

Enhancing Employability Skills and Placements in Technical Institutes: A Case Study

Pramod K. Shahabadkar¹, Ajinkya S. Joshi², Keshav N. Nandurkar³

¹Training and Placement Officer, K. K. Wagh Institute of Engineering Education and Research, Nashik, Maharashtra, India

²I/C Registrar, K. K. Wagh Institute of Engineering Education and Research, Nashik, Maharashtra, India

³Principal, K. K. Wagh Institute of Engineering Education and Research, Nashik, Maharashtra, India

¹pramodshahabadkar@gmail.com

²ajinkya_j@rediffmail.com

³keshav1965@gmail.com

Abstract: Objective: Employability skills and placements are extremely important for any technical institute. Analysis of strengths, weakness, opportunities and challenges (SWOC) helps to make informed decisions on the inputs received from the stakeholders. The purpose of this paper is to identify the SWOC of training and placement cell of a technical institute, undertake initiatives based on the SWOC analysis and determine the impact of these initiatives.

Methodology: IT tools like Google form were designed and employed to carry out the SWOC analysis. This Google form was sent to the students and responses were obtained from 1087 students. The students responses were grouped under strengths, weaknesses, opportunities and challenges and then segregated under five sub categories namely - institute and infrastructure; staff; teaching and learning; training / placement activities and mechanism or policies for improvement. Based on the SWOC analysis, certain initiatives were undertaken to overcome the weakness and to explore the opportunities. These initiatives have been mapped with the SWOC are analysed to determine the impact. To remain within the scope of this paper, data related

to training and placement activities are presented in this paper. This SWOC analysis has been conducted in an engineering college located in the western part of India in the state of Maharashtra.

Findings: Findings indicate that there has been a significant improvement in the number of placements, average package and industry footfall following the implementation of the initiatives. Average placements increased by 36.03%, average package increased by 2.31%, maximum package increased by 40% and industry footfall increased by 35%. According to the recruiter feedback, a satisfactory increase of around 10 to 15% has been observed in the leadership skills, overall behaviour and sincerity of the students.

Limitations: The present study has considered only the activities related to training and placement cell for enhancing the employability skills and placements in the institute. A larger study including other categories needs to be undertaken.

Social Implications: The analysis is based on the opinion of the students, faculty, recruiters and actual values obtained after the implementation of the initiatives. Authors believe that a similar process with suitable modifications can be adopted to enhance the employability skills of students and placements of any educational institute.

Originality: This study is original in the sense that data is collected directly from the students. Further, in this study systematic mapping of SWOC analysis,

Ajinkya S. Joshi

K. K. Wagh Institute of Engineering Education and Research,
Nashik, Maharashtra, India
ajinkya_j@rediffmail.com

initiatives undertaken and outcome of these initiatives is being carried out. The outcome of this study will help the Management, Principal and other senior faculty in developing appropriate strategies for enhancing the employability skills and placements.

Keywords: Employability skills; Training and Placement; SWOC analysis; Higher Education; Global Competition; Quality Technical Education; Google Form; Google Sheets.

1. Introduction

Higher education plays an important role in nation building by providing the requisite skilled manpower. Reports indicate that across the globe, engineering is the most preferred career choice (Patil et al., 2020). However the National Employability Report 2019 points out that nearly 80% of the engineers are not fit for any type of employment or job. The number of Indian engineers that are equipped with the next generation skills is very low. Like any other developing countries, higher educational institutes in India are struggling in making their students employable and industry ready. In India, there are around 943 Universities 12 IIT's, 19 IIM's, 31 NIT's, 18 IIIT's and 5 ISR's. The total enrolment in higher education has been estimated to be around 37.4 million including 19.2 million male and 18.2 million female. Higher educational institutes in general and specifically technical colleges of India are working hard in making the students industry ready. In this context enhancing the employability skills and placements is very important. To cater this demand, majority of the technical institutes in India have already established a separate Training and Placement Cell. The objective of this cell is to train and provide job opportunities to the students during their course.

In order to survive the global competition, the educational institutes need to monitor needs of the stakeholders, predict requirements and take appropriate decisions. In this context SWOC analysis of any educational institute is very essential (Shahabadkar et. al., 2019). SWOC is strategic tool used to study and investigate system or a situation (Nasreen and Afzal, 2020). The term was initially labelled as "SWOT" where 'T' stood for 'Threat'. This has been replaced by "C" i.e. "Challenges" to create a more positive attitude.

Quality jobs through campus interview in turn lead to qualitative and quantitative admissions and helps in

branding of the institute (Shahabadkar et. al, 2005). Hence it is the need of the hour to clearly define the strategies and visions for the Training and Placement (T&P) Cell of the institutes with a mandate of providing industry ready students to society. Strategic planning of T&P Cell is to plan its activities for a period of 3 to 5 years to achieve an institutional objective of providing more and more employment opportunities to their students. Aim of the strategic planning is to analyse the internal and external factors through SWOC analysis.

In this era of technological driven and globalization of business, excellence in academics is not enough for getting the job. Students must also have good communication and presentation skills. It has been observed that a significant gap exists between the employers expected performance and actual performance of the students (Siddoo et. al., 2017). The employability of technical graduates is low (Tulsi and Poonia, 2015) and availability of properly trained engineering graduates is necessary for the technical progress and economic growth of the society (Kövesi and Kálmán, 2019).

Creating innovative appetite in the students through projects and internships in the industries enhances the employability and prosperity (Naik, 2017). There is a need to prepare engineering students for jobs in industry and this can be achieved by exposing the students to newer technologies and engineering methodologies. One of the approaches to tackle the problem of lacking job readiness in the Indian industries (or institutes) is to train the students for technical, aptitude and soft skills during their course from entry level. Role of industry in employability is very crucial (Iyer and Dave, 2015). Collaboration among all the stake holders of an educational institute is necessary to enhance the employability of the students (Matsouka and Mihail, 2016).

This study aims to understand the internal factors namely strengths, weaknesses and external factors namely opportunities and challenges of the training and placement cell. This study was conducted in an engineering college located in the western part of India in the state of Maharashtra. Based on the responses, a SWOC matrix was prepared and certain initiatives were undertaken to address the weakness and explore the opportunities. The impact of the initiatives has also been discussed.

2. Literature review

Although SWOC was initially developed for business; it is now widely used for all types of organizations including educational institutes. The strengths and weakness represent the internal factors that can be controlled to some extent whereas opportunities and challenges represent the external factors that are beyond the control of any organization (Aithal and Suresh kumar, 2015). SWOC analysis helps the institute for improving the teaching and learning, faculty performance as well as infrastructure improvements. It guides academic leaders in defining the road map and policies. A large number of researchers have conducted SWOC analysis for educational institutes. Work of few researchers relevant in the present context is presented here.

Rao (2014) carried out research to identify awareness about soft skills amongst students, bridge gap between industry and institute and find creative tools and techniques for promoting soft skills. Questionnaire containing open and close ended questions was designed and responses were obtained from students, faculty, industry and directors of educational institutions. The author observed that the problem of un-employability in Indian students was mainly due to lack of soft skills. Regular soft skill training programs must be arranged to improve employability. According to the researcher, the Training and Placement Officer (TPO) from engineering and management institute plays an important role in coordinating the stakeholders of the institute and bridging the gap between industry and institute.

Nasreen and Afzal, (2020) applied SWOC in Higher Education for understanding strengths, weakness, opportunities and challenges of the distance learning. Singh (2017) applied SWOC to define policies for higher education in India. A study to understand the perception of students about employability skills was undertaken in the State of Punjab, India (Chadha and Sachdeva, 2019). A questionnaire was designed and responses were obtained from 325 students of nine engineering, MBA and MCA institutes who were on the verge of obtaining an employment. The responses were analysed using ANOVA (one way) to determine whether gender affected the employability skills of respondents. Baring leadership and problem solving skills, significant difference was observed in rating of skills by male and female respondents.

Blicblau et. al. (2016) carried out a study to determine the impact of industry based learning on the academic grades of students from undergraduate Mechanical Engineering course. The researchers analysed the academic grades of the students over a two-year period. The data were analysed according to the set criteria by employing three different statistical methods. The outcome of the statistical tests indicates a positive relation between completing industry based learning and higher final year grades.

SWOT analysis for strategy formulation was undertaken at University of Warwick (Dyson, 2004). The researcher has introduced SWOC analysis and then linked it to different planning methods. The researcher points out that SWOT analysis can help in generating new strategic initiatives.

A study to understand the functioning of Training and Placement cells in private engineering colleges was carried out in the State of Karnataka, India (Angadi and Ravanavar, 2014). Data were collected through separate structured questionnaires from training and placement officers and final year students of 33 private engineering colleges. The study highlights the observation of TPO's and final year students about the placement cell of their respective institute. The article also lists best practices adopted by some of the institutions.

Several researchers have employed SWOC for strategic planning and overall development of the educational institutes. Based on the SWOC analysis, in the current study, an attempt has been made to introduce certain initiatives for improving the employability skills and placements. Impact of these initiatives has also been presented in the study.

3. Objective and Design of the Study

It has been observed that SWOT analysis is being used by the researchers for improving the education sector and defining new policies for the benefit of all stakeholders. SWOC is an effective tool and helps in generating new strategic initiatives. The objectives of the present study are as follows:

O1: To identify and investigate strengths, weaknesses, opportunities, and challenges of training and placement cell.

O2: To present initiatives undertaken by the institute based on SWOC analysis for improving the skills sets

of students and job opportunities through campus interviews.

O3: To investigate the effectiveness of the initiatives undertaken by the institute.

4. Methodology

This study was conducted at K. K. Wagh Institute of Engineering Education and Research, Nasik India. The institute established in 1984 is permanently affiliated to Savitribai Phule Pune University. The institute is accredited by National Board of Accreditation (NBA) and by NAAC with grade A. Every year around 1000 students take admission to this institute with 840 students at undergraduate, 150 at the post-graduate level and some at the doctoral level. Institute also secured 85th rank in 2016 National Institute Ranking Framework (NIRF) survey. The institute was in a process of developing a long term sustainable strategic plan to enhance the employability skills and job opportunities and hence SWOC study of the training and placement cell was undertaken.

It has been observed that most of the studies of SWOC analysis involve traditional ways in collecting and analysing the opinion of the respondents through group discussion, brain storming session, literature or paper based survey. In contrast, the present study employs IT tools like Google forms to collect and analyse data from the stakeholders. Besides impartial, accurate and quick responses, these tools ensure maximum participation and transparency as the researcher is not in direct contact with the respondent. Further, the respondent is also free to respond as per his/her convenience.

An online survey through Google form was designed by taking the inputs from Principal, Heads of Departments, TPO and senior faculty members of the institute. Survey consisted of both open ended and multiple choice questions. Multiple choice questions were designed to collect the respondent's details like branch, year, gender and whether the respondent is a staff or student. Further, open ended questions were designed to capture the strengths, weaknesses, opportunities and challenges of the training and placement cell of the institute.

5. Data collection

The required data for the study has been collected

from the students and staff. Both students and staff were made aware about the need of the activity. Email along with the covering letter along with Google form containing questionnaire was sent to around 2000 students and staff members. Population for the survey includes the students from second year to final year engineering as well as those from MBA and MCA. Students and staff were conveyed about the last date of the survey. Regular reminder emails were sent for enhancing students' participation in the survey.

Through these emails, importance of SWOC analysis was advocated to ensure maximum participation in the study. The first year students were excluded from the survey as they were the new entrants when the survey was conducted. Responses were obtained from 1087 staff and students. The characteristics of respondents are shown in table 1.

Table 1 : Characteristics of respondents

Respondent characteristics	Value
Total number of respondents	1087
Total number of staff participants	59
Total number of students participants	1028
Age group of students	18 – 20 years

Methodology adopted for the study is shown in Figure 1.

The collected survey data was analysed and SWOC matrix was prepared. Collected data were studied thoroughly and grouped under five categories namely:

- Institute and infrastructure
- Staff
- Teaching and Learning
- Training and Placement activities and
- Mechanism or policies for improvement

To remain within the scope of this article, study related to Training and Placement is presented in the following section.

6. SWOC Analysis

Findings of the SWOC analysis reveal that institute is having good number of placements, better career launch opportunities, quality placements, adequate number of companies for campus placements, proper mentoring of students and good industry-institute interactions. Weaknesses include limited number of recruiters for some branches, absence of few multinational giants for campus interviews and not having an internship model under affiliating university for engineering students. Based on strengths, weakness, opportunities and challenges a matrix prepared and is shown in the Table 2.

The analysis indicates that the institute has a great opportunity for making the students industry ready. Because of its location, it is a challenge to bring more companies for campus interview. Providing campus placements to all eligible students is the toughest challenge faced by the institute.

Table 2 : SWOC matrix for training and placement activities

Strengths	Weaknesses
S1. Better career launch through Placement cell	W1. Limited recruiters for some branches
S2. Adequate number of companies for campus interview	W2. Prominent industries such as Microsoft, Google and Ford are not visiting the institute
S3. Proper mentoring of students throughout the course	W3. Not having an Internship model under affiliating University for engineering students
S4. Good industry and institute interactions and company specific employability enhancement training program	
S5. Quality students with good marks in the qualifying examinations	
S6. Fully dedicated and state of the art facilities for conducting the training and placement activities	
S7. Dedicated and qualified staff	
Opportunities	Challenges
O1. Inviting highly reputed industries to institute for conducting the campus interview	C1. Providing 100% placements is the toughest challenge for the institute
O2. For making the students more industry ready	C2. To provide quality jobs (higher package) through campus interview
O3. Opportunity to improve the soft skills of the students and make them ready to face interviews	C3. Increasing internship opportunities
	C4. Inculcating soft skills in the students from rural background

7. Initiatives undertaken after conducting SWOC

The SWOC analysis was presented to the top management and detailed discussions were carried out. Based on the guidelines, certain initiatives were undertaken by the institute to address the weakness and to overcome challenges and to explore the opportunities. The strengths, weaknesses, opportunities and challenges were carefully mapped with the initiatives launched by the institute. Mapping of these initiatives with the SWOC is shown in the table 3. The outcome of these initiatives has been discussed in section 8.

The initiatives undertaken by the institute are summarized as follows:

7.1 Appointing additional support staff

A regular training and placement officer is already available in the institute. To meet the challenges, additional support staff was allocated to the training and placement section. This includes an assistant T&P officer and an attendant. In addition to this appointment, a committee of staff members (one from each department) was constituted to assist the T&P section in arranging various training programs for students either in-house or through external experts.

7.2 Networking with industries

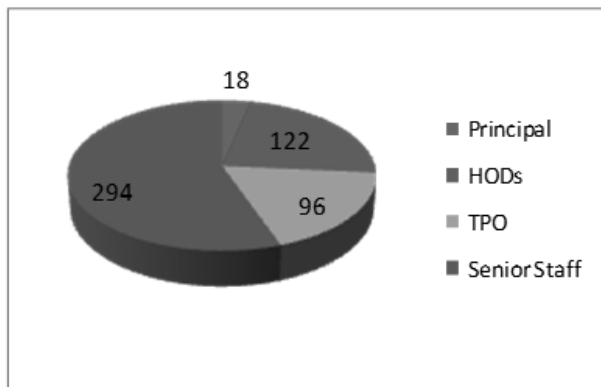
With an objective of inviting more and also reputed industries to the campus for conducting interviews, the institute has obtained membership of various industrial organizations like CII (Confederation of Indian Industries), NIMA (Nashik Industries & Manufacturers Association) and AIMA (Ambad Industrial Manufacturers Association). To strengthen the industry institute interaction, leaders of the institute: Principal, Heads of Departments, T&P Officer and senior staff are regularly visiting industries. Summary of such industrial visits during AY 2018 and 2019 is given in Figure 3. MOU's were also signed with industries to enhance student and staff training.

7.3 Infrastructure for T&P cell

Institute has developed a good infrastructure for arranging Training and Placement activities. This dedicated infrastructure named as "Dr. A P J Abdul Kalam Career Development Centre" is spread over an area of 5078 sq. ft. Two computer labs with 77

Table 3 : Mapping Matrix: SWOC with initiatives

SWOC	Initiatives undertaken by the institute							
	Appointment of additional manpower	Networking with Industries	Infrastructure for T&P Cell	Increasing number of eligible students	Employability enhancement training programs	Training on Aptitude Tests	CV Witting Workshops	HR Connects
Strengths	S3, S4, S7	S2, S4	S2, S6	S1, S2, S5	S1, S3	S1	S1, S3	S4
Weakness	W1, W2							
Opportunities	O1			O2	O2, O3	O2	O2, O3	O1
Challenges	C1, C2, C3				C4	C4		C1, C3

**Fig. 3 : Summary of industrial visits by faculty during 2018 and 2019**

computers of latest configuration have been established for conducting the online tests aptitude tests. The Wi-Fi enabled centre is also equipped with video conferencing facility to conduct online HR and technical interview. Through this Video conferencing, students are being trained virtually for technical and soft skills by industry experts.

7.4 Increasing the number of eligible students

Every company specifies some minimum academic marks as eligibility criteria to participate in the campus interview. Such criteria include first class, aggregate first class and no year drop. To sensitise the importance of consistent academic marks, TPO connects were held from the first year first semester. This has helped students to understand the eligibility criteria of various companies in the first year itself. This has sensitised the importance of consistent academic marks among the students.

7.5 Employability enhancement programs

With an objective of making the students industry ready, a unique training module for enhancing

employability skills from first year to final year was designed and implemented. This training module and its qualitative outcome are detailed in the table 4. Quantitative outcome of these training modules has been discussed in section 8. The primary objective of this training module was to train the students from first year itself.

7.6 Conducting online practice tests

With an objective of making the students industry ready, online practice tests are provided to the students through a web based tool. Results and analysis of these tests are made available to the students immediately.

Table 4 : Impact of training module

Class	Name of the programme	Qualitative Outcome
First Year Engineering (FE)	TPO connect and expert seminars / workshops	Students became aware about: • Training and Placement Cell and its activities • Details of the visiting companies and their eligibility criteria • Importance of academic marks / percentage
Second Year Engineering (SE)	“Team building and motivational” workshops	Students were trained for public speaking, group activity and SWOC analysis
Third Year Engineering (TE)	Structured training programs (60 to 70 hours) HR Connect	Students were trained for Aptitude Test, MOCK Tests and Soft Skills Students became aware about industry expectations
Final Year Engineering (BE)	Company specific training Programming skills and post selection training	Students got prepared for placements / mock aptitude tests / mock interviews Made the students industry ready

7.7 CV writing and mock interview sessions

CV writing and mock interview sessions are conducted for final year students with an objective of helping them to prepare their CV's and also to hone their interview skills. Industry experts are invited to college regularly to conduct these sessions.

7.8 HR connect

HR Managers from various industries are invited regularly to the institute and a platform is provided to the students to interact with these managers. The aim of these HR Connect is to make the students aware about industry expectations from the fresh graduates and also to make the students aware about selection process of the industries.

8. Outcome of initiatives

This SWOC study prompted the institute to undertake new initiatives. The benefits obtained after implementation of the initiatives have been discussed in this section. The average values for feedback of AY 2014-15 and 2015-16 have been labeled as pre-feedback while the average values of feedback for AY 2016-17, 2017-18 and 2018-19 have been labeled as post feedback.

a. Increase in placements

By implementing this new training module the institute was able to provide more job opportunities and placements through the campus interview. The average values for placement for pre and post implementation of initiatives is as shown in table 5. Average placements have increased the placements by 36.03%. This indicates that the initiatives have helped the institute to increase the placements to a considerable extent.

b. Increase in package

In the changing scenario, companies are recruiting the freshers with a variable package depending on the performance and capability of the students. There has been an upward shift in the maximum package following the introduction of the training program. Figures indicate that the maximum package has improved by 40%. However the increase in the average package is very less and stands at 2.31%.

c. Increase in industry footfall

Initiatives undertaken by the institute especially visit of the senior faculty to the industry has led to an increase in the number of companies visiting the institute for placements. The number of companies visiting the institute for placements rose to 114 indicating a rise of 35%. This in turn has led to the increase in the placements indicating a need for liaison with the industry.

Table 5 : Average values for placement - pre and post implementation of initiatives

Parameter	Pre implementation Status	Post implementation Status	Percent Change
Number of Placements	408	555	36.03
Maximum Package	10	14	40.00
Average package	3.47	3.55	2.31
Number of Companies visiting for the campus interview	84	114	35.00

a. Improvement in Skill sets of Student

The institute obtains feedback from its recruiters on a regular basis. To understand the effectiveness of the initiatives, recruiter's feedback conducted before and after the SWOC analysis have been compared and presented in this section.

A structured questionnaire was used to collect recruiter feedback. The objective of this feedback was to understand the technical, aptitude, communication skills, the overall behaviour of students during the campus interview and adequacy of the infrastructural facilities extended by the institute in conducting the campus interviews. The comparison for pre and post recruiter feedback for changes in student skill sets have been shown in table 6.

According to the recruiter feedback, satisfactory increase from 10 to 15% has been observed in the leadership skills, overall behavior and sincerity of the students. It appears that the initiatives launched by the institute have certainly benefited in enhancing the employability skills and placements of the students. The mapping of the initiatives with the outcome is shown in table 7.

9. Conclusion

Through this study, an attempt has been made to

enhance the employability skills and placements of the institute. Mapping of the initiatives with the SWOC and the outcome indicates the purpose and usefulness of these initiatives.

Results indicate that there is a significant increase in the placements, number of industries visiting the institute for campus placements and increase in the maximum package received by the students. Post implementation figures indicate a rise of 36.03% in average placements, a rise of 2.31% in average package, increase of 40% in the maximum package and increase of 35% in the industry footfall.

Recruiter feedback shows an increase in the leadership skills, overall behaviour and sincerity of the students by 10 to 15%. However, the institute needs to focus its attention on additional improvement in certain skill sets such as group discussion, communication skills, aptitude and technical skills. At

the same time, the increase in the average package of 2.31 lakhs appears to be very less and cannot be attributed alone to the institute initiatives. In this context the institute may consider refining its training module and placement activities from time to time.

In order to augment the employability skills and placements, authors feel that a similar methodology and study may be adopted for other educational institutes with suitable modifications.

Acknowledgments

The authors gratefully acknowledge the Management of K. K. Wagh Institute of Engineering Education and Research, members of Think Tank Committee, students, administrative staff and colleagues in general for their cooperation and support for the study.

**Table 6 : Comparison of recruiter feedback for student skill set on a scale of 5
(1 represents lowest level and 5 represent highest level)**

Year	Technical Skills	Aptitude Test Performance	Communication Skills	Leadership Qualities	Participation in GD	Appearance and Dress Code	Sincerity	Overall behavior during the drive
Pre SWOC feedback (Average for 2014-15 and 2015-16)	3.08	3.03	2.94	2.73	3.23	3.08	3.32	3.24
Post SWOC feedback (Average for 2016-17, 2017-18 and 2018-19)	3.31	3.21	3.05	3.16	3.27	3.38	3.67	3.72
Percentage Change	+ 7.47	+ 5.94	+ 3.74	+ 15.75	+ 1.24	+ 9.74	+ 10.54	+ 14.81

Table 7 : Mapping of institute initiatives with the outcome

Initiatives	Outcome			
	Number of Companies Visiting to the institute	Number of Students Selected through Campus Interview	Package	Student Skill Sets
Appointment of Additional Manpower	√	√	√	√
Networking with Industries	√	√	√	√
Infrastructure for T&P Cell	√			
Increasing the Number of Eligible Students	√	√		√
Employability Enhancement Training Programs	√	√	√	√
Training on Aptitude Tests		√	√	√
CV Witting Workshops		√	√	√
HR Connects		√	√	√

References

- [1] Aithal, P. S. and Suresh Kumar P. M. (2015), Applying SWOC analysis to an institution of higher education, *International Journal of Management, IT and Engineering*, 5(7), pp. 231-247.
- [2] Angadi, S. S. and Ravanavar, G. M. (2014), Study and analysis of training and placement cells in engineering colleges, *International Journal of Management, IT and Engineering*, 4(10), pp. 162-175.
- [3] Blicblau, A. S., Nelson, T. L. and Dini, K. (2016), The role of work placement in engineering students, *Asia-Pacific Journal of Cooperative Education*, 17(1), pp. 31-34.
- [4] Chadha, V. and Sachdeva, H. (2019), Students' Perceptions of Employability: A Gender Perspective, *Arthshastra Indian Journal of Economics & Research*, January-February 2019, pp. 23-37. doi: 10.17010/aijer/2019/v8i1/142712
- [5] Dyson, R. G. (2004), Strategic development and SWOT analysis at the University of Warwick, *European Journal of Operational Research*, 152, pp. 631-640.
- [6] Iyer, V. M. and Dave, K. (2015), Industry's role in employability, *Industrial and Commercial Training*, 47(3), pp. 151-158.
- [7] Klara Kövesi & Anikó Kálmán (2019), How to manage the study-to-work transition? a comparative study of Hungarian and French graduate engineering students' perception of their employability, *European Journal of Engineering Education*, DOI: 10.1080/03043797.2019.1622654
- [8] Matsouka, K. and Mihail, D. M. (2016), Graduates' employability: What do graduates and employers think?, *Industry and Higher Education*, 30(5), pp. 321-326.
- [9] Naik, B. M. (2017), Enhancing Employability, Innovation, Entrepreneurship and Creativity in Changing World, *Journal of Engineering Education Transformations*, 30(4), pp. 84-91.
- [10] Nasreen, K. and Afzal, M. T. (2020), Strengths, weakness, opportunities and threats in higher education: a SWOT analysis of Allama Iqbal Open University Islamabad (Pakistan), *Asian Association of Open Universities Journal*, In Press, DOI: <https://doi.org/10.1108/AAOUJ-11-2019-0052>
- [11] National Employability Report 2019, 'Aspiring Minds', https://www.aspiringminds.com/wp-content/uploads/2019/05/NER_Engineer_2019-V5 last accessed 10th December 2020.
- [12] Patil, V. K., Joshi, A. S. and Kadave, P. T. (2020), Role of Stakeholders in Improving Indian Engineering Education Ecosystem, in *Glimpses of Engineering and Technology in the Modern World*, Virudhunagar Hindu Nadars' Senthikumara Nadar College, Virudhunagar, Tamil Nadu, pp. 29-39. ISBN: 978-81-942052-7-2
- [13] Rao, M. S. (2014), Enhancing employability in engineering and management students through soft skills, *Industrial and Commercial Training*, 46(1), pp. 42-48.
- [14] Shahabadkar, P. K., Joshi, A. S., and Nandurkar, K. N. (2019), Developing IT Enabled Mechanism for SWOC Analysis: A Case Study. *Proceedings of the 2nd International Conference on Manufacturing Excellence (ICMAX-2019)*, February 15-16, 2019, pp. 158-164. ISBN: 978-93-88441-69-8.
- [15] Shahabadkar, P. K., Nandurkar, K. N., and Shahabadkar, P. (2005), Changing The Nature Of College Through Co-operative Learning - A Case Study, *Journal of Engineering Education*, 18(4), pp. 56-63.
- [16] Siddoo, V., Sawattawee, J., Janchai, W. and Yodmongkol, P. (2017), Exploring the competency gap of IT students in Thailand: the employers' view of an effective workforce, *Journal of Technical Education and Training*, 9(2), pp. 1-15.
- [17] Tulsi, P. K. and Poonia, M. P. (2015), Expectations of Industry from Technical Graduates: Implications for Curriculum and Instructional Processes, *Journal of Engineering Education Transformations*, Special Issue January 2015, pp. 19-24.