
Who Needs Certifications? A Survey of Certifications in the IT Industry

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Abstract

The importance of certifications in the IT industry has been a topic amongst those involved in higher education for some time. As more states push for "accountability" in higher education, certifications have been mentioned as a possible way to demonstrate learning. In addition, students are more and more likely to ask about certifications because they want something to distinguish them in an ever more competitive job market. The question this paper seeks to address is: are certifications really a good asset for students to acquire? In order to help understand this question, data was collected from Information Technology professionals to determine how common certifications are for those working in the field. The results show dramatic differences in the prevalence of certifications based on the area of Information Technology.

Keywords: Certification; Information Systems Education.

1. INTRODUCTION

There has been a great deal of discussion in the academic community about the value of sending students out into the workforce with certifications. This discussion revolves around using certifications to show accountability in higher education. After all, if the students are certified, they must know something! The question is: does this really do the students a service?

The purpose of this paper is to try to investigate this question by examining how many people in industry actually have certifications and propose reasons why certifications are important or may not be important.

Specifically this paper examines the arguments surrounding the use of certifications in higher education and then summarizes an industry survey to see how common certifications are in the field. The purpose of this paper is not to provide a definitive answer as to whether or not requiring certifications is a good idea. Rather, it seeks to examine how common these certifications are, in part to form a basis for decision making in education about certifications.

Another goal of the paper is to open potential avenues for future studies in the area of certifications for IT professionals.

2. LITERATURE REVIEW

There has been research conducted on the value of certifications and on whether or not these certifications should be emphasized in education. In fact, several arguments have been made in favor of using industry certifications in higher education.

Haga, Moreno and Segall (Haga, Moreno, & Segall, 2012) argue that third party feedback, such as certifications, are an unbiased way to evaluate educational outcomes. Certainly, as university accrediting bodies increase their requirements for proving educational outcomes, this argument will continue to have weight. In fact, some studies have already used specific industry certifications to evaluate educational programs (Moore & Berner, 2004).

The argument for using industry certifications is also made by Al-Rawi, Landari and Bouslama (Al-Rawi, Lansari, & Bouslama, 2005), who suggest using industry certifications to meet ABET accreditation criteria. Their argument is that there are several industry certifications that could be used to demonstrate student learning in multiple areas required by ABET. The ICCP (Institute for Certification of Computer Professionals) is a sponsor of the ISA (Information Systems Analyst) Certification used by some schools to verify knowledge gained in Systems Analysis and Design courses (Haga, W., Moreno, A., & Segall, M. 2012).

Others have made similar arguments for other areas of technology education (Chittister & Haines, 2010). For instance, Chittister and Haines point out that linking educational accreditation to specific learning outcomes would aid the students in becoming certified after graduation. This argument has been made for software engineering programs as well (Naveda & Seidman, 2005). While this argument is specifically applied to engineering programs, the argument can be extended to Information Systems and Information Technology programs.

While certifications may be used to prove that education is happening, is it worthwhile for the students? There has been research that indicates that, in specific cases, certifications can garner higher salaries for students (Cegielski, 2004). The compensation for Operations Management professionals with a CSCP Certification average 7.6% above those professionals in similar occupations without

certifications, while those with a CPIM average 3.4% more (Rosen, Mahar, & Janicki, 2012).

There has also been some research done in IT that has found that those with IT certifications earn more than those without (Cegielski, 2004). However, this was limited to the area of network administration. This does, however, point to a trend in IT. Indeed, multiple studies have pointed to the demand for students who are trained in both networking and cyber security (Locasto, Ghosh, Jajodia, & Stavrou, 2011).

Research has also been performed on factors that influence students to pursue IT certifications (Hunsinger & Smith, 2008). The authors note that salary and differentiation are both factors that influence students. In fact, they find that the majority of the students they surveyed felt that pursuing a certification would be beneficial to their career. This perception by students that IT certifications are important for placement and for future work opportunities can also influence how universities structure their curriculum (Yew, 2008).

The question, however, remains: Are certifications widely held and equally important across areas of Information Systems?

3. METHODOLOGY

The data for this study was collected as part of a larger survey conducted in 2013. Data was collected from 299 information systems professionals who are AITP non student members.

Descriptive statistics are used for this study rather than comparative statistics for several reasons.

First, the purpose of this paper is the examination of the use of certifications professionally, rather than to draw conclusions.

Secondly, while this study did collect information from 299 individuals, the purpose of the study was not solely to determine the usage of certifications. Because of this, the distribution of individuals across the various categories is far from uniform and, in several cases, provides a very small sample size.

4. RESULTS AND DISCUSSION

The results from the study are presented in a series of tables in the body of the document and in Appendix 1. The tables are discussed in detail by area here.

Basic Demographics

Table 1 presents the basic demographic data from the study, and even here we have some interesting findings. The participants in this survey were 76% male, 23% female and had an average of 17 years of experience in the field of IT. Of those who responded, 36.79% reported having at least one certification. This is interesting, as it indicates that just over a third of those in industry have a certification. Another interesting finding here is that those with certifications had four years more experience and were four years older than those without certifications. This would seem to indicate that the longer you are in the field, the more likely you are to have a certification.

	N	%
Participants	299	
With Certifications	110	36.79%
Male	228	76%
Female	68	23%
Not reported	3	1%
Average age	43.17	
Ave Time in IT	17.02	
With Certification		
Average Age	45.67	
Ave Time in IT	19.83	
Without Certification		
Average Age	41.74	
Ave Time in IT	15.38	
		#/Person
# of Certifications	207	1.9

Table 1: Basic Statistics

Educational Level

Table 2 (Appendix) presents a breakdown of the educational level of those in the survey. Overall, approximately 45% of those surveyed had Bachelor's degrees while 32% of the

respondents had Master's degrees. One of the interesting findings here is that, while there appears to be a link between educational level and certifications, it is not the one the authors expected. Indeed, the most likely groups to have certifications are those at the Masters or PhD level. In fact, those individuals with a Masters in the field of IT are the most likely to have a certification at 46.3%. At the outset, it was assumed to be more likely that those with an Associate's degree or lower would have a certification as an additional job qualification. Instead, those with an Associate's degree were the least likely to have a certification, with only 30.77% of those individuals reporting that they had one, while those with only a High School education were the second least likely to have a certification at 31.82%.

It is also interesting to note that, with the exception of those with a Master's degree and those with an Associate's degree or lower, the likelihood of having a certification floated around the same level for each educational level: just over a third. This matches fairly well with the overall population of the survey.

Job Responsibilities

Different job classifications lead to the largest differences in the likelihood of having a certification, as shown in Table 3. Those individuals in the fields of networking and security and project management were the most likely to have a certification (at 69.23% and 63.16% respectively). This is not surprising, as the Project Management Institute certification is well recognized, and Cisco has done a great deal to promote their certifications in the areas of security and networking.

Those in development were the least likely to have a certification. The limiting factor here might be the variety of languages and development platforms for the software developers. While Microsoft has certainly done a great deal to promote their certifications, not everyone uses Microsoft's tools or languages.

The differences can be seen even more clearly in table 3a. There are a number of areas (Development, Database and Strategy) where employees are significantly less likely to have certifications. In fact, in looking at the data, it is much more bi-modal than evenly distributed across job types.

Company Size

The size of the company also seemed to be related to certifications, as shown in table 4. Those working for larger organizations were much more likely to have certifications than those working for smaller companies. Indeed, of those working for the largest organizations (10,000+) 53.85% had certifications – significantly above the overall average – while those working for very small organizations (<11) were the least likely to have certifications at only 29.09%.

There appears to be a significant jump in the likelihood of an individual having a certification as soon as the organization size exceeds 500. In looking at the data, of those in companies under 500 roughly 33% had certifications, while 47% of those at companies of over 500 employees had certifications.

Looking at the data, as the size of the company grows, so does the percentage of people with certifications. This finding may be related to the fact that many certifications have continuing education requirements, and larger companies would be better able to pay for their employees to maintain the certification. On the reverse of that, those working for smaller groups would be more likely to need to pay to maintain their certification out of their own pocket.

It is also possible that larger organizations would be more likely to have a reward structure in place for those individuals who have certifications, thus providing additional incentives for employees to pursue them.

Company Type

There are some clear trends amongst different company types, as shown in table 5. Those in Education and Not for Profit segment reported the highest percentage of certification (47.37% and 47.06% respectively). This is somewhat confusing, as these are also the least likely to be able to support employee certifications, at least from a financial perspective. However, the results here could have been thrown off by the low number of people in the survey who worked for a non-profit company.

Those working for LLC's and in Healthcare were the least likely to have certifications (23.08% and 23.53% respectively).

Type of Certification

This is the area in which the exploratory nature of this study shows the most. As can be seen in Table 6, the type of certifications is spread across many areas: however, since the survey instrument did not accommodate all the certifications held by the respondents, there is a lack of correlation with the data for all 110 certification holders in tables 4 and 5.

Certification	N	%
Cisco	18	8.70%
A+	17	8.21%
PMP	19	9.18%
MS	17	8.21%
EMC	3	1.45%
CISA	2	0.97%
CISS	6	2.90%
ITIL	8	3.86%
CDP	9	4.35%
Total	99	47.83%

Table 6: Certifications by Type

On additional problem encountered in the answers was that most answers were given in the form of SLAs (Several Letter Abbreviations) which could not always be tracked to a given certification or area reliably. Table 6 shows the certifications that were most commonly given, and will guide our changes to the next version of the survey, as discussed in our conclusions.

Discussion

Based on the analysis of the data that was collected in this study, it can be seen that there are distinct differences in the need for certifications across different job responsibilities and company types and sizes. The data have some implications for education in information systems.

The first observation that can be made regarding the data is that if students express an interest in a career in networking or security, they should be counseled to seek a certification. As the data showed, nearly 70% of professionals working in this area have a certification, so students would benefit from having one as well.

This same argument holds true for students who are looking for jobs in project management.

Once again, most of the professionals working in this area (63%) have a certification. On the other hand, most undergraduate students will not be moving directly into jobs in project management. Thus, this advice would seem more applicable to graduate students, or non-traditional undergraduates who might move directly into more senior positions.

One clear takeaway from the data in this study is that the majority of individuals working in IT today do not have certifications. While students may want to pursue a certification to make them stand out more in a crowded job market, it would appear that, in most jobs in IT, a certification is not required.

While certifications do certainly indicate that the students have a solid knowledge of the material in the area of that certification, it is certainly not the only way to document that the students have this knowledge. It may also be argued that, based on the number of IT professionals who do not have certifications, that forcing students to achieve a particular certification prior to graduation may not be particularly helpful. For example, students going into careers in database may not be well served by a certification, as only 20% of professionals currently working in the field reported having a certification.

Future Work

This was a preliminary study, and the authors plan on continuing to gather this data in the future. Moving forward, the authors will use the data collected on certifications to refine the questions asked of the respondents. The next step would be to make the data gathered on certifications easier to quantify, so that we can more closely tie specific certifications to specific job titles.

There also needs to be additional data collected in specific areas so that comparative statistics between the areas may be used. While it is interesting to note the differences between the job areas, it would be better if more data could be collected to determine if the differences observed here are statistically significant.

While this paper introduces many questions of where and why certifications are important, additional research is needed to help clarify the answers.

5. CONCLUSIONS

This paper examined data from 299 IS professionals to look for the use of industry certifications in various areas of IT. The findings indicate that the majority of professionals working in IT today do not have a certification in their area. While there is quite a bit of variation across the various job areas of IT (from less than 14% with a certification for software developers to nearly 70% with a certification for network and security professionals), overall slightly less than 37% of IT professionals have a certification.

Based on the data, the argument could be made that students who are graduating from IT or IS programs do not necessarily require an industry certification. While those students who are considering a career in those areas where certifications are the most common (security and networking for example) may wish to achieve a certification, those in other areas may not be well served by doing so.

The data indicate that, while certifications are one way of measuring student academic achievement, it may not be the one that best aligns with what students and their future employers need. As academics, we should continue to look at ways to measure growth in our students to provide data on accountability, but forcing them to achieve a certification may not be the "silver bullet" in this area.

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Appendix 1: Tables

Education Level	Total		With Certification		Without Certification	
	N	%	N	%	N	%
High School	22	7.36%	7	31.82%	15	68.18%
Associates	26	8.70%	8	30.77%	18	69.23%
Bachelors - IT	94	31.44%	33	35.11%	61	64.89%
Bachelors - Non IT	42	14.05%	14	33.33%	28	66.67%
Masters IT	54	18.06%	25	46.30%	29	53.70%
Masters Non IT	42	14.05%	16	38.10%	26	61.90%
PhD	19	6.35%	7	36.84%	12	63.16%

Table 2: Education and Certification

Job Type	Total		With Certification		Without Certification	
	N	%	N	%	N	%
Management	51	17.06%	20	39.22%	31	60.78%
Software Development	43	14.38%	6	13.95%	37	86.05%
Database Admin/Analyst	15	5.02%	3	20.00%	12	80.00%
Networks/Security	26	8.70%	18	69.23%	8	30.77%
Business/Systems Analysis	26	8.70%	12	46.15%	14	53.85%
Project Management	19	6.35%	12	63.16%	7	36.84%
Other IT	49	16.39%	21	42.86%	28	57.14%
IT Strategy	38	12.71%	10	26.32%	28	73.68%
Big Data / Business Intelligence	12	4.01%	5	41.67%	7	58.33%
Not Reported	20	6.69%	3	15.00%	17	85.00%

Table 3: Job Type and Certification

Job Type	Total		With Certification		Without Certification	
	N	%	N	%	N	%
Software Development	43	14.38%	6	13.95%	37	86.05%
Not Reported	20	6.69%	3	15.00%	17	85.00%
Database Admin/Analyst	15	5.02%	3	20.00%	12	80.00%
IT Strategy	38	12.71%	10	26.32%	28	73.68%
Average				36.79%		
Management	51	17.06%	20	39.22%	31	60.78%
Big Data / Business Intelligence	12	4.01%	5	41.67%	7	58.33%
Other IT	49	16.39%	21	42.86%	28	57.14%
Business/Systems Analysis	26	8.70%	12	46.15%	14	53.85%
Project Management	19	6.35%	12	63.16%	7	36.84%
Networks/Security	26	8.70%	18	69.23%	8	30.77%

Table 3a: Job Type and Certification - by certification likelihood

Size of Company	Total		With Certification		Without Certification	
	N	%	N	%	N	%
<11	55	18.39%	16	29.09%	39	70.91%
11-20	17	5.69%	6	35.29%	11	64.71%
21-100	51	17.06%	15	29.41%	36	70.59%
101-499	84	28.09%	31	36.90%	53	63.10%
500-999	26	8.70%	11	42.31%	15	57.69%
1000-9999	53	17.73%	24	45.28%	29	54.72%
10000+	13	4.35%	7	53.85%	6	46.15%

Table 4: Size of Company and Certification

Company Type	Total		With Certification		Without Certification	
	N	%	N	%	N	%
Education	57	19.06%	27	47.37%	30	52.63%
Corporation	141	47.16%	52	36.88%	89	63.12%
Government	23	7.69%	7	30.43%	16	69.57%
LLC	26	8.70%	6	23.08%	20	76.92%
Non or Not for Profit	17	5.69%	8	47.06%	9	52.94%
Sole Proprietor or Partnership	18	6.02%	6	33.33%	12	66.67%
Healthcare	17	5.69%	4	23.53%	13	76.47%

Table 5: Company Type and Certification