Comparing Credentials in the Building Design and Construction Community: CPC, LEED-AP, and DBIA

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Previous research in the building design and construction community has examined the benefits of gaining individual certifications but no research has been found that compares the impact of the various credentials. The purpose of this research was to determine if statistically significant differences existed between the perceived value of the Certified Professional Constructor (CPC) certification, the Leadership in Energy and Environmental Design Accredited Professional (LEED-AP) accreditation, and the Design Build Institute of America's Design-Builder designation (DBIA). Researchers compared the results of three previously completed surveys. The researchers were able to analyze 203 out of 527 (39%) responses from CPCs, 9,060 out of 46,332 (22%) responses from LEED-APs, and 155 out of 631 (24.5%) responses from DBIAs. A one-way ANOVA was utilized to determine whether statistically significant differences existed between the three groups mean scores on eight impact questions. Results indicated statistically significant (.05 alpha) differences between the groups in seven out of the eight questions. On five of these seven questions yielding statistically significant differences, the mean scores for CPCs were significantly lower than LEED-APs and DBIAs. These results may be used by building design and construction employees to determine which credential may be the most beneficial to them.

Key Words: Accreditation, Certification, Construction Education, Credential

Introduction

The reasons why an individual may obtain professional certification are numerous. For some, it may be the prestige associated with a certain credential behind their name; for others, it may be a job requirement or a necessary step to achieving a higher salary. Despite these various motivations, professional credentials typically offer a baseline for understanding an individual's level of knowledge. Unfortunately, the multitude of certifications available today can sometimes call to question the true value of particular credentials.

In this study, the Certified Professional Constructor (CPC) certification, the Leadership in Energy and Environmental Design Accredited Professional (LEED-AP) accreditation, and the Design Build Institute of America's Design-Builder designation (DBIA) are examined to determine if there are significant differences in perceived value between each credential. This is especially important to professionals who may be weighing the benefits or impacts one certification may have over another – an issue compounded by the rapidly growing number of available certifications in the building design and construction community.

This study is unique in that it examines three credential systems that are relatively new within the industry. The CPC certification was established in 1994 by the American Institute of Contractors (AIC) with the goal to set high standards for the skill, knowledge, education, and conduct of certified constructors. Similarly, the LEED-AP designation was started in 2001 to assist with the U.S. Green Building Council's (USGBC) effort to increase sustainable buildings. Currently, the Green Building Certification Institute (GBCI) oversees the LEED-AP program and the credentialing process independent of the USGBC. Most recently, the DBIA designation program was started in 2002 by the Design Build Institute of America with the intention to create an accepted standard for acknowledging design-build professionals with identifiable education and experience. A unique feature of this

designation is the fact that candidates must take required coursework from the parent organization (DBIA) prior to taking the writing examination.

The following sections will review the existing literature on the perceptions of professional certification both in and outside of the building design and construction community. Lastly, a summary of common elements and key findings which influenced the design of this study will be presented.

Literature Review

Background

In the building design and construction industry, professional credentials for individuals can be attained through both state licensure and/or specialty certification. The existence of both forms of credentials has historically been a source of contention and confusion for both practitioners and the general public (Engineering Certification Task Force, 2006; Kelly, 2007; Paraprofessional Exploratory Task Committee, 2008). While the history of professional credentials is beyond the scope of this paper, it is important to first investigate the distinction between both licensure and certification to ascertain the reason both types exist.

Licensure involves the granting of a license, usually by a governmental entity, to practice a certain profession. Most professions that include licensure requirements (e.g., medicine, law, architecture, engineering, etc.) do so because they are deemed to be a risk to the health, safety, and well-being of the general public (Engineering Certification Task Force, 2006; Paraprofessional Exploratory Task Committee, 2008). While licenses may also be required for those whose occupations put them in contact with the public (e.g., barbers, massage therapists, chauffeurs, etc.), the qualification and requirements are much less stringent than those for the aforementioned classifications. As such, design and construction industry professionals are uniquely aware of the impact that licensure plays in their professional career.

Unfortunately, the purpose and value of the other type of professional credential, certification, is often much less understood. This gap in awareness between licensure and certification can be explained by the relative newness of certification, the vast array of certification options, and even the variations in the definition for the term itself (Kelly, 2007). Thus, it is necessary to further explore the definition of professional certification.

In Bratton and Hildebrand's (1980, p. 23) study of technology certification in education, certification is defined as, "the process by which a professional organization or an independent external agency recognizes the competence of individual practitioners." Similarly, Summerfield (1991) defines certification for health, leisure and movement professionals as the process of proving qualifications through education, experience, and generally examination components; however, Summerfield also differentiates certifications from licensures, registrations, and accreditations. These differences are primarily based upon whether or not the organization issuing the credential is a government entity and whether it is an individual or an organization receiving the distinction.

The authors found many examples of research addressing the value of certification outside the building design and construction community. In fact, in areas such as nursing, information technology, automotive repair, and teaching, there are extensive studies exploring the value of various professional certifications. The next section will explore three of these studies in an effort to understand how other industries perceive value in various certifications.

Certification Outside the Building Design and Construction Community

Even a cursory look through the existing literature will expose researchers to a plethora of articles and studies on the value of various certifications within the field of nursing. One reason behind this sizeable interest is the sheer volume of available certifications. The authors noted over 100 possible different nursing certifications which does not include the array of licenses and educational degrees that are also available. Nevertheless, one distinction about the studies on nursing certification does call for attention – the effects of certification on salary. Both Stromborg et al. (2005) and Mee and Carey (2001) found that salaries and/or incentives for obtaining a professional certification

can be sizable. In fact, Robinson and Mee (2004) found that the average full-time income of a certified nurse was $10,000 higher than a non-certified nurse. Other studies report that increasing the certified nurse population within a hospital can improve patient satisfaction, increase nurse recruitment and retention, and encourage active involvement with professional affiliations (Shirey, 2005).

A second area where professional certification is topic of great debate is the field of information technology (IT). Unlike nursing where certifications are generally developed and administered by professional organizations (e.g., American Nurses Association, American Board of Nursing Specialties, etc.), many IT certifications are based upon specific hardware or software developers. The hundreds of different certifications are based upon standards from companies like Microsoft, Cisco Systems, Hewlett Packard, and many others. Given these differences, the findings on IT professional certification are highly variable in the literature. Some cite such benefits as employer recognition, distinction among peers, and salary increases in the range of 10 to 20 percent for a single certification (Brandel, 2001). Others cite that the large array of certifications and the lack of industry standard certifications simply makes professional credentials one of several tools that employers use to separate applicants (Griffith, 1999).

A final area of certification that has attracted noteworthy research concerns automotive repair. The National Institute for Automotive Service Excellence confers the title of Automotive Service Excellence (ASE) certification to individuals who meet specified experience requirements as well as pass a detailed examination. While the process is similar to many other professional certifications, the research findings for ASE certification are unique in the fact that they examine not only certified and non-certified individuals (Kolo, 2006) but also other stakeholders including employers, consumers, and others. According to Yemaneab (1998), employers favored hiring certified technicians almost three-to-one and consumers perceived a higher level of credibility when certified technicians were utilized over non-certified technicians.

Certification in the Building Design and Construction Community

The benefits of certification in the building design and construction community appear far less in research studies and popular press articles than in other industries. While there are opportunities for designers and contractors to obtain professional certifications, especially in the sanitary/environmental engineering area (Engineering Certification Task Force, 2006), the bulk of the discussion on professional credentials focuses on licensure. For instance, Fergus, Shifler, Pengidore, and Bourell (2007) discuss the merit of obtaining professional licensure for materials engineers. They allude to an average salary increase of five percent, the possibility of providing expert testimony in court, and the benefits of required lifelong learning as reasons for licensure. Additionally, Kennedy (2005) identifies multiple reasons for industrial engineers to become licensed including: mobility, advancement, job security, credibility, and consulting opportunities.

Beyond licensure, some architecture and engineering fields offer specialty certifications. In civil engineering for example, individuals can earn post-licensure, specialty certifications in water resources, geotechnical, and building security (ASCE, 2009). These certifications, administered by either Civil Engineering Certification, Inc. (CEC) or the Building Security Council (BSC), focus on recognizing individuals who have attained advanced knowledge and skills in a specific focus area. Each requires the individual to hold a valid license.

There are, however, professional certifications in the building design and construction community that are not directly related to licensure. The Council of Engineering & Scientific Specialty Boards (CESB) is one organization that is leading the way for recognizing and promoting specialty certification for engineers, technologists, technicians, and related scientific personnel. One of CESB's objectives is to help establish criteria and guidelines for establishing and operating specialty certification for its member organizations (CESB, 2009). Currently, there are more than 20 different CESB accredited programs that offer certification in areas ranging from cost engineering to indoor air quality.

Other organizations who offer certification to the building design and construction community include the Project Management Institute (PMI), the Construction Management Association of America (CMAA), the Tilt-Up Concrete Association (TCA). While these certifications are not directly linked with traditional A/E professional organizations, the benefits of obtaining these credentials are still noteworthy. Izenson (2002) writes, "Those who

gain certification benefit by increased respect and recognition in the industry or profession, improved opportunity for upward mobility, increased professional credibility and higher self-esteem (p. 22)."

Summary

The existing literature shows that many occupational areas have examined individual certification in greater detail than the building industry. Healthcare, information technology, and automotive repair are three examples where lessons learned from previous studies can shed some light on different ways individuals can associate value with a particular certification. Increased credibility, recognition/prestige, and improved customer satisfaction are just some of the observations in other industries that should be examined with respect to various professional credentials. Additionally, the mixed observations on the link between professional certification and increased salary is another area of particular importance to some who are contemplating on what credentials to pursue.

Methodology

Research Instruments and Validation

The first study's survey, *Perceptions of Certified Professional Constructors* (Bruce, Sauer, & McCandless, 2008), was based on Roberts' (2005) *Perceptions of Certified Research Administrators.* While the subsequent studies' instruments were improved (Bruce, Gebken, & Strong, 2009), each contained the same eight impact questions. Once the instruments were created, the researchers forwarded the instrument to four educational experts for validation and improvement.

Populations, Samples, and Data Collection

According to the AIC Constructor Certification Commission (2006), there were 665 Certified Professional Constructors (CPC) at the time of the original study. The instrument was successfully delivered to 527 of those members via e-mail. After the researchers sent a follow-up e-mail, a total of 203 surveys were successfully submitted (39% response rate) by CPC respondents.

At the time of the LEED-AP study in 2008, the USGBC advertised that there were 62,000 LEED-APs. Of the 62,000 LEED-APs, 46,332 allowed USGBC to post their e-mail publicly at the GBCI website at http://www.gbci.org. This was the sample for the LEED-AP study. An electronic link to the improved survey was then e-mailed to 46,332 LEED-APs. Of the 46,332 original e-mails 4,555 (9.8%) were returned to the researcher as undeliverable. Upon closing, 9,060 of the 41,777 successfully contacted LEED-APs (22%) had responded.

The population for the DBIA study included all credentialed Professional DBIAs found publicly at the DBIA website. At the time of the study, this list included 651 Professional DBIAs. Of the 651 original e-mails, 20 (0.03%) were returned to the researcher as undeliverable. Upon closing, 155 of the 631 successfully contacted Professional DBIAs (24.5%) had responded.

Research Question, Variables, and Statistical Analysis

The primary research question asked if there were statistically significant differences between the means of LEED-APs, CPCs, and DBIAs regarding the impact the credential has had on their career. In each of the three independent studies, respondents were asked to rate their level of agreement of how their credential has impacted their career in terms of increasing recognition, professional opportunities, salary, promotion opportunities, job responsibilities, prestige among superiors within their organization, prestige among individuals within their organization, and prestige among individuals outside their organization. Respondents were asked to provide their level of agreement from strongly agree to strongly disagree to the eight statements. The researchers set the value of responses such that a response of strongly agree received a value of five and strongly disagree received a value of one. This value represented the dependent scale variable for this study. The respondent's certification (LEED-AP, CPC, or DBIA),

provided the independent categorical variable. Since the one-way analysis of variance (ANOVA) is used to compare the means of two or more independent groups (Minium, Clarke, & Coladarci, 1999), it was chosen as the most appropriate statistical analysis technique for this study's main research question.

Table 1

Means Comparison of Impact of Credential by Credential Classification

Question	1 LEED	2 CPC	3 DBIA	F	Sig.	Sig. Differences
How has the certification impacted your career in terms of having others more fully recognize your abilities to perform your job?	3.70	3.39	3.74	18.274	.000 .000	1-2 2-3
How has the certification impacted your career in terms of increasing your professional opportunities for contributions?	3.59	3.20	3.51	24.029	.000 .001	1-2 2-3
How has the certification impacted your career in terms of increasing your salary?	3.01	3.09	3.08	1.819	.162	
How has the certification impacted your career in terms of increasing your promotion opportunities?	3.34	3.22	3.28	3.548	.029	1-2
How has the certification impacted your career in terms of increasing your job responsibilities?	3.64	3.19	3.30	49.184	.000 .000	1-2 1-3
How has the certification impacted your career in terms of increasing your prestige among superiors within your organization?	3.78	3.48	3.70	18.568	.000 .011	1-2 2-3
How has the certification impacted your career in terms of increasing your prestige among individuals within your organization?	3.77	3.50	3.72	16.946	.000 .007	1-2 2-3
How has the certification impacted your career in terms of increasing your prestige among individuals outside your organization?	3.87	3.59	3.85	18.084	.000 .001	1-2 2-3

Results

Table 1 shows the means, F value, and statistical significance for each question (2a-h) by the credential classification. There were statistically significant differences between means for seven of the eight questions dealing with impact of the credential.

Once statistically significant differences were noted using the ANOVA, the researchers utilized Tukey's Honestly Significant Differences post hoc test to find out which comparisons yielded the statistically significant differences. The far right column of Table 1 shows which comparisons yielded statistically significant differences. The numbers match those above the credential (LEED=1, CPC=2, DBIA=3).

Conclusions and Recommendations

The primary research question asked if there were statistically significant differences between the means of LEED-APs, CPCs, and DBIAs in regard to the impact their credentials have had on their careers. Of the eight survey questions dealing with this research question, seven presented statistically significant differences (.05 alpha). Of those seven questions, CPCs had statistically significant lower means than the other two organizations on five questions. It may be concluded, therefore, that LEED-APs and DBIAs value their credential more than CPCs.

The only question where there were no statistically significant differences between the groups was in regard to the increase in salary. Nearly 70% of all respondents did not feel as though their credential increased their salary.

The authors recommend future studies that compare the perceptions of non-certified professionals in the industry to those credentials in this paper and others. Have non-certified professionals thought about becoming certified? What certifications have they considered and why? If they have not attempted to gain certification, what are the primary reasons? Another future study could analyze the correlations between these three groups and their demographic properties. For instance, do LEED-APs with professional degrees value their credential more than CPCs and DBIAs with professional degrees?

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