 2008).

VI. CONCLUSIONS

To be an effective engineer of the future, one should have a broad knowledge base that includes comprehensive academic knowledge and also a sound technical exposure. Internships mould the students more towards entrepreneurship. Most of the present-day engineering students are career-oriented and do their internship not out of fear or compulsion, but because of a need for a better job opportunity. Internships also help the students develop better interpersonal relationships. The practical experience gained from internship programs must be in a position to fulfil all these criteria and make the 'today's student', a ‘better engineer’ tomorrow.

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Table 1: Demographic features of the participants in our study

S. No	Feature	Number	Percentage (%)
1	**Mode of internship**		
	Company	55	51.4
	Work from home	28	25.7
	Both	24	22.9
2	**Type of internship**		

	Sponsored	63	58.9
	Paid	44	41.1
3	**Was the stipend paid for an internship?**		
	Yes	28	26.2
	No	79	73.8
4	**Came to know about the internship from**		
	Batchmates	32	29.9
	Seniors	26	24.3
	Faculty	23	21.5
	Internet	16	15
	Hearsay	10	9.3
5	**A major reason for doing an internship**		
	University regulation	42	39.3
	Peer pressure	04	3.7
	Better job placement	38	35.5
	To gain industrial hands-on experience	02	1.87
	Real-world experience	03	2.81
	Social pressure	01	0.94

Table 2: Problems faced by students during the internship (Likert scale 1 to 5)
1 – Strongly disagree; 5 – strongly agree.

Problems faced during the internship	1	2	3	4	5	Total
Assigned work unrelated to your academic course	24 (22.4%)	19 (17.8%)	33 (30.8%)	19 (17.8%)	12 (11.2%)	107
Work load was in excess	19 (17.8%)	28 (26.2%)	37 (34.6%)	15 (14%)	8 (7.5%)	107
Inappropriate work timings	44 (41.1%)	27 (25.2%)	27 (25.2%)	6 (5.6%)	3 (2.8%)	107
Lack of time to do other academic activities	35 (32.7%)	19 (17.8%)	26 (24.2%)	21 (19.6%)	6 (5.6%)	107
Inadequate internship hours	29 (27.1%)	20 (18.7%)	34 (31.8%)	19 (17.8%)	5 (4.7%)	107
Feeling shy or inhibited to get the job description from the company, clarified	23 (21.5%)	19 (17.8%)	40 (37.4%)	19 (17.8%)	6 (5.6%)	107

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