

Key Performance Indicators of Employability of Graduating Engineers from an Engineering College in Oman

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Abstract— Key performance indicators (KPIs) provide parameters for measuring the results of an organization. However, if the performance indicator is qualitative in nature, such as the employability of recent graduates from an engineering college, the task is more complex. This kind of measurement calls for an assessment of the need for such KPIs, the practices of the college and an understanding of the process for implementing the identified KPIs. KPIs are normally numerical measurements that can be linked to a performed task, but the spirit of the task should not be captured only in numbers. This study was done in a college located in Muscat, Oman, where the implementation of KPIs is currently in a nascent state and is initiated and supported by the Ministry of Education. There is a wide range of stakeholders in higher education, including the students, students' parents, the staff of the college, the management of the college, the government, the employers and even the society in which the college is located. However, this paper considers only the immediate stakeholders - the students, the staff and the college administration - focusing more on the college and its contribution to the employment of its graduating students. The responsibility is perhaps equal for all three stakeholders in their contribution towards graduates' employability, but as per the KPIs identified, the college administration has more tasks to perform in the process.

Keywords– KPIs, Employability and Graduating Engineers

I. INTRODUCTION

It is becoming an increasing concern for engineering colleges to get their graduating engineers suitably employed within an acceptable span of time after they complete their studies.

This paper examines the employability of graduating engineers from a private engineering college in the Sultanate of Oman and explores the opportunities provided to graduates by the staff and the management of the college.

According to Al-Shaibany (2012), unemployment among Omani citizens exceeded 24 per cent in 2010. It is in this context that we have to analyse the skill sets of graduating engineers ready for employment from engineering colleges in Oman.

“Employability has been defined as ‘a set of achievements skills, understandings and personal attributes – that make graduates more likely to gain employment and be successful in their chosen occupations.’ These skills include: communication, leadership, problem solving and team working” (The Higher Education Academy Engineering Subject Centre, 2011).

As reported by Ariyawansa (2008), even if one of the main objectives of higher education is to improve students' skills to face the challenges of society at large, many of them leave the university without having sufficient self-confidence and assurance for successful employment.

The employability of graduating students depends on the contributions of the three main stakeholders, namely the students, staff and the management of the college. The contributions of these stakeholders can be measured by a few key performance indicators (KPIs), which can translate the qualitative aspects of the contributions to quantitative ones.

However, there is no one clear answer to the question of employment of recent engineering graduates.

With this background in mind, this paper seeks to identify set of KPIs for the three main stakeholders. From these identified KPIs, it is possible to initiate actions to improve performances and increase the employability of graduating students.

The employability of graduating students, in its generic form, appears to have common ingredients that are not region specific. The Presidential Committee in Sri Lanka appointed to identify problems of graduates found three main reasons for the graduates' unemployment problem: “negative attitudes,” “lack of communication skills,” and “lack of English knowledge” These traits appear to be common among recent graduates in Oman as well.

A study by Gallaher (1989) focuses on the learning difficulties of Arab students in a medical college in Saudi Arabia. The author mentions that the difficulties of medical students in coping with English were multifaceted, pervasive and persistent.

Jewels and Albon (2012) rightly point out that many university teachers assume that there is a correlation between language competency and success at a university; however, it

is probably inconsiderate to believe that the language competency alone leads to better learning outcomes.

II. METHODOLOGY

This study was done in a private engineering college in Muscat, Oman. At the time of this writing, in 2013, the college has more than 3,000 students. The elements used in identifying the KPIs include the modules offered by the college, additional employment training for graduating students, the resources provided by the administration to increase employment opportunities for students.

The three main stakeholders considered are the students, the teaching staff and the college administration.

The college has a student services department in which graduating students seeking employment can register with their post-graduation contact details. The staff members arrange several industrial visits for students before graduation. In addition, students have the opportunity to take a refresher course titled "Finishing School" immediately after their final-year exams. Furthermore, the college administration invites companies in Oman to participate in a career fair, where students are encouraged to interact directly with the participating companies and submit applications for employment.

All these factors are taken into consideration for identifying the KPIs for the stakeholders.

III. DEVELOPING KPIS FOR EMPLOYABILITY-FROM STUDENTS PERSPECTIVE

Graduating students looking for employment should try to improve their skill sets, beginning with self-reflection and a clear assessment of their own skills and need for self-improvement

However, a survey conducted at the college in 2012 found that students do not show much enthusiasm for improving their English communication skills — one of the critical factors in getting a job after graduation. It is disconcerting to note that one-third of the respondents lack the motivation to improve their language skills. The cause for the lack of motivation is the need to learn the English language in Arab society.

The lack of interest or motivation can also be ascribed to the need to communicate in a society in a language other than their own (Arabic). In the case of the Arab world, native Arabic speakers have few opportunities to use the foreign language in their society. As a result, many problems occur when they study at a university where the language of instruction is a foreign one such as English as per the author, Al Khasawneh, (2010).

Froilan (2009) has a different take on the matter, claiming that Arabic speakers who communicate mostly in their mother tongue should not be blamed for being slow to develop skills in English. According to the author, the ineffective teaching and learning process also contributes to this general problem. In perspective, if a student spends four years or more in a

professional college where the language of instruction is English, and still their English language ability leaves much to be desired, then Froilan's notion definitely needs a closer look.

Whether it is the lack of motivation or the curriculum or the teaching, the goal remains same— that is, students should find jobs after graduation without long periods of waiting.

The following KPIs give an indication of the effectiveness of the employment opportunities offered to the students. The KPIs are given codes for differentiating the three different stakeholders' key performance measures.

TABLE 1
KPIs – STUDENTS' PERSPECTIVE

No.	Indicator / KPI Code	KPI Measurement
1	Graduate students' availability for employment/ST1	ST1.1/Number of students registering with college for employment. ST1.2/Percentage of students registering as compared to the number of graduates.
2	Graduate finishing school programs/ST2 (The college conducts intensive 10-day training programs for graduating students.)	ST2.1/Number of students attending finishing school programs of the college. ST2.2/Percentage of students attending the finishing programs (with total number of graduate students).
3	Job fairs/ST3 (The college organizes career/job fairs, inviting companies interested in employing graduates.)	ST3.1/Number of graduate students attending the job fair. ST3.2/Percentage of students attending the job fair, compared to the graduating student population. ST3.3/Number of student applications submitted for jobs. ST3.4/Number employed due to job fair (within 6 months after job fair).
4	Student internship during the program/ST4	ST4.1/Number of students completing an internship. ST4.2/Percentage of students completing internship (compared to total students in the final year).

IV. KPIS FOR EMPLOYABILITY OF THE GRADUATES- FROM STAFF PERSPECTIVE

The teaching staff's contribution to students' employability is reflected in the students' performance at the time of their interview assessment by the employer. In addition to

classroom teachings, it is important that the students get exposure to the job market through regular industrial visits.

As Shamel et al. (n.d.) report, the industrial visits provide the students and programs with “dynamic,” real-time feedback that is very useful to the program. The authors suggest a methodology in which the teaching staff informs the students of the industrial processes, the equipment’s applications and safety precautions before visiting an industrial site. After the visit, students’ understanding of the visit is assessed. This way, the students’ learning is authenticated by practical application and exposure. The teaching staff can make the industrial visits truly effective by giving the students proper input and by adopting an appropriate methodology of pre- and post-visit assessment.

It is important that each teaching department (three departments in the case of the college under consideration) organizes such industrial visits for the students, and these criteria form the basis for the staff KPI.

TABLE 2
KPIs –STAFFS’PERSPECTIVE

No.	Indicator / KPI Code	KPI Measurement
1	Industrial visits of students with teaching staff./STF1	STF1.1/Number of industrial visits organized by Mechanical and Industrial Engineering department. STF1.2/Electronics and Computer Engineering department. STF1.3/Built and Natural Engineering department.

The emphasis in this research is not just on identifying KPIs but also on monitoring of KPIs by the management so that the KPIs importance is realized by everyone linked to them.

In the case of some KPIs, it is possible that the system itself needs to be improved. For instance, in the case of KPIs relating to industrial visits (Code Staff – STF 1.1 to 1.3), the spirit of the KPI hinges on the knowledge gained by the students after the industrial site visit. Keeping track of the number of visits alone is not going to be beneficial either to the teaching institution or the students.

The teaching staff should ensure a system of assessment before and after the visit so that the number of visits effectively reflects a possible increase in students’ generic skills. This kind of linkage is to be analyzed and established for each of the KPIs.

V. KPIs FOR ENHANCING THE EMPLOYABILITY OF THE GRADUATES- FROM MANAGERMENTS’ PERSPECTIVE

As reported by Harvey et al. (cited in Crebert, 1999), employers expect graduates to function in the workplace, be confident communicators, good team players, critical thinkers and problem solvers, as well as adaptive and transformative, capable of initiating as well as responding to change.

It would be difficult for any college or university to

guarantee that all students can obtain the skills expected by employers. However, it is the college administration’s responsibility to ensure that students are given ample opportunities to learn the skills that employers demand.

Only a highly proactive management could provide opportunities to the graduating students enough employment opportunities.

The KPIs listed here reflect the opportunities provided by the college to the students to learn generic skills and be ready to meet employers’ expectations.

TABLE 3
KPIs –MANAGERMENTS’PERSPECTIVE

No	Indicator / KPI Code	KPI Measurement
1	Employment opportunities generated by the management of the institute/M1	M1.1/Number of companies participating in the job fair. M1.2/Percent increase in participation compared to previous year.
2.	Interaction with industry/M2	M2.1/Number of occasions when college invited industrial personnel for interaction with students/staff/management. M2.2/Number of different industrial personnel visiting college for interaction with students/staff/management.
3	Internships for students/M3	M3.1/Number of companies providing internship to the students

VI. KPI LINKS

These KPIs are most successful and useful when they are embedded in the college system and all the stakeholders are aware of the preparation and links that are required prior to their installation.

The term “KPI links” is used here to highlight that certain actionable steps have to be taken to ensure that the KPIs themselves become effective instruments of measurement. This term has not been used earlier in any other literature that the author found so far.

For instance, each of the KPIs listed above relies on certain elements or links. The KPI table drawn here illustrates these elements or links with the KPIs identified.

VII. GRADUATE STUDENTS’ AVAILABILITY- KPI LINKS

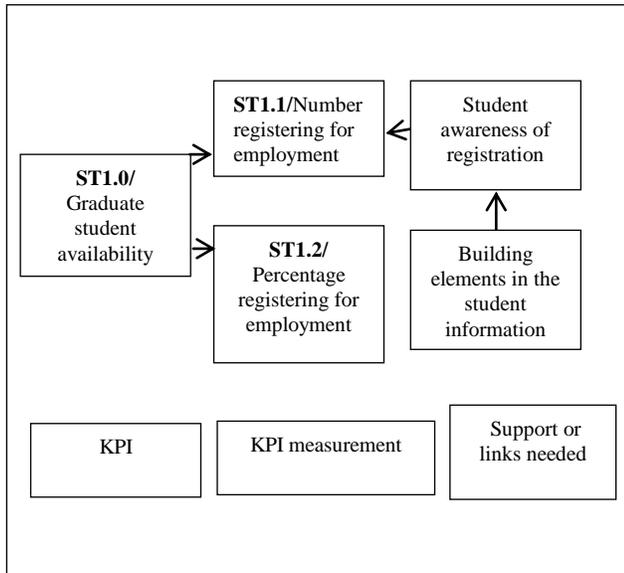
The KPI with its necessary prior links is illustrated in the following figure for the KPI identified by code ST1.0.

Figure 1 shows the importance of creating a proper student awareness system. At present the college is not having such a system. A finishing school training or a job fair arrangement or making the students aware of any employment opportunity is solely done through notice boards mails or announcements in the class.

A web page created in the college portal for communicating

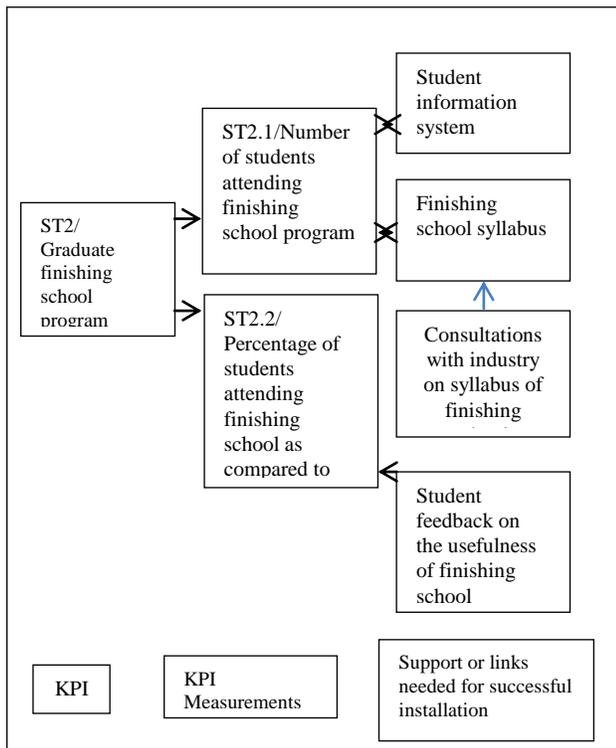
with the students about the job opportunities available could enhance the student participation.

FIGURE 1
KPI LINKS FOR GRADUATE STUDENT AVAILABILITY



VIII. GRADUATE FINISHING PROGRAM- KPI LINKS

FIGURE 2
KPI LINKS FOR GRADUATE FINISHING PROGRAM



From the above two KPI links figures, it must be clear that

unless the linking building blocks are in place (support links needed for successful installation), the KPIs' effectiveness will be very much muted.

Students must be able to access other students' feedback as well, which can motivate them to participate and make the feedback more dynamic. There should be staff assigned to give answers to students' feedback. This kind of system could prove very useful and may lead to more positive participation by the students in such activities as the finishing school.

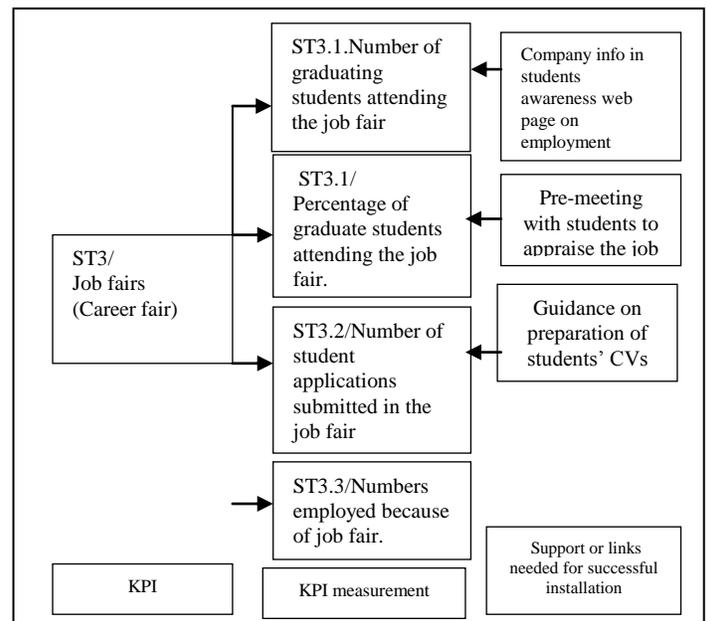
IX. JOB FAIRS- KPI LINKS

Many universities in the West prepare their students as to how to approach the companies at a job fair. For example, in the United States, Virginia Polytechnic Institute and State University, commonly known as Virginia Tech, advised its students not to talk about salary and benefits straight away but to let the employer initiate that discussion. According to Virginia Tech, the job fair is not the appropriate place to start discussion about the compensation package.

The context can be different for Oman, and so the organizing staff should be able to brief the students in the appropriate manner before they meet company executives at the job fair.

The KPI links relating to the Job fairs from the students perspective is given below:

FIGURE 3
KPI LINKS FOR JOB FAIRS



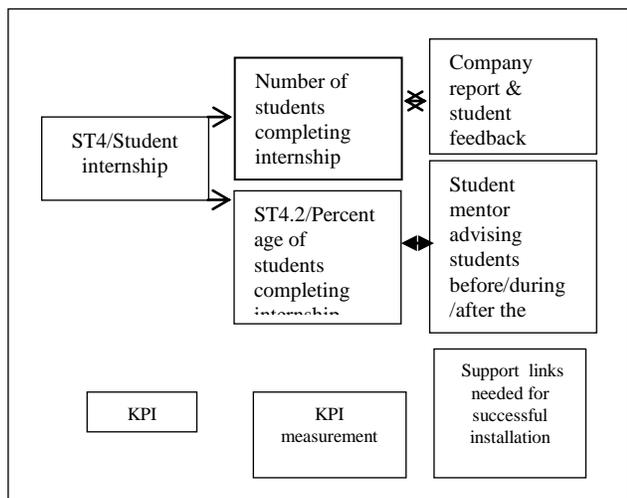
X. STUDENT INTERNSHIP- KPI LINKS

According to Abrams (2011), the internship is not just a training ground for students, or an opportunity for employers to get some work done on the cheap. Increasingly, employers

are drawing all their hires from their internship programs. The idea of an internship is not to create jobs, but to improve employability (Ramya, 2013). It is imperative, then, that all students graduating are placed as interns prior to graduation.

In the college in which this study was done, internship is not compulsory for all students.

FIGURE 4
KPI LINKS FOR STUDENT INTERNSHIP

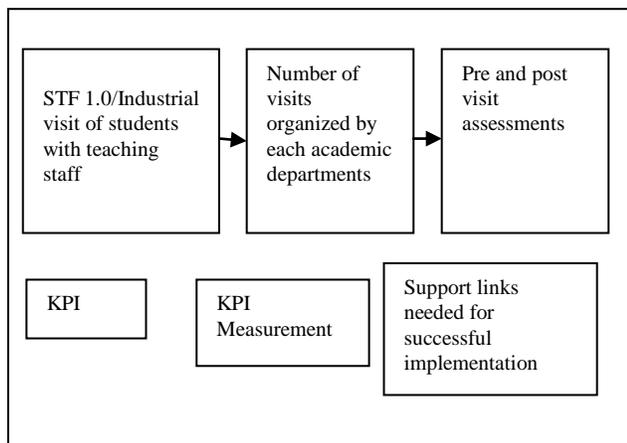


If the students are to get the full benefit of employment opportunities, then it is necessary that the college considers making internship compulsory for all students.

As this may be the first time students will take up a job-like commitment, the college should have a process to guide the students through the internship process by properly informing them beforehand and receiving their assessment afterwards.

XI. INDUSTRIAL SITE VISITS ARRANGED BY STAFF- KPI LINKS

FIGURE 5
KPI LINKS FOR INDUSTRIAL VISITS



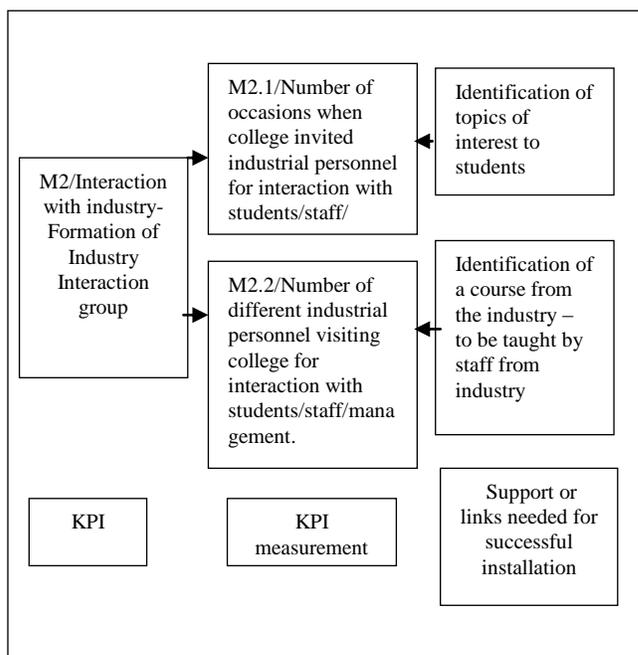
The students will realize the benefit of the industrial visit only if the staff organizing the visit ensure that the students get full information and knowledge by pre and post visit briefing and also follow it up by post visit assessments.

XII. KPI LINKS FOR COLLEGE MANAGEMENT

Students are driven by their desire to get employment, and the college administration should be attuned to this aspiration by creating a climate that is conducive and supportive of it. Job fairs are not the sole route towards this goal, but continuous contact with industries is essential.

Realizing this, the college has formed an industry interaction group and holds regular meetings with industry members. These interactions should also mature into regular class meetings and lectures for students.

FIGURE 6
KPI LINKS FOR INDUSTRY INTERACTION



Edmondson (2012) talks about transactional partnerships that are lesser interactions, such as an executive agreeing to teach a course, which may lead to doing more and bigger projects together with the industry in the future.

XIII. SUMMARY AND CONCLUSIONS

Based on the KPIs and the KPI links in this chapter, the following specific suggestions were made to the college:

1. Creation of an interactive web page in the college portal for students' employment.
2. All graduating students seeking assistance from the college for employment should register at the web page. (Working students or students going in for higher studies may not register.) This would also give a clear idea for KPI

monitoring.

3. Part of the interactive web page should include separate pages for:

3.1. Finishing school:

i.) Finishing school – date of commencement, duration and syllabus.

ii.) Interested students should be able to register online for the finishing school (Facilitates monitoring of KPI).

iii.) Students should be able to give the feedback to the college for further improvement.

3.2. Job fair or career fair:

i.) List of companies taking part in the fair (Facilitates monitoring of KPI).

ii.) Brief about the companies.

iii.) Student skill set required by the companies.

4. The companies should be able to access a web page in the college portal to indicate their requirement of students at any point in time — before, during and after the job fair.

6. Each and every student having an internship should be under the guidance of an academic advisor who should be able to advise the students about possible expectations and address any misgivings students may have.

7. On similar lines, the college should also make the industrial visits more effective for students. Staff should perform assessments before and after the event.

It is important to note here that the formulation and development of KPIs led to these suggestions and their possible assessment after implementation.

The aforesaid recommendations were also discussed at the learning and Teaching committee meeting and all these recommendations were accepted for possible implementation.

The whole picture that emerges out of this research paper is that KPIs and KPIs links if monitored closely could become beneficial to the graduating students of the college.

It is also possible to take up each issue that has long term ramifications- like for instance, strategy and innovation in learning and teaching- study the issues with reference to KPIs and KPI links and monitor them for very creative and positive impacts.

Strategic Development.

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