

# **WATERFORD INSTITUTE OF TECHNOLOGY**



## **PERCEPTIONS OF KEY STAKEHOLDER'S (STUDENTS AND LECTURING STAFF): INTEGRATING IT INDUSTRY CERTIFICATION INTO IRISH INSTITUTES OF TECHNOLOGY (IOTS)**

**LUCY WHITE**

**PETER CAREW**

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# **PERCEPTIONS OF KEY STAKEHOLDER'S (STUDENTS AND LECTURING STAFF): INTEGRATING IT INDUSTRY CERTIFICATION INTO IRISH INSTITUTES OF TECHNOLOGY (IOTS).**

**Lucy White, Peter Carew**

*ISOL Research Group,  
Department of Computing, Mathematics and Physics,  
Waterford Institute of Technology*

**Abstract:** IT industry certification and its position in academia continue to be a highly contemporary issue. This paper explains IT industry certification, its origin, and its current state. The main focus of this paper is to represent the findings of two preliminary studies undertaken: a student questionnaire and a focus group for lecturing staff. The purpose of both initial studies was to ascertain the perceptions of the main stakeholders in relation to integrating IT industry certification into Irish Institutes of Technology (IoTs). For the purpose of this study a summary of the findings will be outlined. However, it is important to note that the findings from both studies along with the literature will help to design a framework that will help construct the main research instrument for the main study.

**Keywords:** Information Technology, Industry, Education, Curriculum,

## 1. INTRODUCTION

In the Information Technology (IT) industry, certification is a designation achieved by a person that demonstrates their ability and expertise in a particular area (Nelson & Rice, 2001; Schlichting & Mason, 2005). IT industry certifications are voluntary and are awarded by professional bodies and reputable organisations (Werth, 1998). Certifications have become a vital part of the IT industry by providing a means to validate and enhance skills development (Cegielski, 2004). It has also generated an industry for certification training, preparation and pre testing, for both vendor-sponsored and vendor-neutral providers (Shore). It is thought that certification will increase the standard for individual performance in attaining software quality and productivity, (Leonard L. Tripp, 2002).

Professional certification in the IT industry began in the 1980s by Novell, Inc. In order for their products to succeed, people would need to be educated with the necessary skills for their highly technical products. The solution gave rise to the Certified NetWare Engineer (CNE). Using the skills, experience and expertise of the product specialists, Novell created tests that incorporated all the knowledge and skills required to work with the NetWare products. CNE became a marketed product that ensured customers and business partners that

their skills were reliable (Shore). In the early 1990s many other hardware and software companies, e.g. Microsoft, IBM, Cisco systems, etc, launched technical certifications for their technologies in a bid to replicate Novell's success (Hitchcock, 2005).

Although the number of IT certifications offered by industry is not easy to quantify, currently it is estimated to be several thousand (Hitchcock). At present, the most popular certifications available are A+, MCSE, Novell, Oracle and Cisco (Schlichting & Mason, 2004). IT industry certification and its relevance to academia is currently a contentious issue (Mason, 2003; Nelson & Rice, 2001; Schlichting & Mason, 2004, 2005).

There are a number of compelling reasons why industry certification could benefit students studying IT in third level institutes. The predominant reason students attend college is to acquire the skills, knowledge and qualification for employment and promotion. However there is evidence that the skill sets of new IT graduates are deficient in certain practical areas when they enter industry (Maj et al., 2001) Many degree programmes do not provide the skill set required by industry (Donaghue, 1997). Certification, given its practical nature, could help redress this skills gap. Professional bodies like the Association for Computing Machinery (ACM) also endorse the use of IT certification in academia (IEEE

& ACM, 2001). Given such reasons, integrating certification into IT degree programmes has become a pressing contemporary issue. The following section of this paper outlines the methods and results of the two preliminary studies undertaken: a student questionnaire and a focus group for lecturing staff. Both students and lecturing staff are considered key stakeholders for the main research.

## 2. METHODOLOGY

A study was conducted to ascertain the perceptions of students and lecturing staff in relation to integrating industry certification into Irish Institutes of Technology (IoTs). A multi-method approach was used in order to utilise a combination of quantitative and qualitative data, providing for the triangulation of findings, and allowing for the elicitation of diverse and rich data.

### 2.1 Student Questionnaire

A questionnaire was distributed to students across a number of undergraduate IT related courses, which are illustrated in Figure 1.1. This method was chosen as it was an efficient way to gather information from a large sample of the student population.

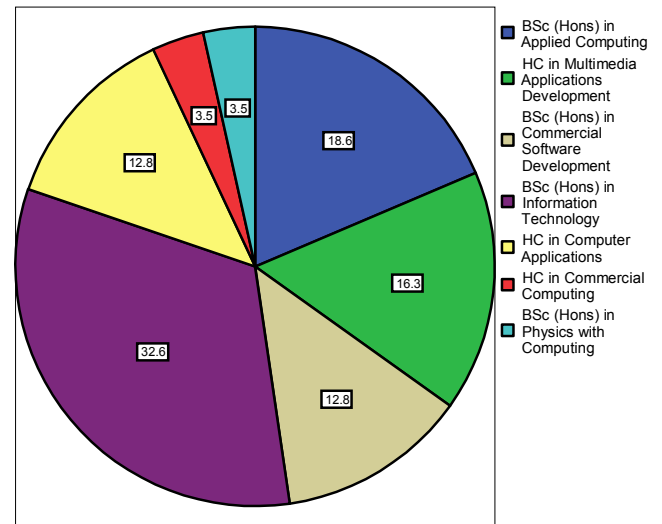
A one page questionnaire was sent to students studying Information Technology in WIT. WIT was an ideal location for this study as the researcher could, with permission, have access to a sample population. Lecturing staff distributed the questionnaires in class; the students returned them upon completion. A total of 86 usable questionnaires were returned. The researcher believes this to be a sufficient response from which to make some informed observations regarding the perceptions of students and the integration of IT industry certification into Institutes of Technology (IoTs). The data was analysed using SPSS.

The questionnaire was broken down into five sections: respondent demographics, awareness, value, and support of IT industry certification and method for integrating IT industry certification into IoTs. An outline of the results of the survey are analysed under these sections.

#### Section 1: Demographics

The respondents were aged between 16 and 50+, studying in both full time and part time capacity. The questionnaire was distributed across a number of IT related courses from first to fourth year.

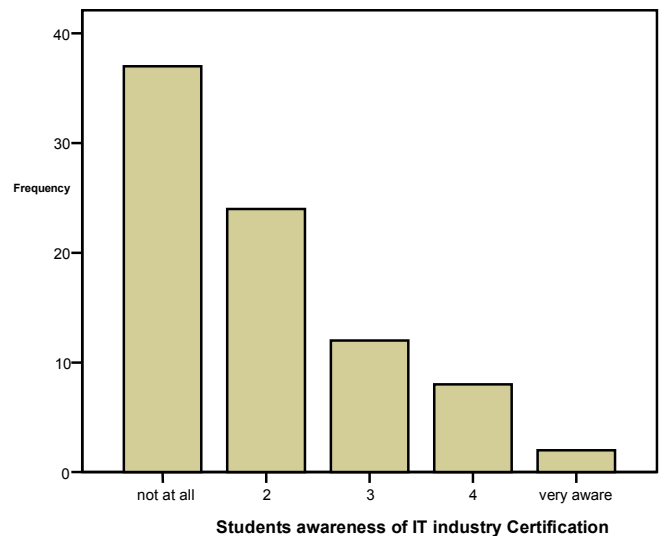
**Figure 1.1** IT Related Courses  
(% represents respondents from each course)



#### Section 2: Awareness of IT Industry Certification

Over half (55.4%) of the respondents indicated a level of awareness of IT industry certification, as shown in Figure 1.2.

**Figure 1.2** Students awareness of IT Industry Certification



The respondents that were aware of IT industry certification indicated that Microsoft's MCSE, CompTIA's A+ and Cisco's CCNA were the most commonly recognized certifications. Table 1.1 illustrates this in more detail.

Table 1.1 Students Familiarity with Specific IT Industry Certifications

IT Certification	Frequency	Percentage %
A+	11	23.9
MCSE	15	32.6
CCNA	10	21.7
RHCE	2	4.3
CCNP	3	6.5
PMP	2	4.3
CCP	1	2.2
CNA	4	8.7

Respondents studying part time had a greater level of awareness than those studying full time. Also respondents who had 8+ years of IT related industry experience also showed a greater level of awareness than those who had little or no experience.

### *Section 3: Value of IT Industry Certification*

In this section the respondents were asked about the value they place on IT industry certification. In relation to whether they thought certification would be advantageous for employment, 11% thought that it would not be beneficial at all. A resounding 89% of respondents thought that it would be advantageous. Furthermore, 87% of the respondents thought that IT industry certification would provide more employment skills than those obtained from academia. 85% of the respondents thought that industry certifications were more practical in nature than those acquired in academia.

### *Section 4: Support for IT Industry Certification*

In this section the respondents were asked about the support they place on IT industry certification. Some respondents indicated that they had already obtained IT industry certification. 67% thought that they would consider obtaining IT industry certification post graduation. Microsoft's MCSE, Cisco's CCNA and CompTIA's A+ certifications were some of those mentioned. When asked if they considered certification as a good alternative to obtaining a degree, 52% of the respondents indicated that they would consider this to be true.

### *Section 5: Methods of Integrating IT Industry Certification*

In this section the respondents were given four possible methods for integrating IT industry certification into IoTs and were asked to rate them on a scale of one (strongly disagree) to five (strongly agree). Results show that 75% of respondents thought that certification content should be integrated into IoTs without obtaining certification upon completion. 86% thought that Certification content should be integrated into IoTs and also achieve

certification upon completion. When asked if academic credit should be given to students already holding certification, i.e. module exemption for relevant certifications 86% respondents indicated support for this. More than half of the respondents thought that Certification and undergraduate studies should remain separate.

The results of the questionnaire show that overall, 71 (91%) respondents indicated that they would be in favour of integrating IT certification into higher education.

### *2.1 Lecturing Staff Focus Group*

A focus group was assembled comprising of six experienced members of WIT staff. The participants consisted of five men and one woman. Each participant was carefully selected to cover a range of backgrounds and expertise, i.e. some who were already certified, some with expertise in education and more with expertise with the modularized system and the implementation of change.

An email was sent out to the staff members inviting them to attend the focus group to discuss their perceptions of integrating IT industry certification into Irish IoTs. This was followed up by an additional phone call and email to confirm the date, time and attendance. The researcher had a list of questions and prompts to steer the conversation in the direction planned. The session lasted for one hour and it was not recorded. After the focus group was completed a summary of the discussion was compiled. This was sent to all the participants of the focus group to validate the findings. The discussion was analysed under the following headings; Awareness of certification, Certification and Education, Integration methods and Issues and Concerns.

Some major themes that emerged from the focus group were as follows:

- **Practical Skills:** all participants agreed that industry certifications were practical in nature and the skills obtained from these are essential for IT graduates.
- **Certification Integration:** integrating industry certifications into the curricula would give both the students and the Institute a competitive advantage
- **Delivery:** course materials issued for IT certifications are of excellent quality and could benefit in the successful delivery of courses in academia
- **Quality:** many people working in the IT industry are unqualified and thus quality has become a major concern. The notion that other disciplines, excluding Information Technology, are required by industry to become "certified" to do their job.
- **Training versus Education:** by integrating industry certification into IoTs there is a common

perception that IoTs may potentially be seen as trainers as opposed to educators.

- Integration Method: based on the modularised system, smaller certifications could be integrated as an elective module. The larger certifications could be split into separate modules throughout the year. Given the nature of the modularised system, integrating certification as separate modules would allow more choice to the student. This suggestion was debated as some participants thought that this solution was too simplistic given the nature of certifications. Not all certifications would fit into this model.

The following issues and concerns were highlighted: the rate of change within the IT sector could have a negative impact on incorporating industry certification into IoTs. Resources such as costs (of implementation and maintenance would be high for IoTs), quality (existing course material and delivery may suffer as a result of integrating industry certification), and training (staff to deliver certifications, i.e. train the trainer) are also factors that need to be considered.

Overall the participants would be in favour of integrating a level of industry certification into IT programmes in IoTs. However it was evident that this would not be at the expense of existing subject areas.

## 5. CONCLUSION

IT industry certification and its possible integration into academia is causing much debate at present. This paper discussed briefly the history and current state of industry certification. The main focus of the report was to examine the key stakeholder's perceptions of integrating IT industry certification into Irish IoTs. Many issues and concerns were raised about how the culture of IoTs could cope with such a change and how this would directly impact students, staff and the Institute. The findings from both preliminary studies will be analysed further to assist the design of the research framework. This in turn will refine the main research instrument for the overall study.

## REFERENCES

- Cegielski, C. G. (2004). Who Values Technology Certification. *Communications of the ACM*, 47(10), 103-105.
- Donaghue, B. (1997). Sa tafe given top marks by higher end users (campus review).
- Hitchcock, L. (2005). Industry certification: Value, validity, and a place for sodis. *in roads - The SIGCSE Bulletin*, 37(4), 59-63.
- IEEE, & ACM. (2001). Computing Curricula 2001 computer science. *ACM Journal of Educational Resources in Computing*, 1(3), 1-240.
- Leonard L. Tripp, B. (2002). Software certification debate: Benefits of certification. *IEEE* (June 2002), 31-33.
- Maj, S. P., Veal, D., & Twiss, R. (2001). Education, Training and Curriculum commercialisation - a reality check. *Consortium for Computing in Small Colleges*, 17(2), 122-131.
- Mason, J. (2003). Certifications - Beat 'em, Join 'em (or lose 'em)? *Consortium for Computing Sciences in Colleges, JCSC: 18*(6).
- Nelson, M. L., & Rice, D. (2001). Integrating Third Party-Certification with Traditional Computer Education. *Consortium for Computing in Small Colleges*, 17(2), 280-287.
- Schlichting, C., & Mason, J. (2004). Certification Training and the Academy. *Consortium for Computing Sciences in Colleges*, 20(1), 157-167.
- Schlichting, C., & Mason, J. (2005). The Computer Curriculum and Certification: A Proposal. *Consortium for Computing Sciences in Colleges, JCSC 20*(4), 84-91.
- Shore, J. (2003). Why Certification? The Applicability of it Certifications to College and University Curricula. *IT Certification and Academia - V3*, 1-8.
- Werth, L. (1998). Certification and Licensing for Software Professionals and Organisations. *11th Conference on Software Engineering Education and Training (CSEET '98)*, 0151.