

Employers' Needs for Employability Skills of Engineering Graduates in Indonesia

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Abstract - Employers hire people with the technical or work-specific skills required to do the job. But they're also looking for an additional set of skills that they often consider just as important—employability skills. This study was conducted to examine the employer's needs about the employability skills of engineering graduates in Indonesia. Data obtained by examining 250 job advertisements from companies that need workers in the fields of engineering, including electrical engineering, mechanical/automotive engineering, chemical engineering, industrial engineering, and oil/gas engineering. Selected companies are companies operating in Indonesia that provide salary above the minimum wage. The results of the study showed no statistically significant difference in the employability skills needs among the various types of engineering fields. The study finds that beyond the work-specific skills, foreign languages (especially English), communications, and computer/ICT skills was the skills of the most expected by employers for graduates of engineering colleges/schools in Indonesia. The study also found that the ability to use MS Office and Autocad was the most expected computer/ICT skills.

Index Terms - employability skills, engineering graduates.

1. Introduction

According to data from Badan Pusat Statistik (BPS - Statistics Indonesia), the number of unemployed in Indonesia in August 2013 reached 7.4 million people, with open unemployment rate¹ of 6.25%. This number has increased compared to February 2013 (5.92%) and August 2012 (6.14%). The highest open unemployment rates are recorded for graduates from Vocational High School (Sekolah Menengah Kejuruan - SMK) and Senior High School (Sekolah Menengah Atas - SMA). The complete data is given in Table I.

One of the reasons why many students continue their studies at university is to enhance their employment prospects. However, while good academic qualifications are highly valued, they no longer seem to be sufficient to secure employment [1]. Due to technological developments and the expanding international orientation of many companies, labour market demands have changed. Traditional 'hard' selection criteria like educational background still count, but are not sufficient anymore. Many argue that individual, 'soft' personality characteristics have become increasingly important, because the workers need to be more flexible to

keep up with the continuous changes and developments [2]. This leads to changes in the personnel selection process where progressively the emphasis is put on so-called soft factors like communication skills and certain personality traits [3].

TABLE I.
UNEMPLOYMENT RATE OF POPULATION AGED 15 YEARS
AND OVER BY EDUCATIONAL ATTAINMENT, 2012-2013
(PERCENT)

Educational Attainment	2012		2013	
	February	August	February	August
(1)	(2)	(3)	(4)	(5)
≤ Elementary School	3.69	3.64	3.61	3.51
Junior High School	7.80	7.76	8.24	7.60
Senior High School	10.34	9.60	9.39	9.74
Vocational High School	9.51	9.87	7.68	11.19
Diploma I/II/III	7.50	6.21	5.65	6.01
University	6.95	5.91	5.04	5.50
Total	6.32	6.14	5.92	6.25

Source: Badan Pusat Statistik [4]

Turns out, the skills and education recent college graduates acquired during their time on campus might not be serving them well when it comes to proving their worth to potential employers. As written by Vasel in Fox Business [5], "According to a 2013 study by American Express (AXP) and Gen Y research firm Millennial Branding, managers have an overall negative view of young workers, and point to their lack of soft skills regarding communication and interpersonal interactions, time management abilities and willingness to work as a team".

A survey by York College of Pennsylvania's Center for Professional Excellence shows that many college faculty members do not think upperclassmen show a level of professionalism expected in today's working world. Almost 40% of faculty responded that less than half of students demonstrate professionalism. But these skills are hard to teach in a classroom setting, and tend to come with office-like experience whether it's from an internship, volunteer work, participating in student organizations or part-time jobs [5].

¹ Open unemployment is a condition in which people have no work to do. They are able to work and are also willing to work but there is no work for them. The unemployment rate is the number of people unemployed as a percentage of the labour force.

2. Employability Skills

A. Definitions

The ILO defines employability skills as:

... the skills, knowledge and competencies that enhance a worker's ability to secure and retain a job, progress at work and cope with change, secure another job if he/she so wishes or has been laid off and enter more easily into the labour market at different periods of the life cycle. Individuals are most employable when they have broad-based education and training, basic and portable high-level skills, including teamwork, problem solving, information and communications technology (ICT) and communication and language skills. This combination of skills enables them to adapt to changes in the world of work.

York [1] defines employability skills as “a set of achievements — skills, understandings and personal attributes — that make graduates more likely to gain employment and to be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy.”

In Australia, employability skills are based on ten skill areas, recognised in the Core Skills for Work Developmental Framework (CSfW). Each skill area is grouped under a general skill category, which relate to the ability to navigate the world of work, interact and communicate with others in work environments, and get work done.

The UK Commission for Employment and Skills report ‘The Employability Challenge’ [6] has drawn on the most commonly used definitions of employability: “We take employability skills to be the skills almost everyone needs to do almost any job. They are the skills that must be present to enable an individual to use the more specific knowledge and technical skills that their particular workplaces will require”.

The Confederation for British Industry’s (CBI) [7] defines them as;

“A set of attributes, skills and knowledge that all labour market participants should possess to ensure they have the capability of being effective in the workplace – to the benefit of themselves, their employer and the wider economy.”

In the Indonesian context, employability is usually associated with how quickly a graduate finds employment. As a result, the waiting period for seeking employment dominates the indicator of whether an institution is able to produce qualified graduates for the job market [8].

B. Important skills and capabilities when recruiting higher education graduates

Table II gives an impression about the skills and capabilities needed by companies today when recruiting university graduates, according to a survey conducted by the Flash Eurobarometer in 2010 in the 27 EU Member States involving 7036 companies.

TABLE II.
IMPORTANCE OF VARIOUS SKILLS AND CAPABILITIES
WHEN RECRUITING HIGHER EDUCATION GRADUATES

Skills	The Degree of Importance (% of answer)				
	Very important	Rather Important	Rather unimportant	Not important at all	Don't Know/No Answer
Teamwork skills	67	31	2	0	0
Sector-specific skills	62	29	6	2	1
Communications skills	60	36	3	1	0
Computer skills	60	35	3	1	1
Ability to adapt and act in new situations	60	37	2	0	1
Good reading/writing skills	59	36	3	1	1
Analytical and problem-solving skills	58	37	4	1	0
Planning and organisational skills	53	42	4	1	0
Decision-making skills	46	45	7	1	1
Good with numbers	40	48	8	2	2
Foreign language skills	33	34	22	11	0

Source: Flash Eurobarometer [9]

In terms of rating certain skills and capabilities as being “very important,” recruiters were most likely to highlight the importance of teamwork (67%), followed by sector-specific skills, communication skills, computer literacy, being able to adapt to new situations, first-class ability in reading/writing, and analytical and problem-solving skills (all 58%-62%).

When asked about the skills and capabilities that would be most important for future higher-education graduates (in 5 to 10 years henceforth), more than 4 in 10 (45%) employers selected sector-specific skills, and a similar proportion (43%) mentioned basic capabilities, such as having good numeracy, literacy and computer skills. About 4 in 10 (39%) respondents felt that communication skills would be important for future higher-education graduates, and 37% said the same about teamwork skills. The data is given in Table III.

TABLE III.
OPINIONS ABOUT THE SKILLS AND CAPABILITIES THAT
HIGHER EDUCATION GRADUATES SHOULD HAVE IN THE NEXT
5 TO 10 YEARS

Skills	Percentage
Sector-specific skills	45
Basic skills such as being good with numbers, good reading and writing skills, computer skills	43
Communication skills	39
Teamwork skills	37
Analytical and problem-solving skills	32

Foreign language skills	31
Ability to adapt to and act in new situations	25
Planning and organisational skills	22
Other	2
DK/NA	2

Source: Flash Eurobarometer [9]

C. International Perspectives on Employability

Little [10] discusses employability in an international perspective. The purpose of Little's paper was to draw together information and data from a number of different countries that have a bearing on issues relating to graduate employability and from which lessons may be learned in the context of current 'employability' developments in the UK. Table IV lists the 10 most highly-rated competencies possessed by UK, European and Japanese graduates at time of graduation.

3. Methodology

This study was conducted to examine the employer's needs about the employability skills of engineering graduates in Indonesia. Data obtained by examining 250 job advertisements appearing in the major graduate recruitment on-line databases from companies that need workers in the fields of engineering, including electrical engineering, mechanical/automotive engineering, chemical engineering, industrial engineering, and oil/gas engineering. Selected companies are companies operating in Indonesia that provide salary above the minimum wage. Advertisements for full-time permanent positions in each of these fields which stated that applicants should possess particular personal skills were analysed and coded. The advertisements examined came out during January – August 2014.

4. Results and Discussions

From a total of 250 ads chosen, 20% were in electrical engineering, 20% in Mechanical/Automotive Engineering, 20% in Chemical Engineering, 20 % in Industrial Engineering and 20% in Oil/Gas Engineering fields. Table V gives a breakdown of all the skills that were mentioned in the sample of 250 advertisements.

TABLE IV.
THE TOP TEN COMPETENCIES POSSESSED AT TIME OF GRADUATION (GRADUATES' OWN RATINGS)

UK	Europe	Japan
1 Learning abilities	1 Learning abilities	1 Loyalty, integrity
2 Working independently	2 Power of concentration	2 Power of concentration
3 Written communication skills	3 Working independently	3 Adaptability
4 Working in a team	4 Written communication skills	4 Getting personally involved
5 Working under pressure	5 Loyalty, integrity	5 Learning abilities
6 Accuracy, attention to detail	6 Field-specific theoretical knowledge	6 Field-specific theoretical knowledge
7 Power of concentration	7 Getting personally involved	7 Fitness for work
8 Oral communication skills	8 Critical thinking	8 Initiative
9 Problem-solving	9 Adaptability	9 Tolerance

ability		
10 = Initiative, 10 = Adaptability 10 = Tolerance	10 Tolerance	10 Working in a team

Source: Little [10]

TABLE V.
SKILLS REQUIREMENTS SPECIFIED IN A SAMPLE OF 250 JOB ADVERTISEMENTS

Skills	Number of ads in which mentioned	Skills	Number of ads in which mentioned
(1)	(2)	(1)	(2)
Foreign language (English)	157 (62.8%)	Working hard	60 (24.0%)
Communication	154 (61.6%)	Self motivated	48 (19.2%)
Computer/ICT	150 (60.0%)	Honest	42 (16.8%)
Teamwork	136 (54.4%)	Discipline	39 (15.6%)
Analytical	82 (32.8%)	Problem-Solving	35 (14.0%)
Working under pressure	80 (32.0%)	Detail	35 (14.0%)
Interpersonal	78 (31.2%)	Responsibility	34 (13.6%)
Leadership	77 (30.8%)		

Table V shows that beyond the work-specific skills, foreign languages (62.8%), communications (61.6%), computer/ICT (60.0%), and teamwork skills (54.4%) was the skills of the most expected by employers for graduates of engineering colleges/schools in Indonesia. The finding of this research was quite similar with findings by Omar et al. [11] which arrayed communications, computer/ICT, foreign language, and teamwork skills as major employability skills required by employers during recruitment process.

The fact that the language and communication skills occupy the top of employability skills is not surprising. Education and skills survey results conducted by the CBI in 2013 [12] showed that:

- Nearly three quarters (72%) of businesses say they value foreign language skills among their employees, particularly in helping build relations with clients, customers and suppliers (39%);
- One in five firms (21%) is concerned that weaknesses in foreign language proficiency are losing them business or is uncertain whether this is happening;
- Among firms concerned about shortfalls in language proficiency, half (52)% are looking to recruit staff with the appropriate skills.

Concerning foreign language skills, majority ads requested graduates who were able to write and speak fluently in foreign language. Roughly, more than 60% ads in all of five engineering fields required languages proficiency mainly in English. For many employers, no skill is more valuable than a foreign language. Learning another language not only provides students with enhanced communication skills but demonstrates to employers that they are committed, motivated and commercially aware of the global economy. Globalisation means that business is increasingly taking place across international boundaries. In order to penetrate foreign markets successfully, employers need

graduates who speak the language(s) of the country in which they wish to make an impact.

Communication is the process by which we exchange information between individuals or groups of people. It is a process where we try as clearly and accurately as we can, to convey our thoughts, intentions and objectives. Good communication skills are key to success in life, work and relationships. Without effective communication, a message can turn into error, misunderstanding, frustration, or even disaster by being misinterpreted or poorly delivered.

Advances in technology such as the internet should help improve communication skills of graduates of higher education. But the facts show different things. *Despite their persistent use of social media and texting, a top complaint from employers about Millennial-age workers is their lack of communication skills. "Younger people are communicating at great levels but it's through technology," says Lauren Stiller, author of You Raised Us, Now Work With Us. "This means their verbal communication skills are diminished. They are talking less to each other and their other communication skills are highly abbreviated and perfunctory"* [5].

It was indeed the case that advertisements for certain types of occupation tended to demand particular sets of skills. Table VI shows the percentages of advertisements citing specific employability skills for jobs in various engineering fields. It can be seen that 74,00 % of the advertisements for electrical engineering field jobs demanded that applicants have foreign language skills, 58,00% required communication skills, 68,00% computer/ICT skills and 60,00% teamwork skills. Communication skill is a skill that is most needed in the field of industrial and oil/gas engineering. Mechanical engineering jobs tended to require computer/ICT, communications and teamwork skills, while electrical and chemical engineering prefers foreign language and computer/ICT skills.

TABLE VI.

SKILLS SPECIFIED IN ADVERTISEMENTS FOR JOBS IN VARIOUS ENGINEERING FIELDS

No	Skills	Electrical Engineering	Mechanical Engineering	Chemical Engineering	Industrial Engineering	Oil/ Gas Engineering
1	Foreign language	74,00%	46,00%	70,00%	60,00%	64,00%
2	Communication	58,00%	60,00%	52,00%	66,00%	72,00%
3	Computer/ ICT	68,00%	66,00%	58,00%	52,00%	56,00%
4	Teamwork	60,00%	60,00%	54,00%	48,00%	50,00%
5	Analytical	32,00%	28,00%	36,00%	42,00%	26,00%
6	Working under pressure	34,00%	46,00%	34,00%	28,00%	18,00%
7	Interpersonal	42,00%	28,00%	24,00%	32,00%	30,00%
8	Leadership	34,00%	28,00%	26,00%	46,00%	20,00%
9	Working hard	28,00%	26,00%	30,00%	26,00%	10,00%
10	Self motivated	24,00%	18,00%	18,00%	18,00%	18,00%
11	Honest	14,00%	30,00%	22,00%	10,00%	8,00%
12	Discipline	12,00%	20,00%	26,00%	10,00%	10,00%
13	Problem-Solving	12,00%	12,00%	14,00%	16,00%	16,00%
14	Detail	10,00%	28,00%	16,00%	14,00%	2,00%
15	Responsibility	14,00%	22,00%	20,00%	6,00%	6,00%

Data analysis using chi-squared test showed that there was no statistically significant difference in the employability skills needs among the various types of engineering fields. All engineering fields require similar attribute of employability skills, ranging from communication skills, foreign language skills, computer/ICT skills, teamwork skills, and so on. Employability skills are '*transferable skills*' – skills that are not specific to one particular career path but are generic across all employment sectors.

The results of this study also found that for computer skills, more than 75% of companies want graduates proficient in MS Office. In addition to MS Office proficiency, for electrical and mechanical engineering fields, more than 25% of employers want graduates can operate CAD Programme/software.

Other findings from this study is that of the 250 advertisements examined, the minimum educational background required is 64% S1 (four years bachelor's or undergraduate degree) and 26% D3 (three years diploma).

5. Conclusion

Employability skills are '*transferable skills*' – skills that are not specific to one particular career path but are generic across all employment sectors. The results of the study showed no statistically significant difference in the employability skills needs among the various types of engineering fields. The study finds that beyond the work-specific skills, foreign languages (especially English), communications, and computer/ICT skills was the skills of the most expected by employers for graduates of engineering colleges/schools in Indonesia. The study also found that the ability to use MS Office and Autocad was the most expected computer/ICT skills.

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