

# Performance of the Accreditation Programs for Engineering Education in Korea

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## Abstract

This study analyzed the effect of the accreditation program by investigating its helpfulness in entering into the labor market, performing the responsibilities or duties in the workplace, and higher reputation from co-workers. The results showed that the accreditation programs had positive effects on the labor market entrance as well as on performances in the workplace. Also, compared with young workers who graduated from engineering colleges, those who graduated from accredited program have higher monthly earnings and they are more likely to work in larger firms. It is concluded that the accredited programs have positive evaluation from the participants overall, which is confirmed by the objective market wage.

## Introduction

The accreditation program for engineering education of Korea started in 1999, and 21 colleges with 133 programs have accredited and another 152 programs are in the process of accreditation in 2008. The purpose of the accreditation program is to enhance the professional competence of the entry level professionals by assuring the accredited engineering educational programs of colleges and universities. To achieve the purpose, Accreditation Board of Engineering Education of Korea (ABEEK) promotes the introduction of innovative and qualified educational programs, and provides the guideline and consultation.

ABEEK [1] proposes that graduates of the accredited programs should demonstrate ability of knowledge of the respective field, as well as the basic capacities in the application of the fundamental knowledge and practical tools of the engineering field. Also, ABEEK suggests that one of the main aspects in the evaluation of the program is the quality and performance of graduates of the accredited program.

The core objective of the accredited engineering program is achieving the demand-driven education and outcomes-based education. The outcomes and assessment on the accredited program can be measured by survey data collected from individuals who graduated from the program and company where graduates are working. Studies on the managerial schemes of an accredited engineering program discussed the design of the survey [2] [3]. Related to the survey method, Han et al. (2008) explored the survey problem of the continuous quality improvement (CQI) from two Korean Universities.

The purpose of this study is to evaluate the performance of accreditation program by assessing the outcomes of graduates from the accredited program for engineering education. The study interviewed individuals who graduated from the accredited programs and collected responses on the helpfulness of accreditation program.

## METHODOLOGY

### Data and Sample

Using the name list provided by the ABEEK, we collected survey data by interviewing individuals who graduated from the accreditation program and are currently working. The data was collected from October 2008 to December 2008 by phone interview and 212 respondents were used for the analysis.

Table 1 showed the descriptive statistics of the sample. About half of the sample graduated in 2008, and about 80

percent were male. Overall 3 of 4 graduates were working large sized (500 or more) firms, and 66.5 percent were working firms of 1,000 or more than 1,000 workers.

Table1. Characteristics of Sample

	N	%		N	%
Year of Graduation			Size of the Company (		
2004	1	(0.5)	1- 4 workers	4	(1.9)
2005	29	(13.7)	5 - 9 workers	3	(1.4)
2006	27	(12.7)	10 - 29 workers	5	(2.4)
2007	53	(25.0)	30 – 49 workers	2	(0.9)
2008	102	(48.1)	50 – 99 workers	7	(3.3)
Total	212	(100.0)	100 – 299 workers	27	(12.7)
Gender			300 – 499 workers	8	(3.8)
Male	168	(79.6)	500 – 999 workers	15	(7.1)
Female	43	(20.4)	1,000 or more workers	141	(66.5)
Total	211	(100.0)	Total	212	(100.0)

## Measures

We examined the helpfulness of the accredited program in the case of entering into the labor market, and completing duties in the workplace by three categorized courses of the accredited program. Also, we investigated the effect of graduation from the accredited program on activities in the workplace and ability of completing job duties. Each question was asked about the degree of agreement using 5 point-likert scale from “strongly disagree” to “strongly agree”. Generally those who answered on “strongly agree” and “agree” showed positive response on the question, and “strongly disagree” and “disagree” showed negative view on the question.

## RESULTS

### Entering the Labor Market

Table2 showed the result of helpfulness of accredited program when graduates got a job. Courses of the accredited program were divided into three categories of liberal arts/social science, MSC (math, science, and computer) and major field, which is suggested by ABEEK. More than half (55.9%) graduates showed positive response on the helpfulness of accredited program overall. Among three categories of accredited courses, courses of major field were most helpful for getting a job. About 50 percent of graduates agreed and about 18 percent strongly agreed on the helpfulness of the major courses. Courses of liberal arts and social science showed the lowest proportion of agreement on the helpfulness, and about 11 percent of graduates responded on the “strongly disagree”.

Table 2. Helpfulness For Getting a Job

	N	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Courses of liberal arts & social science	212	10.9	22.6	21.2	40.6	4.7
MSC (Math, Science, Computer)	212	5.2	19.3	26.0	36.3	13.2
Courses of Major Field	212	2.8	16.1	13.7	49.5	17.9
Curses of accredited program: overall	211	4.3	17.1	22.7	43.6	12.3

### Completing duties in the workplace

Table3 showed the result of helpfulness of accredited program when graduates completed their duties in the workplace. Courses of the accredited program were divided into three categories of liberal arts/social science, MSC (math, science, and computer) and major field. More than half (55.6%) graduates showed positive response on the helpfulness of accredited program overall. Among three categories of accredited courses, courses of major field were most helpful for completing their duties in the workplace. About 48 percent of graduates agreed and about 15 percent strongly agreed on the helpfulness. Courses of liberal arts and social science showed the lowest percentile of agreement on the helpfulness. The result was similar in that of getting a job.

Table 3. Helpfulness For Completing Job Duties

	N	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Courses of liberal arts & social science	212	9.0	26.9	21.7	39.1	3.3
MSC (Math, Science, Computer)	212	5.7	18.4	24.0	42.0	9.9
Courses of Major Field	211	5.2	13.3	18.5	47.9	15.1
Overall courses of accredited program	212	5.2	16.1	23.1	44.3	11.3

Figure 1 showed the helpfulness of courses for getting a job and completing duties. Overall, courses of the accredited program were more helpful to the graduates when they got a job than when they completed job duties. The percentages of the “agree” or “strongly agree” were higher in getting a job in each of three courses.

Figure1. Helpfulness of three course categories

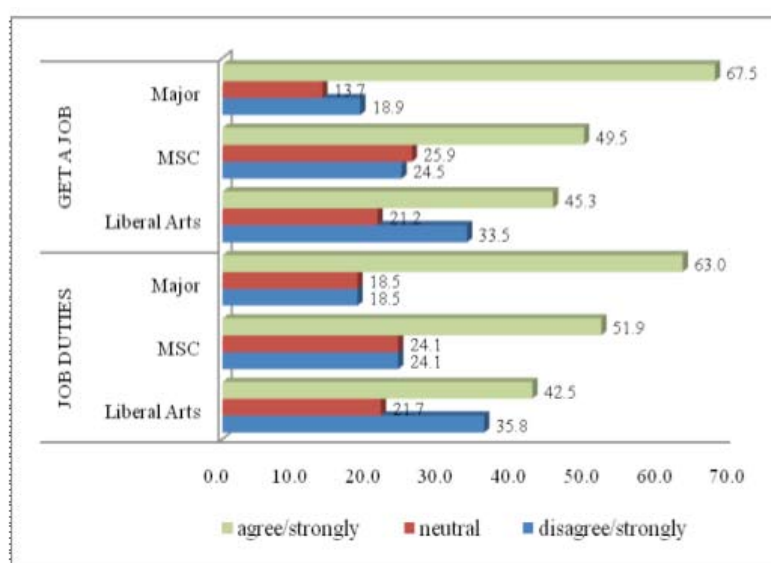


Table 4 showed the helpfulness of graduated from accredited program on the activities in the workplace. The activities in an organization were asked as four categories: adjustment in the work environment, good communication skills with co-workers, professionalism or ethics related with the job and higher reputation from co-workers. The proportions of the “agree” or “strongly agree” were between 28.7 percent in professionalism and 39.1 percent in good communication skills. On the other hands, proportions of the “disagree” or “strongly disagree” were above 40 percent in the adjustment in the work environment (48.6%) and professionalism (42.5%). Therefore the proportion of negative response is higher than positive response in the helpfulness on the activities in an organization where they are working.

Table 4. Graduated from Accredited Program and Activities in the workplace

	<b>N</b>	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
Adjustment in the work environment	212	17.9	30.7	16.5	33.0	1.9
Good communication with co-workers	212	13.7	25.0	22.2	37.2	1.9
Professionalism/ethics related with job	212	15.1	27.4	28.8	27.8	0.9
Higher reputation from co-workers	211	13.3	24.6	23.7	36.5	1.9

Table 5 showed the helpfulness of graduated from accredited program on the abilities of completing job duties in an organization. The abilities of completing job duties were asked as four categories: ability of voluntarily completing job duties, creativity in the problem solving, professional knowledge in the theory and excellency of practical ability on a job site. The proportions of the “agree” or “strongly agree” were between 28.7 percent in professionalism and 39.1 percent in good communication skills. On the other hands, proportions of the “disagree” or “strongly disagree” were about 70 percent in creativity in the problem solving and professional knowledge in the theory. Among the four categories, the proportion of positive response was lowest (42.0%) in the excellency of practical ability on a job site.

Table 5. Graduated from Accredited Program and Ability of Completing Job Duties

	<b>N</b>	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
Ability of voluntarily completing Job duties	212	4.2	17.9	27.4	50.0	0.5
Creativity in the problem solving	212	2.8	9.0	19.3	58.5	10.4
Professional knowledge in the theory	212	2.8	9.0	19.3	58.5	10.4
Excellency of practical ability on a job site	212	6.6	25.0	26.4	37.7	4.3

### Wages of the graduates

Table 6 shows the average monthly earnings, hourly wage and working hours in a week. The average monthly earning of graduates from the accredited program was 2,619,900 KW and average working hours in a week was about 50 hours. To compare the average monthly earning, Graduates Occupational Mobility Survey of the Korean Employment Information Service which is national level data was analyzed (Table 7). The average monthly earnings of four year college graduated and engineering graduates were 1,763,900 KW and 2,004,600KW respectively. Therefore the average monthly earning of graduates from accredited program is higher than college graduated and engineering major. Even though the working hours in a week was considered, the hourly wage (which is monthly earning divided by working hours) was higher in graduates from accredited program than college graduates or engineering major.

Table 6. Wage of graduates from the accredited program

	<b>N</b>	<b>Mean</b>	<b>SD</b>
Monthly earning (Unit: 10,000 Korean Won)	204	261.90	(74.52)
Hourly wage (Unit: 10,000 Korean Won)	204	6.30	(9.73)
Working hours in a week	212	50.01	(12.43)

Table 7. Wage of 4-year graduated and Engineering major

	4-year college graduated		Engineering major <sup>4)</sup>	
	Mean	SD	Mean	SD
Monthly earning (Unit: 10,000 Korean Won)	176.4 <sup>1)</sup>	(80.1)	200.5	(72.5)
Hourly wage (Unit: 10,000 Korean Won)	4.3 <sup>2)</sup>	(3.1)	4.4	(2.5)
Working hours in a week	45.8 <sup>3)</sup>	(14.3)	48.6	(12.1)

Data: Graduates Occupational Mobility Survey of the Korean Employment Information Service

Sample: <sup>1)</sup> 195,513, <sup>2)</sup> 181,549, <sup>3)</sup> 182,537, <sup>4)</sup> 48,947

## CONCLUSION

The purpose of this study is to evaluate the performance of accreditation program by assessing the outcomes of graduates. This study interviewed 212 graduates from the accredited programs and currently working to investigate the helpfulness of the accredited program in the case of entering into the labor market, completing duties in the workplace, their activities in the workplace and ability of completing job duties in the work environment.

Overall we found that the accreditation programs had positive effects on the entering into the labor market and completing duties in the workplace, especially major courses were more helpful than courses of MSC or liberal arts or social science. Also, compared with young workers who graduated from engineering colleges, those who graduated from accredited program have higher monthly earnings and they are more likely to work in larger firms. The proportions of positive response on the reputation from co-workers and good communication with co-workers were about 40 percent. It is concluded that the accredited programs have positive evaluation from the participants overall, which is confirmed by the objective market wage.

## References

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