
**AC 2011-1191: ASSESSMENT OF INDUSTRY PERCEIVED BENEFITS
OF ACCREDITATION TO CONSTRUCTION EDUCATION PROGRAM
GRADUATES**

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Assessment of Industry Perceived Benefits of Accreditation to Construction Education Program Graduates

Abstract

Accreditation of an educational program may result in benefits to the program, students, subject profession, and employers of program graduates. A principal benefit to employers is an ability for graduates of accredited engineering programs to pursue professional licensure. In the construction industry, professional licensure is not required and the benefit to construction employers is not as clear. Construction industry personnel were surveyed regarding their perceptions of graduates from accredited construction education programs, specifically whether graduates of an accredited program are preferred for employment and receive greater salaries, are assigned greater responsibility and are promoted at a greater rate, and possess greater technical and/or managerial skills. The results of the survey indicate that there does appear to be an initial value placed on accreditation by employers. However, the results appear to indicate that this value is not warranted.

Introduction

Accreditation is the process of evaluating a program relative to specified educational quality standards. Its purpose is to ensure that graduates from an accredited program are adequately prepared for entry into the profession. Accreditation is often viewed as critical to maintaining the quality and reputation of program graduates. In the US, accreditation is a voluntary process by which external peer evaluators organized by a non-governmental agency review a program. For construction programs in the US, accreditation is most often held from the Accreditation Board for Engineering and Technology (ABET) and American Council for Construction Education (ACCE). Construction and engineering programs pursue and maintain accreditation as a mechanism to ensure the quality of education.

Adherence of the program to a set standard and maintaining accreditation may produce benefits for all parties with an interest in the education level for graduates, including the subject profession, academic program, students, and those in industry that eventually employ graduates¹. In a global environment, professions that require adherence to accreditation standards may increase the recognition of both educational programs and experience gained in the industry^{2,3}. Academic programs may enhance their level of prestige and increase their ability to attract highly qualified faculty and students.

Students benefit from the requirements for quality classroom and laboratory facilities, the quality educational program delivered by qualified faculty, and in some cases an opportunity to pursue professional registration and licensure. Employers, as consumers of educated graduates, may also benefit from greater quality in the applicant pool and the opportunity for accredited graduates to pursue professional licensure.

In engineering education and practice, accreditation has long been linked with professional licensure. Widespread efforts to enact uniform laws and licensing standards has resulted in the National Council of Examiners for Engineering and Surveying (NCEES) representing state

boards of registration and promoting a registration model law that requires graduation from an accredited program and professional practice for professional registration⁴.

Construction students can pursue certifications that are administered by professional associations within the construction industry. However, certification does not require completion of an accredited academic program and is not required for practice in the construction industry. Therefore, the benefits of accredited academic programs to the construction industry are not as clear as those in the engineering industry.

Employer Perceptions

Presumably, any benefit from accredited graduates to employers would be recognized and a value placed on accreditation. Employer benefits may be either real or perceived, but in any case should be manifested in employer attitudes, actions, and observations.

Employers may prefer to hire from accredited programs because they believe graduates of these programs possess greater skills and abilities at the time of graduation. Similarly, they may prefer accredited programs not because of higher skill levels, but rather because the proportion of graduates with the desired skills is greater. In either situation, employers perceiving this benefit of accredited programs will pursue such graduates with greater effort, employ such graduates more often, and offer higher initial wages/salaries.

If in fact employers do find superior skills and abilities in graduates from accredited programs, then those employees are likely to be promoted faster and given additional responsibility. Given that accreditation has long been linked with technical engineering programs and that construction programs typically include a significant focus on management processes, the nature of any superior skills it is of particular interest.

Construction industry personnel were surveyed regarding their perceptions of graduates from accredited construction education programs. The survey was designed to evaluate the value employers place on graduates of an accredited program by their tendency to:

- Be preferred for employment and receive greater salaries;
- Be assigned greater responsibility and be promoted at a greater rate; and
- Possess greater technical and/or managerial skills.

Survey and Analysis Methods

An internet based survey was developed and participation was solicited from members of professional associations within the construction industry. Members of the Association for the Advancement of Cost Engineering (AACE), Carolinas Association of General Contractors (Carolinas AGC), and Professional Construction Estimators Association of America (PCEA) were asked to participate in the survey. These associations were selected because their membership represents the breadth of the construction industry in terms of location and market sector. These associations are also likely to employ construction program graduates.

AACE is the largest organization globally serving the entire spectrum of the cost management profession⁵. PCEA is a national organization of construction industry estimators from throughout the southeastern US⁶. Carolinas AGC is the largest AGC chapter and has member firms that perform or support all types of commercial and industrial construction⁷.

The survey was created using and hosted on SurveyShare.com. A web link was distributed via email to members of the target associations. Participation in the survey was entirely voluntary. The survey was an unsecured survey, meaning that participants were not required to provide an email address or any other identifying information.

The first survey question asked if respondents were involved in the hiring or promotion of personnel with a formal education in construction (management, engineering, science, etc.) If the respondent answered no to this question, then their session ended. If the respondent answered yes, then they continued on to the remaining questions. There were seven remaining questions that asked respondents to indicate their level of agreement with statements regarding the tendency of graduates of accredited programs relative to graduates of non-accredited programs. Respondents were asked to indicate their level of agreement on a 5-point Likert scale ranging from “strongly agree” to “strongly disagree”, and an option of “don’t know” was also provided. The seven statements were (emphasis added for this paper and not included in the survey):

- Q2. Graduates of accredited construction education programs *tend to be hired more* often than those from unaccredited programs.
- Q3. Graduates of accredited construction education programs *tend to be recruited more aggressively* than those from unaccredited programs.
- Q4. Graduates of accredited construction education programs *tend to receive higher initial salaries/wages* than those from unaccredited programs.
- Q5. Graduates of accredited construction education programs *tend to be assigned greater job responsibilities* than those from unaccredited programs.
- Q6. Graduates of accredited construction education programs *tend to be promoted faster* than those from unaccredited programs.
- Q7. Graduates of accredited construction education programs *tend to possess greater technical skills* than those from unaccredited programs.
- Q8. Graduates of accredited construction education programs *tend to possess greater managerial skills* than those from unaccredited programs.

In an effort to not bias the results, examples of accredited and unaccredited programs were not provided. Rather, the response of “don’t know” was included as an option for respondents that were unaware of the accreditation status of programs from which employees graduated.

Each professional association was justifiably protective of the contact information for members. The researchers provided each association with the survey link, and they in turn distributed the link to their membership via email. Therefore, the exact number of potential respondents solicited is unknown and the response rate to the survey cannot be calculated. A total of 58 responses were received, which likely reflects a very low response rate. Of the 58 responses

received, 30 of those answered yes to the initial question indicating their involvement in hiring or promotion of construction personnel.

Responses to questions 2 through 8 were assigned numerical values for analysis, ranging from a value of 5 for “strongly agree” to a value of 1 for “strongly disagree”. A “neutral” response was assigned a value of 3, and indicates that the respondent neither agrees nor disagrees with the statement and that there is no difference between graduates of accredited and non-accredited programs.

The responses to each question were tallied and statistically analyzed at the 5 percent level of confidence ($\alpha=0.05$) using the Wilcoxon Signed Rank test to test the null hypothesis:

$$H_0 : \mu = 3 \text{ (no difference between graduates)}$$

against the alternate hypothesis:

$$H_1: \mu > 3 \text{ (graduates from accredited programs do exhibit the tendency).}$$

The Wilcoxon Signed Rank test was used because it does not require the assumption that the sampled population has an approximate normal distribution⁸. In this study, the researchers had no basis for making the assumption of a normally distributed population.

Results

Survey questions 2, 3, and 4 focused on whether employers indicated a preference for and placed value on graduates of accredited programs. The responses to these questions are provided in Figures 1 through 3 and it is clear from the data that employers have a preference for hiring graduates from accredited construction programs. The data indicates that they are recruited more aggressively, hired more often, and to a lesser degree paid more initially.

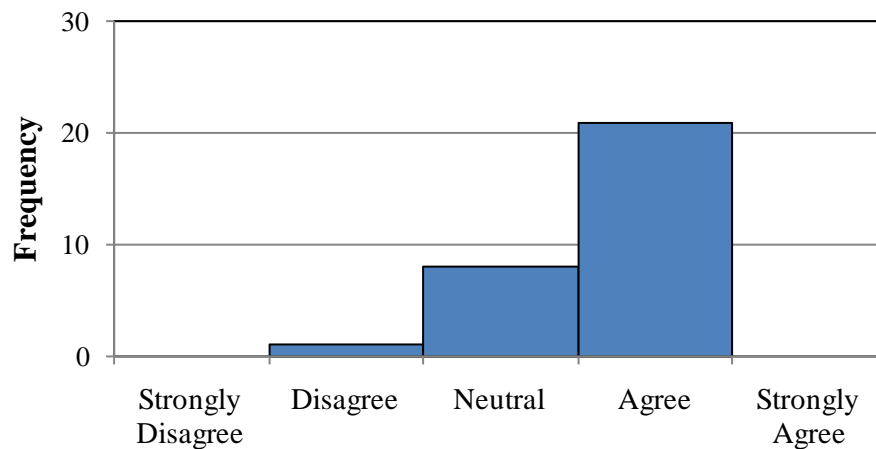


Figure 1: Responses to Q2 – Graduates of accredited construction education programs *tend to be hired more often than those from unaccredited programs*

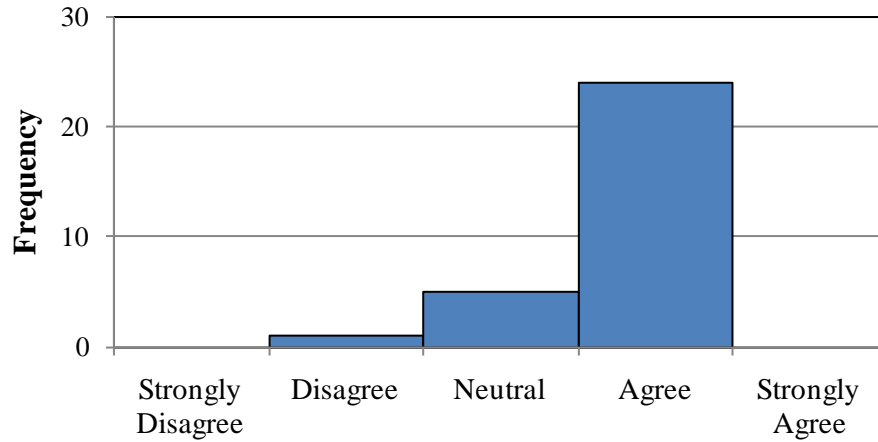


Figure 2: Responses to Q3 – Graduates of accredited construction education programs *tend to be recruited more aggressively than those from unaccredited programs*

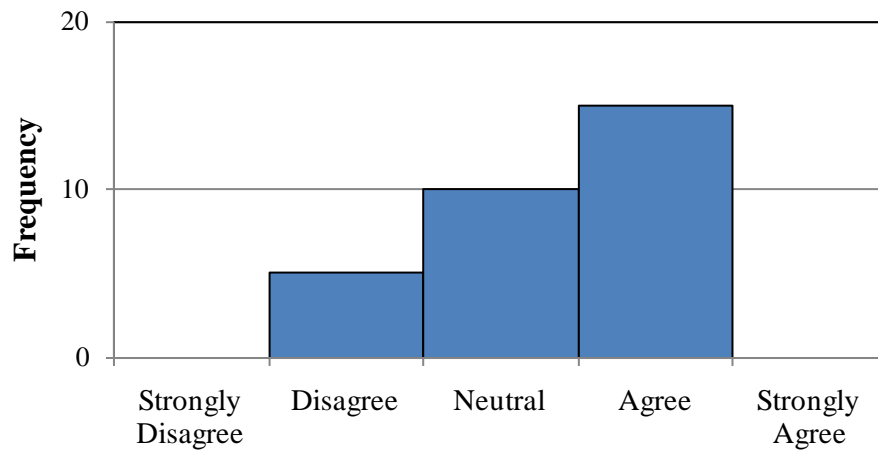


Figure 3: Responses to Q4 – Graduates of accredited construction education programs *tend to receive higher initial salaries/wages than those from unaccredited programs*

The statistical analysis yielded similar results and are provided in Table 1. The p-values found when testing questions 2, 3, and 4 were less than the significance level of 5 percent set for the test, which led to rejection of the null hypothesis and the conclusion that graduates of accredited construction programs are more aggressively pursued, more often hired, and paid a higher initial wage/salary than graduates from unaccredited programs.

Table 1: Rank Sum Test Results for Employer Preference

Question	Count	Count for Test	Wilcoxon Statistic (W)	p-Value
Q2	30	22	241.5	0.0000
Q3	30	25	312.0	0.0000
Q4	30	20	157.5	0.0260

Survey questions 5 and 6 focused on promotion and progression of graduates from accredited programs. The responses to these questions are provided in Figures 4 and 5. The data does not provide a clear indication that there is any difference in the rates of promotion and increasing responsibility.

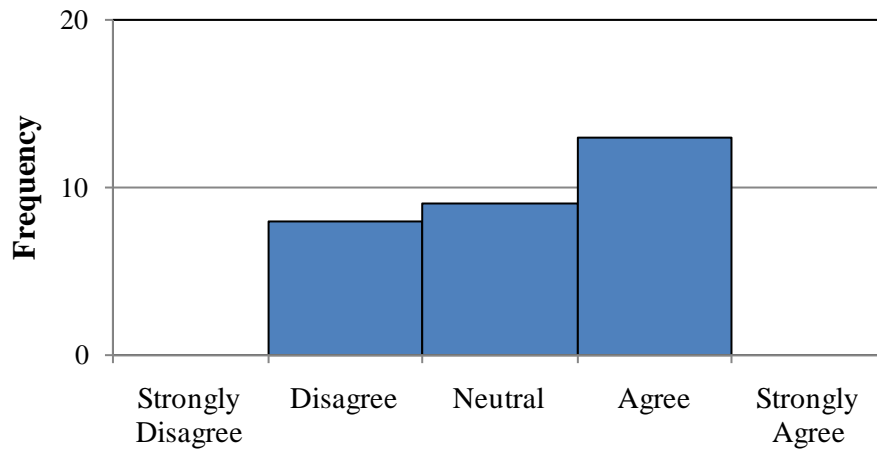


Figure 4: Responses to Q5 – Graduates of accredited construction education programs *tend to be assigned greater job responsibilities* than those from unaccredited programs

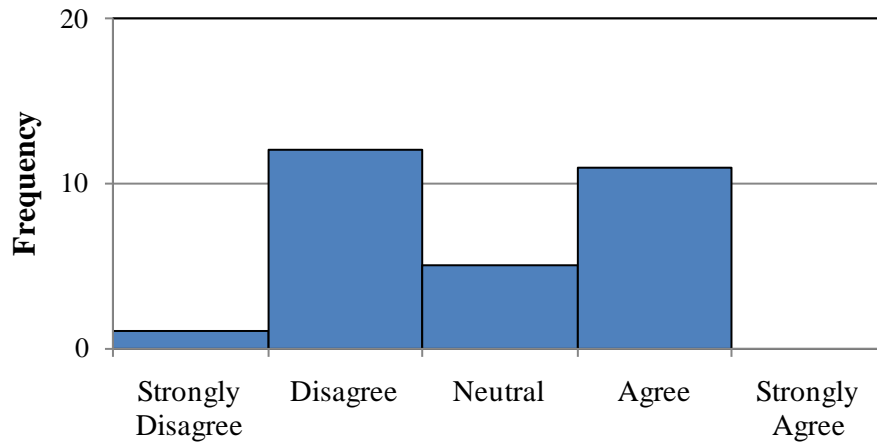


Figure 5: Responses to Q6 – Graduates of accredited construction education programs *tend to be promoted faster* than those from unaccredited programs

As indicated in Table 2, the p-values resulting from analysis of questions 5 and 6 were both greater than the 5 percent significance level and the null hypotheses were accepted. It was concluded that there was no difference in the rate of promotion or level of assigned responsibility between graduates of accredited construction programs and graduates from unaccredited programs.

Table 2: Rank Sum Test Results for Promotion and Responsibility

Question	Count	Count for Test	Wilcoxon Statistic (W)	p-Value
Q5	30	21	143.0	0.1740
Q6	29	24	132.0	0.7010

Survey questions 7 and 8 focused on the nature of prominent skills in graduates from accredited programs. The responses to these questions are provided in Figures 6 and 7. The data clearly indicates no tendency towards greater technical skills and a considerable tendency away from greater managerial skills in graduates from accredited programs.

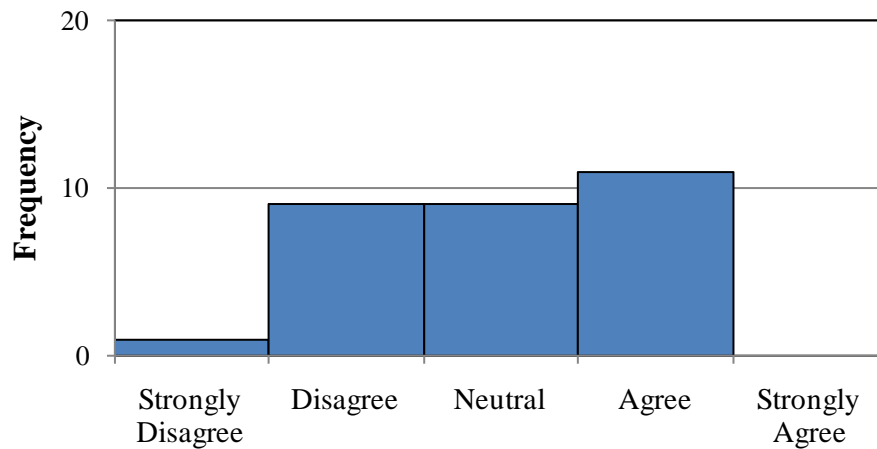


Figure 6: Responses to Q7 – Graduates of accredited construction education programs *tend to possess greater technical skills than those from unaccredited programs*

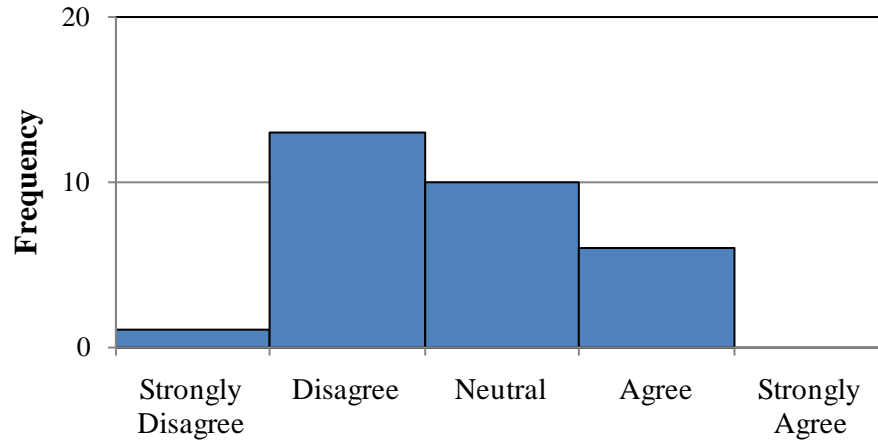


Figure 7: Responses to Q8 – Graduates of accredited construction education programs *tend to possess greater managerial skills than those from unaccredited programs*

As shown in Table 3, the p-values resulting from analysis of questions 7 and 8 were both greater than the 5 percent significance level and the null hypotheses were accepted. It was concluded that there was no difference in the level of technical skills between graduates of accredited construction programs and graduates from unaccredited programs.

Table 3: Rank Sum Test Results for the Nature of Skills

Question	Count	Count for Test	Wilcoxon Statistic (W)	p-Value
Q7	30	21	115.5	0.5070
Q8	30	20	60.0	0.9550

The survey responses to question 8 indicate that graduates from accredited programs do not possess superior managerial skills and further analysis was performed to assess the statistical significance of this indication. The Wilcoxon Signed Rank test was applied at the 5 percent level of confidence to test the null hypothesis:

$$H_0: \mu = 3 \text{ (no difference between graduates)}$$

against the alternate hypothesis:

$$H_1: \mu < 3 \text{ (graduates from accredited programs do not exhibit the tendency).}$$

The Wilcoxon Statistic (W) and p-value resulting from this analysis were 60 and 0.048, respectively. This p-value is less than the 5 percent significance level, the null hypothesis was rejected, and it was concluded that graduates of accredited construction programs do not possess greater managerial skills than graduates from unaccredited programs.

Conclusions

Accreditation may produce benefits that are realized by both academic programs and students. Programs may enhance their prestige and attractiveness, while students benefit from the quality of facilities and educational program. This research focused on the perceptions of those that employ graduates of construction education programs.

Based on the survey responses and analyses performed, it was concluded that graduates from accredited construction programs are preferred by employers, as respondents indicated they tend to be hired more often, and paid a higher initial wage. Thus, there does appear to be an initial value placed on accreditation by employers.

However, it was unclear whether this value is warranted. It was concluded that there was no statistically significant difference in the rate of promotion, the level of assigned responsibility, or the level of technical skills possessed between graduates of accredited programs and graduates of unaccredited programs. It was further concluded that graduates of accredited construction programs do not possess greater managerial skills than graduates from unaccredited programs.

These results are based on a limited response from those that employ graduates of construction programs. No participants responded “don’t know” to any question, which may indicate that some responses are reflective of perceptions rather than experience. However, the results clearly support the recommendation that employers reconsider the value placed on graduates from accredited programs. This is particularly true when graduates are being considered for positions that are primarily managerial in nature. These results are significant to those in construction education programs in that a value is placed on accreditation by potential employers.

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