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Examining Employability as Associated with IC3, MOS, and ACA Certifications

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Examining Employability as Associated with
IC^3, MOS, and ACA Certifications

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Abstract

Forrier and Sels (2003) define employability as "an individual's chance of a job on the internal and/or external labor market" (p. 106) and is important (Wittekind, Raeder, & Grote, 2010). Possessing an industry certification may be considered an example of human capital skill. The human capital theory suggests qualifications, knowledge, skills, and experience of individuals may lead to increased earnings or productivity (Becker, 1993; Rosen, 1987; Schultz, 1971). As such, the human capital theory provides a framework for studying perceived employability (Wittekind, Raeder, & Grote, 2010; Verhaar & Smulders, 1999) as associated with IC^3, MOS, and ACA industry certifications.

Randall and Zirkle (2005) suggested that entry-level certification is promoted as a "vehicle to provide students with viable skills needed by the workforce, to satisfy state skill standards, and to prepare students for postsecondary studies" (p. 287). Beyond intrinsic pride in one's accomplishment and praise received from classroom teachers, there is a need to make the connection for how industry certification relates to employability. Therefore, gaining a better understanding of how achieving industry certification relates to employability opportunities in Arkansas will provide certification candidates with more concrete answers to possible essential questions such as "why should I be certified" and "how am I going to use this certification."

The purpose of this study was to investigate how achieving IC^3, MOS, and ACA industry certification relates to employability opportunities in Arkansas as perceived by human resource (HR) and information technology (IT) professionals. To narrow the gap in the knowledge regarding employability implications for certification holders in the state of Arkansas, a convenience sample of HR and IT professionals was used. Participation was voluntary. Instrumentation was based upon CompTIA's (2011) *Employer Perceptions of IT Training and*

Certification. CompTIA is the Computing Technology Industry Association; a non-profit trade association. Research questions addressed familiarity with IC^3, MOS, and ACA certifications, perceptions regarding preference for candidates possessing certification, compensation for certification credentials, and value placed upon certification credentials.

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Dedication

This is dedicated to my best friends, my sister Kayla Todd and my mother Sharon Todd. Mom and Kayla, without you, so many things in my life would be impossible and it certainly would not be as much fun or as rewarding. Thank you for inspiring, encouraging, and loving me. I love you.

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Chapter One

INTRODUCTION

Society marks significant accomplishments of individuals through a series of certificates, licenses, diplomas, and other special documents. At birth, a certificate is issued. For marriage, a license is issued. Upon graduation, a diploma is issued. For international travel, a passport is issued. Adding to the list of important documents is "a growing trend within secondary and post-secondary institutions to offer information technology (IT) certification" (Randall & Zirkle, 2005, p. 287) to students. Arkansas Career and Technical Education (CTE) programs are echoing this by working to incorporate certification into course offerings by requiring new programs of study to determine the availability of an appropriate industry certification for secondary students (CTE Information and Research, 2010). Programs of study already in place, requiring such courses as Computerized Business Applications (CBA) or Computer Applications I and II (CA I/II), are also making connections to industry certification opportunities.

In order to offer certification testing to high school students, it is mandated that a school become a testing center with one or more teachers or other appropriate individual serving as the testing proctor. The industry certifications most applicable to the field of business education, computer technology classes are Internet and Computing Core Certification (IC^3), Microsoft Office Specialist (MOS), and Adobe Certified Associate (ACA). Despite the fact that these are high school students, a testing candidate's age or previous experience does not lessen the rigorous nature of the certification tests. The tests are based upon globally accepted standards which must be maintained regardless of age or experience.

The global standards relate to specific standards. The standards are based on specific areas of focus. For example, IC^3 focuses on assessing digital literacy, MOS and ACA focus on

application software proficiency. Assessing digital literacy and software proficiency is important because certification is used by the IT industry to train and accredit employees (Clarke, 2001). Offering further evidence of this belief, Cantor (2002) describes certification as confirmation of adequate knowledge and skills.

The curriculum taught in Computerized Business Applications (CBA), a two-semester course, and Computer Applications I/II (CA I/II), one-semester each, make these courses well-suited to facilitate IC^3 and MOS testing for students. According to the Arkansas Department of Career Education's (ACE) curriculum frameworks (2015), CBA is "designed to prepare students with an introduction to business applications that are necessary to live and work in a technological society" (Course Description section, para. 1). CBA frameworks cover hardware, concepts, and business uses related to word processing, presentations, spreadsheets, databases, telecommunications, and basic web page design. Similarly, ACE curriculum frameworks for CA I/II (2015) entail providing students with "fundamental computer skills necessary to do well in high school and virtually all jobs today" (Course Description section, para. 1). In CA I, students learn fundamental word processing skills. These fundamental skills include creating/editing documents and using bullets, numbered lists, special characters, borders and shading, fonts, paragraph spacing, and line spacing. Additionally, Internet searching and citing skills are emphasized as well as creating simple presentations and spreadsheets. In CA II, curriculum focuses on intermediate computer skills and seeks to expand student competencies. Intermediate skills taught in CA II focus more heavily on creating more complex word processing documents, spreadsheet documents including charts and graphs, and basic web pages.

The curriculum taught in Digital Communications I/II/III/IV (DC I/II/III/IV), one-semester each, make these courses well-suited to facilitate ACA testing for students. According

to the Arkansas Department of Career Education's (ACE) curriculum frameworks, DC I focuses on page composition, layout, design, editing, and printing associated with page design software. DC II emphasizes editing digital images and photography while analyzing and organizing information, setting up design structures, and producing special visual expressions related to graphics and photos. DC III teaches creative and technical skills needed for web design and animation allowing students to create visual effects and animated graphics for video and web as well as other types of media. DC IV introduces students to digital audio and video giving students an opportunity to focus on pre-production, production, and post-production phases of video editing.

Although certification validates skills (Certiport, 2010), a general "confusion persists about what certification means" (Cantor, 2002, p. 2). Attainment of industry certification is encouraged within Career and Technical Education (CTE) programs at the national, state, and local levels. Specifically, business education promotes IC^3 (Internet and Computing Core Certification), MOS (Microsoft Office Specialist), and Adobe (Adobe Certified Associate) certifications. While certification attainment is a means of validating instruction and student learning within the educational program, there is an assumption that individuals are reaping rewards from certification and that businesses will more readily hire employees who have attained industry certification (Cegielski, 2004). One testing vendor alludes to the idea that certification provides "tools to build a brighter future" (Certiport, 2015, "Microsoft Office Specialist Benefits," para. 1) through achieving certification, learning computer skills sought after by companies, gaining experience and confidence while preparing for the future, boosting personal résumés and standing out from other applicants, and increasing earning potential (Certiport, 2015).

Comparing the curriculum frameworks of CBA, CA I/II, and DC I/II/III/IV with a closer look at the IC^3, MOS, and ACA certifications will confirm a strong correlation between the curriculum being taught in these classes and the competencies being tested for IC^3, MOS, and ACA certifications.

Internet and Computing Core Certification (IC^3)

IC^3 certification is noted for assessing "the foundation of knowledge needed to succeed in environments that require the use of computers and the Internet" (Certiport, 2010, "Overview," para. 3). To become IC^3 certified, a test candidate must successfully pass all three individual exams (Computing Fundamentals, Key Applications, and Living Online) which make up IC^3 certification. Computing Fundamental objectives relate to computer hardware, peripherals, and troubleshooting; computer software; and using an operating system. Key Applications objectives relate to computer program functions, word processing functions, spreadsheet features, and communicating with presentation software. Living Online objectives relate to communication networks and the Internet, electronic communication and collaboration, using the Internet and the World Wide Web, and the impact of computing and the Internet on society. As an industry certification, IC^3 certification identifies a credentialed individual as "someone with the critical entry-level skills needed to effectively use the latest computer and Internet technology to achieve business objectives, expand productivity, improve profitability, and provide a competitive edge" (Certiport, 2010, "Overview," para. 6).

Microsoft Office Specialist (MOS)

Industry certification related to Microsoft Office programs signifies proficiency in desktop application programs. Testing candidates may certify in one or more of the individual areas (Word, Excel, PowerPoint, Access, Outlook, SharePoint, OneNote, or Office 365). Expert

certification levels are available for Word and Excel. A special Master credential is available for individuals achieving Word Expert, Excel Expert, PowerPoint and one additional certification in either Access, Outlook, SharePoint, OneNote, or Office 365.

Word objectives relate to creating and customizing documents, formatting content, working with visual content, organizing content, reviewing documents, and sharing and securing content. Excel objectives relate to creating and manipulating data, formatting data and content, creating and modifying formulas, presenting data visually, and collaborating and securing data. PowerPoint objectives relate to creating and formatting presentations, creating and formatting slide content, working with visual content, and collaborating on and delivering presentations. Access objectives relate to structuring a database, creating and formatting database elements, entering and modifying data, creating and modifying queries, presenting and sharing data, and managing and maintaining databases. Outlook objectives relate to managing messaging, managing scheduling, managing tasks, managing contacts and personal contact information, and organizing information. SharePoint objectives relate to creating and formatting content, managing sites, participating in user communities, configuring and consuming site search results, and integrating SharePoint services and Microsoft applications. OneNote objectives relate to managing the environment, sharing and collaborating with other users, organizing and finding notes, and editing and linking content. Office 365 objectives relate to navigating Office 365, communicating by using Office 365 Outlook Web Application, collaborating by using Lync Online, and managing sites in SharePoint Online. Earning a MOS certification indicates demonstrated proficiency in desktop applications (Certiport, 2010).

Adobe Certified Associate (ACA)

Entry-level certification in Adobe software applications indicates a level of proficiency relevant for "an increasingly competitive work world [where] employers need more than familiar users of digital communications technology to drive successful outcomes" (Certiport, 2010, "Certification Helps Prove Proficiency," para. 1). A variety of ACA certifications are available. These include Web Communication using Adobe Dreamweaver, Rich Media Communication using Adobe Flash Professional, Visual Communication using Adobe Photoshop, Visual Communication using Adobe Premiere Pro, Visual Communication using Adobe Illustrator, and Visual Communication using Adobe InDesign. Dreamweaver objectives relate to setting up project requirements, planning site designs and page layouts, understanding the program interface, adding content, organizing content, and evaluating and maintaining a site. Flash objectives relate to setting up project requirements, identifying interactive media design elements, understanding the program, building interactive media elements, and evaluating interactive media elements. Photoshop objectives include setting up project requirements, identifying design elements when preparing elements, understanding the program, manipulating images, and publishing digital images. Premiere objectives relate to setting project requirements, identifying design elements when preparing video, understanding the program, editing video sequences, and exporting video. Illustrator objectives relate to setting project requirements, identifying design elements used when preparing graphics, understanding the program, creating graphics, and archiving, exporting, and publishing graphics. InDesign objectives relate to setting project requirements, identifying design elements when preparing page layouts, understanding the program, creating page layouts, and publishing, exporting, and archiving page layouts. According to Certiport (2015), achieving an ACA certification is proof of skill attainment "in

demand today by industry and academia and reflects well when presented on a résumé or college application" (Introduction section, para. 2). Although this may be the case, there is still a need for further understanding of the value of certification as it relates to employability.

Statement of the Problem

Randall and Zirkle (2005) suggested that entry-level certification is promoted as a "vehicle to provide students with viable skills needed by the workforce, to satisfy state skill standards, and to prepare students for postsecondary studies" (p. 287). Students have been shown to be motivated by essential questions (TLC: Community, 2010) such as "what do I need to know," "why do I need to know," and "how am I going to use it," for the student earning industry certification. Beyond intrinsic pride in one's accomplishment and praise received from classroom teachers, there is a need to make the connection for how industry certification relates to employability.

Purpose of the Study

The purpose of this study is to investigate how achieving IC^3, MOS, and ACA industry certification relates to employability opportunities in Arkansas as perceived by human resource (HR) professionals and information technology (IT) professionals.

Significance of the Study

Gaining a better understanding of how achieving industry certification relates to employability opportunities in Arkansas will provide certification candidates with more concrete answers to possible essential questions such as "why should I be certified" and "how am I going to use this certification." From these determinations, the desire for industry certification attainment may grow into more than just a value-added benefit to the typical classroom

experience for students that will last for more than one or two particular semesters during a typical high school career.

Understanding the benefits of certification is critical for state improvement. As such, state demographics and IT careers are examined.

State Demographics

Since this study is confined to the state of Arkansas, a state demographic profile is provided to give a better understanding of the state's size, population, education level, and income. Information is based upon data available from the U.S. Census Bureau via O*NET, the Occupational Information Network. The 2010 U.S. Census Bureau (see Table 1) placed Arkansas' land area at 52,035.48 square miles with 56.0 persons per mile. The population was estimated at 2,966,369 in 2014, reflecting an increase from the 2010 estimate of 2,915,958. High school graduates, age 25+ between the years of 2009-2013, was placed at 83.7%. Individuals holding a Bachelor's degree or higher during the same time period, age 25+, totaled 20.1%. Per capita income, in 2013 dollars, for the years of 2009-2013 was $22,170. The median household income was $40,788, and 19.2% of the state's residents were living below the poverty level.

Table 1

Arkansas Demographics from U.S. Census Bureau 2010

Item	Data
Land Area	52,035.48 square miles
Persons Per Mile	56.0
Population (2014)	2,966,369
Population (2010)	2, 915,958
High School Graduates, Age 25+ (2009-2013)	83.7%
Bachelor's Degree or Higher, Age 25+ (2009-2013)	20.1%
Per Capita Income, 2013 Dollars (2009-2013)	$22,170
Median Household Income (2009-2013)	$40,788
Living Below Poverty Level	19.2%

IT Careers

While technology use is common and has become a fact in the business world (Schuldt & Totten, 1994), individuals choose careers for a variety of reasons. Reasons may include wages, availability, and location. Today, O*NET may be accessed online by "job seekers, workforce development and HR professionals, students, researchers" (O*NET, 2015, Introduction section, para. 2) and virtually anyone with internet access to secure "detailed descriptions of the world of work" (O*NET, 2015, Introduction section, para. 2). Replacing the Dictionary of Occupational Titles (DOT) as a primary source of occupational information, O*NET is a "unique, comprehensive system [which] identifies and describes over 950 occupations in the following areas: job-specific tasks, skills, knowledge, and abilities requirements, work styles, interests, [and] training requirements" (O*NET, 2015, "O*NET—What is It?," para. 1). Using O*NET, a

list of the top 20 IT occupations nationwide was accessed and reviewed in relation to opportunities within the state of Arkansas (see Table 2). Annual projected job openings take growth and net replacement into consideration.

Table 2

*Top 20 IT Occupations Nationwide as Listed on O*NET Utilizing Arkansas Data*

Occupation	Median Yearly Wage 2013	Number of Employees 2012	Projected Job Openings Annually
Information Technology Project Managers	$75,100	Not Available	Not Available
Geographic Information Systems Technicians	$75,100	Not Available	Not Available
Geospatial Information Scientists and Technologists	$75,100	Not Available	Not Available
Informatics Nurse Specialists	$67,300	1,640	50
Instructional Designers and Technologists	$60,400	1,790	40
Information Security Analysts	$61,500	860	40
Bioinformatics Technicians	Not Available	Not Available	Not Available
Computer and Information Systems Managers	$97,300	1,370	40
Computer Network Architects	$81,200	1,150	20
Business Intelligence Analysts	$75,100	Not Available	Not Available

Occupation	Median Yearly Wage 2013	Number of Employees 2012	Projected Job Openings Annually
Computer Systems Analysts	$67,300	1,640	50
Business Continuity Planners	$62,100	7,430	180
Software Developers, Systems Software	$72,300	1,040	30
Software Developers, Applications	$79,400	1,940	50
Network and Computer Systems Administrators	$63,300	2,260	50
Web Administrators	$75,100	Not Available	Not Available
Database Administrators	$63,500	1,150	40
Computer User Support Specialists	$38,100	2,830	80
Career/Technical Education Teachers, Secondary School	$49,600	1,190	40

Even though not all of the top 20 IT occupations are readily available in Arkansas, there are a number of careers in which technology plays a role (see Table 3). As such, technology skills relevant to competencies being validated by certification may be advantageous. Such careers include:

Table 3

*Other Occupations with Technology Used as Listed on O*NET Utilizing Arkansas Data*

Occupation	Typical Job Titles	Applicable Software Used
Receptionists/ Information Clerks	Community Liaison, Front Desk Receptionist, Clerk Specialist, Receptionist, Office Assistant	Microsoft Office software
Secretaries/ Administrative Assistants	Administrative Assistant, Administrative Associate, Administrative Secretary, Administrative Specialist, Department Secretary, Office Assistant, Secretary	Microsoft Access, Microsoft Outlook, Web browser software, Microsoft Word
Executive Secretaries/ Executive Administrative Assistants	Administrative Aide, Administrative Assistant, Administrative Secretary, Executive Assistant, Executive Secretary, Office Manager	Microsoft Access, Microsoft Word
Office Clerks	Administrative Assistant, Customer Service Representative, Office Clerk, Office Manager, Receptionist, Secretary	Microsoft Office software
Production Workers	Clean Up Person, Factory Worker, Machine Operator, Service Person	Microsoft Excel, Microsoft Word
Textile Knitting and Weaving Machine Setters, Operators and Tenders	Knitter, Weaver, Loom Fixer, Winder Operator	Microsoft Outlook, Microsoft Excel, Microsoft Word

Occupation	Typical Job Titles	Applicable Software Used
Interviewers	Admissions Clerk, Registrar, Market Research Interviewer, Research Interviewer, Patient Services Representative	Microsoft Office software
Order Clerks	Administrative Assistant, Customer Service Representative, Materials Scheduler, Order Analyst, Warehouse Clerk	Microsoft Outlook, Microsoft Excel, Microsoft Access
Social and Human Service Assistants	Advocate, Case Worker, Outreach Specialist, Community Coordinator, Family Support Worker, Mental Health Technician	Microsoft Access, Microsoft Outlook, Microsoft Excel
Court Clerks	Case Manager, Circuit Court Clerk, Court Specialist, Law Clerk	Microsoft Office software
Licensed Practical Nurses and Licensed Vocational Nurses	Clinic Nurse, Office Nurse, Private Duty Nurse, Triage Nurse, Hospital Nurse	Microsoft Office software

Occupation	Typical Job Titles	Applicable Software Used
Tour Guides and Escorts	Docent, Historical Interpreter, Museum Educator, Science Interpreter, Discovery Guide, Tour Guide	Microsoft Office software
Nursery and Greenhouse Managers	Farm Manager, Garden Center Manager, Grower, Nursery Manager, Horticulturist, Production Manager	Microsoft Word, Microsoft Excel
City and Regional Planning Aides	Community Planner, Development and Housing Director, Engineering Technician, Planner, Planning Assistant, Zoning Technician	Microsoft Excel, Microsoft Word
Curators	Curator of Collections, Curator of Education, Exhibitions Curator, Gallery Director, Museum Curator	Adobe InDesign, Adobe Photoshop, Microsoft Word
Tellers	Bank Teller, Customer Relation Specialist, Member Services Representative, Personal Banking Representative	Microsoft Outlook, Microsoft Excel

Occupation	Typical Job Titles	Applicable Software Used
Medical Assistants	Certified Medical Assistant, Clinical Assistant, Doctor's Assistant, Ophthalmic Technician, Optometric Assistant, Chiropractor Assistant	Microsoft Office software
Childcare Workers	Child Care Provider, Child Care Teacher, Child Care Giver	Microsoft Word
Hotel, Motel, and Resort Desk Clerks	Desk Clerk, Front Desk Agent, Front Desk Supervisor, Guest Service Representative, Night Auditor	Microsoft Publisher, Microsoft Outlook, Microsoft Excel
Couriers and Messengers	Courier, Distribution Technician, Messenger, Driver, Mail Technician	Microsoft Office software
Wholesale and Retail Buyers	Buyer, Merchandiser, Procurement Specialist, Purchasing Manager, Trader	Microsoft Excel, Microsoft Outlook
Police, Fire and Ambulance Dispatchers	911 Dispatcher, Police Dispatcher, Emergency Dispatcher, Public Safety Dispatcher, Communications Office	Microsoft Word

Research Questions

1. To what degree are HR and IT professionals in the state of Arkansas familiar with IC^3, MOS, and/or ACA certifications?
2. Do HR and IT professionals perceive that their organizations give preference to candidates possessing one or more IC^3, MOS, and/or ACA certification?
3. Are employees with IC^3, MOS, and/or ACA certifications compensated for these credentials?
4. To what extent do HR and IT professionals value entry-level employee certification credentials upon initial hire?

Theoretical Framework

Forrier and Sels (2003) define employability as "an individual's chance of a job on the internal and/or external labor market" (p. 106) and is important (Wittekind, Raeder, & Grote, 2010). According to Hughes and Byrd (2015), human capital theory is significant in proposing the economic value of human resources. When human capital theory is applied in a practical sense, it can be used when examining human resources within organizations (Holton and Naquin 2004). Human Capital Theory seeks to explain the gains of education and training as a form of investment in human resources (Aliaga 2001; Nafukho, Hairston, & Brooks, 2004), with the premise that people are considered a form of capital for development (Aliaga 2001; Becker 1993, Benhabib and Spiegel 1994; Engelbrecht 2003; Hendricks 2002). It seeks to place economic value on KSAs of individuals. Human capital theory has its limitations because it is difficult to attribute a cost to a human being's knowledge, skills, and abilities. "From this perspective, education and schooling are seen as deliberate investments that prepare the labor force and

increase productivity of individuals and organizations, as well as encouraging growth and development at the international level' (Nafukho, Hairston, & Brooks, 2004, p.546).

Possessing an industry certification may be considered an example of human capital skill. The human capital theory suggests qualifications, knowledge, skills, and experience of individuals may lead to increased earnings or productivity (Becker, 1993; Rosen, 1987; Schultz, 1971). As such, the human capital theory provides a framework for studying perceived employability (Wittekind, Raeder, & Grote, 2010; Verhaar & Smulders, 1999).

Assumptions

The following assumptions about the research project will be made:

1. HR and IT professionals have a basic knowledge of IC^3, MOS, and ACA certifications.
2. IC^3, MOS, and ACA certifications increase the employability of job candidates.

Limitations

The following limitations about the research project will be made:

1. This study will be limited to IC^3, MOS, and ACA certifications which are most likely to be made available to Arkansas public high school students enrolled in business education, computer technology related courses.
2. This study will be limited to HR and IT professionals within the state of Arkansas.

Definition of Terms

The following definitions, presented in alphabetical order, will assist readers in gaining a better understanding of this research:

- Adobe Certified Associate (ACA) is a credential that may be earned by a test candidate who has demonstrated application software proficiency via Adobe programs (i.e. Dreamweaver, Flash, Photoshop, Premiere, Illustrator, InDesign).

- Career and Technical Education (CTE) integrates academic subject matter with employability skills.
- Industry Certification is a professional credential signifying attainment of globally recognized standards for digital literacy and application software proficiency. For the purpose of this research, emphasis will be given to IC^3 (Internet and Computing Core Certification), MOS (Microsoft Office Specialist), and Adobe (Adobe Certified Associate) certifications.
- Internet and Computing Core Certification (IC^3) is a credential that may be earned by a test candidate who has demonstrated digital literacy proficiency.
- Microsoft Office Specialist (MOS) is a credential that may be earned by a test candidate who has demonstrated application software proficiency via Microsoft Office programs (i.e. Word, Excel, PowerPoint, Access, Outlook, etc.).
- Students—For the purpose of this study, secondary students enrolled in one or more business education course offered in an Arkansas public school district.

Chapter Two

REVIEW OF LITERATURE

The idea that certification matters is a generally accepted belief among students and educators. Certification opportunities at the secondary level require the cooperation of many stakeholders working willingly and collaboratively toward the common goal: industry certification for students (Dean, 2001). In this collaborative effort, all stakeholders must rise to the challenge by doing what is needed (Keck, 2015). Students prepare for rigorous certification tests (Vaandrager, 2015). Parents encourage best efforts from children (Hoover-Dempsey & Sandler, 1995). Educators purposefully infuse certification centered instruction into the curriculum as well as testing opportunities into the course calendar (Dean, 2001). Administrators allocate funding for certification testing and enable the establishment of the school in being designated as a certification testing center for students (Dean, 2001).

While achieving certification speaks favorably of the achieving individual and the school for facilitating the opportunity, there is still a need to make the connection for how industry certification relates to employability, specifically in Arkansas. In developing a better understanding, it is important to investigate the issue of certification from many angles. Who is testing, who is paying for these testing opportunities, what are the findings of scholars and experts, and how does certification relate to employability are integral aspects of this review of literature. Understanding the secondary student certification candidate is the first aspect to be addressed.

Career Development and Secondary Students

Even though IC^3, MOS, and ACA certifications may be taken by candidates of any age or experience level, many Arkansas public school students in grades 9 thru 12 participating in

business education, computer technology classes have an opportunity to sit for one or more of these certification exams while still in high school. Because of this, Donald Super's Theory of Career Development (Super, 1990) provides a foundation for this research. Gies (1990) explains Super's career development theory as a process "involving a compromise between personal and social factors, self-concept and reality, and newly learned and existing patterns of responses. The closer the chosen occupation is to self-concept the more meaningful the choice will be" (p. 55). Super's theory breaks the developmental process into five life stages. These life stages are identified as growth, exploration, establishment, maintenance, and decline. Super's theory also takes into account that individuals have unique abilities, interests, and personalities and that these may change over time and from experience. Although these students would fit into Super's exploration stage of career development, falling well within the 15-24 age range for this stage of development and gaining skill development through these classes, students seeking certification further exemplify Super's concept of vocational maturity as they do not chronologically fit into the typically specified ages of Super's career development stage (Super, 1990). The addition of the certification exams with students having the opportunity to obtain proof of entry level skill attainment as evidenced by earning one or more certification falls into the establishment stage of career development. This stage of career development typically occurs between ages 25-44 according to Super's Theory of Career Development.

Student Self-Regulation and Certification

Student self-regulation relates to certification because the student must pace themselves during the testing process. Each of the three components of the IC^3 allow only 45-50 minutes per component (Certiport, 2015). In older versions of the certification, 45 minutes is the maximum time allowed (Certiport, 2010). In newer versions, 50 minutes is the maximum time allowed.

MOS testing allows up to 50 minutes per exam. ACA testing allows up to 50 minutes per exam (Certiport, 2015). Self-regulated learning is a proactive process (Zimmerman, 2008) and an important part of achieving certification. Because self-regulated learning is a proactive process, a motivated student should be able to use specific processes or responses to improve academic performance and achievement (Zimmerman, 1986). A student capable of self-regulated learning possesses personal initiative, the ability to adapt, and demonstrate endurance (Zimmerman & Schunk, 2007). According to Zimmerman and Kitsantas (1997), a successful self-regulated learner is one who is capable of performing skills without intentional thought or focus with attention being paid to actual performance outcomes. Successful certification requires mastery of complex skills that can be performed as a natural response and without undue intentional thought (Zimmerman & Kitsantas, 1997) under a timed testing condition.

Although self-regulation may also result in positive self-reactions, self-efficacy, and intrinsic interest in students (Zimmerman & Kitsantas, 1997), Winne (1995) reports self-regulation is not a generalized ability or trait. Rather, Winne advocates that self-regulation is a process that is complex and interactive involving metacognition as well as motivational and behavioral components. A student's goals, expected outcome, and perception of self-efficacy may affect his or her motivation. As such, a "primary goal of education . . . is to foster independent, self-motivated, self-regulated thinkers and learners . . . able to seek information from diverse sources, think critically about what they find, and select and integrate knowledge" (Zimmerman & Paulsen, 1995, p. 13).

Student Self-Concept and Certification

For a student working toward achieving certification, self-concept is also worthy of consideration. Self-concept or perceived competence (Wigfield & Eccles, 2000) may be in

contrast with self-efficacy or a test candidate's conviction related to successful performance (Schiefele, 1991; Zimmerman, 2000). The work of Christoph, Goldhammer, Zylka, and Hartig (2015) in agreement with Mumtaz (2001) and Volman, van Eck, Heemskerk, and Kuiper (2005) maintains that an individual perceiving him or herself to be competent, effective, and/or skilled in using computers will earn higher computer-related scores than those who do not perceive themselves to be competent, effective, and skilled. Therefore, further developing a student's existing computer self-concept or even helping to create a student's computer self-concept is likely to play a role in student motivation regarding certification testing.

Since students have willingly opted to take these elective classes in business education and computer technology, students generally have a positive self-concept regarding computers and a higher motivation level for successful certification testing (Hunsinger & Smith, 2008). Hunsinger and Smith (2008) combined the Theory of Planned Behavior with interview and survey data to identify factors influencing students to earn IT certification. Icek Ajzen's Theory of Planned Behavior proposes that attitude, subjective norms, and perceived behavioral control are "significant in predicting behavioral intention, which in turn predicts behavior" (Hunsinger & Smith, 2008, p. 247). Furthermore, it was found that affect, specifically emotion, and cognition, specifically outcome beliefs, can predict attitude (Hunsinger & Smith, 2008). If a student perceives him or herself as more competent, a willingness to engage in activities to better facilitate the development of related competencies should be present (Christoph, Goldhammer, Zylka, & Hartig, 2015). In this instance, a student should be willing to engage in activities to better facilitate the development of skills related to achieving certification.

As previously stated, regardless of a testing candidate's age or previous experience, the rigorous nature of the certification tests is maintained. Students are not given an easier version of

tests, allowed extended time, nor any other testing modifications to compensate for age or experience level (Certiport, 2015). It is not uncommon for a student to take a certification exam more than once before successfully achieving certification. This provides ample opportunity for the student to demonstrate such proactive qualities as personal initiative, perseverance, and adaptive skill which stem from advantageous motivational feelings, beliefs, and metacognition strategies (Zimmerman & Schunk, 2007). With students preparing to sit for certification tests, the issue of funding these certification testing opportunities must be explored.

Funding Secondary Students' Certification

Funding is critical because human capital theory relates to economic investment in human resources. Arkansas state law, AR Code § 6-15-1002, states "students in Arkansas deserve the best education that the citizens can provide" (2012) and this includes funding of things such as certification testing for students. Arkansas business educators and the Arkansas Department of Career Education are answering this charge by encouraging certification testing opportunities for secondary business education, computer technology students in classrooms across the state. At the same time, CTE programs nationwide are charged with providing students with credentials and certifications which are recognized and valued by business and industry (Association of Career and Technical Education, 2015). These actions at the state and national levels reinforce the assertion of Randall and Zirkle (2005) of "a growing trend within secondary and postsecondary institutions to offer information technology (IT) certification" (p. 287).

Providing these certification testing opportunities is not without cost. On July 20, 2012, under the leadership of former Governor Mike Beebe, the Governor's Workforce Cabinet announced the launch of the Microsoft IT Academy Program in Arkansas. Beginning as a pilot

program, the Microsoft IT Academy Program collaboration with Arkansas is noteworthy as expansion into all high schools and adult education centers is planned. Furthermore, Arkansas is the first state in the nation to make the program available to adult learners via adult education centers and Arkansas Workforce Centers. Web-based instruction and industry certifications are integral features of the Microsoft IT Academy Program. The Department of Career Education, the Department of Education, and the Department of Workforce Services jointly funded the Arkansas Microsoft IT Academy Program according to the State of Arkansas (2012). An initial investment of $469,635 by the state "provides a variety of curricula, lab resources, teacher training and certification materials for an anticipated 343 sites" (State of Arkansas, 2012, p. 2) for a period of three years.

Supporting the implementation of the Microsoft IT Academy Program in Arkansas, former Director of the Arkansas Department of Career Education William L. "Bill" Walker, Jr. is credited with representing the lead agency for the initiative as well as saying, "for students and workers alike, technological literacy is essential to compete in today's economy . . . program will play a significant role in preparing a technologically savvy workforce for our 21st–century global economy" (State of Arkansas, 2012, p. 1).

According to the Arkansas Department of Career Education (2014a), any school can be registered as a testing center at no charge and download test software for free. However, certification vouchers or licenses for use during the school year must be purchased. For schools not receiving certification testing vouchers at no out-of-pocket expense to the school district through the Microsoft IT Academy Program, the local school district may opt to annually purchase certification vouchers or even a testing site license directly through a testing vendor

such as Certiport. The Carl D. Perkins Career and Technical Education Act, the Perkins Act, may be the funding answer for local school districts.

Reauthorized on August 12, 2006, as Public Law 109-270 (Association for Career & Technical Education, 2015), the purpose of the Carl D. Perkins Career and Technical Education Act is to provide individuals with the academic and technical skills necessary for success in a knowledge- and skills-based economy. This reauthorization placed an increased focus on the academic achievement of CTE students and strengthening connections between secondary and postsecondary education as well as improving state and local accountability (U.S. Department of Education, 2015). Certification testing may qualify as a supported Perkins activity. According to the Association for Career and Technical Education (2015), types of activities supported generally serve as a change catalyst or drive program improvement, develop accountability ensuring quality and results, strengthen academic integration into CTE, ensure CTE access for special populations, develop and improve curriculum, purchase equipment above minimum standard levels, provide career guidance and academic counseling, provide professional development for teachers, counselors, and administrators, and support CTE student organizations. Typically, certification testing may be placed into one or more of these generally supported types of activities.

In Arkansas, data reports 101,950 students in grades 9 thru 12 took part in one or more CTE course during the 2012-2013 school year which reflects 74% of Arkansas students as CTE students (Arkansas Department of Career Education, 2014b). The number of secondary Business/Marketing Technology CTE Completers/Concentrators earning industry certification rose from 193 during the 2011-2012 school year to 506 during the 2012-2013 school year (Arkansas Department of Career Education, 2014b). This increase translates into a 162.18% over

the previous year. It should be noted that a completer and a concentrator vary slightly. A concentrator is identified as a student who has enrolled in at least three units of credit from a program of study whereas a completer is identified as a graduating senior successfully earning three or more units of credit in a CTE program of study (Arkansas Department of Career Education, 2014b). Continuing to make progress in the number of certifications earned, the 2013-14 school year reported 2,588 certifications earned by secondary students (see Figure 1). Arkansas' partnership with Microsoft IT Academy for curriculum, materials, and resources and Certiport for actual certification testing will continue in Arkansas through the 2014-15 school year. Under this partnership, curriculum may be delivered to all school districts and unlimited certification testing is granted for 79 of Arkansas' school districts (Arkansas Department of Career Education, 2014b).

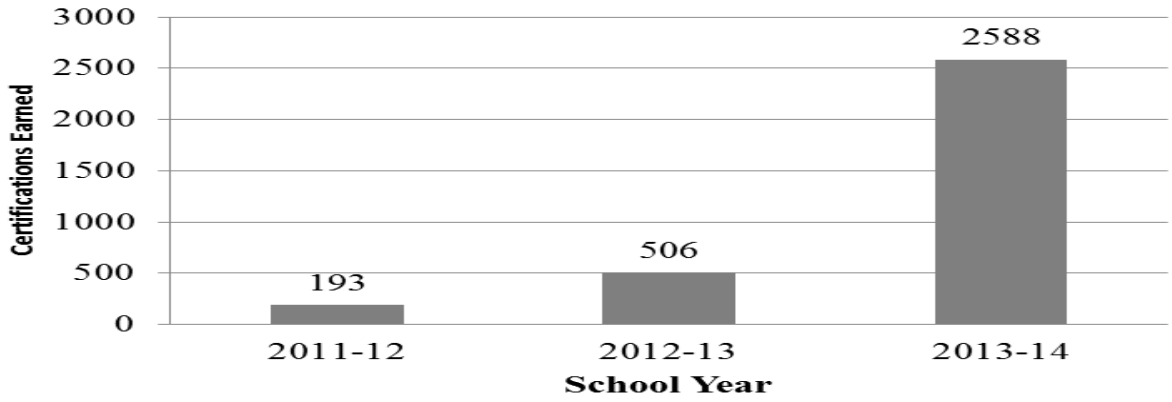

Figure 1. Certifications Earned by Arkansas Secondary Students.

Knowledge gained by individuals relates to the economic theory of human capital (Hughes & Byrd, 2015). As such, building the credentials, résumés, and confidence of students is important. This is especially relevant as students prepare to leave high school and enter into the next phase of life, further education or immediate entry into the workforce. According to Hughes and Byrd (2015), knowledge held by individuals helps the economy prosper. Furthermore, it is

described as a scenario in which an individual and the organization benefits. For example, an individual may benefit from the mastery of new skills while the organization benefits from potentially higher revenue and increased earnings (Hughes & Byrd, 2015). To effectively manage human capital requires organizations to recognize that employees are "valuable asset[s] . . . and the lifeblood" (Karr, 2001, p. 60) of the business or organization. It is also important to know what others, scholars and experts, have already discovered regarding certification.

Certification Influence on Society

Society influences the financed interest in the education of tomorrow's workforce and leaders. Thus there are many groups and individuals with opinions concerning education processes. Determining which information to consider and what input is the most relevant and applicable may sometimes be a daunting task. Regarding the issue of industry certification, Randall and Zirkle (2005) are often cited and address the questions of who benefits from certification and what is needed.

Technology Growth, Certification, and Employment

Technology evolves at a rapid pace creating the need for highly skilled individuals. In response to the rapid pace of technological changes and in an effort to provide students with marketable skills, certification has become an answer (Ray & McCoy, 2000). This point is reiterated by Randall and Zirkle (2005) as they state "industry-based IT certification has become a standard precursor to employment in many IT job roles" (p. 289). Certification is believed to be a type of stamp of approval verifying the certificate holder possesses the skills and knowledge needed to be successful (Cantor, 2002).

However, also according to Randall and Zirkle (2005), there is a lack of data on certification programs at the district, state, and national levels to determine the effectiveness.

More than this lack of data, there is also a concern of resulting ill-informed decisions about certification programs being made. This concern is due to the variety of information available, much of which is based on marketing and convenience rather than on passage rates, preparation for continuing education, and job placement opportunities.

While "certifications act as a signal to hiring managers that a job candidate has achieved a level of knowledge and skill necessary to perform in a particular IT job role," (Randall & Zirkle, 2005, p. 290) a U.S. Department of Commerce (2003) report points to a different finding. The U.S. Department of Commerce's report indicates that a certification satisfies a specific skill set but does not prepare students for IT careers above entry level. Advancement above entry level often requires additional formal education and previous work experience.

Especially important to note is the flag of caution raised by Randall and Zirkle (2005) as they warn that high schools implementing vendor-specific certifications may be placing students at a disadvantage. This disadvantage may be an academic disadvantage as well as a workforce disadvantage. If a student earns certification as a secondary student but does not enter the workforce for several years, the certification may have been replaced by a newer version and therefore be out of date. Re-certification may even be necessary. Conversely, if the student earns certification as a postsecondary student, the student should possess a marketable certification as well as more formal education and related experiences to draw upon.

As schools point to student certification successes as an answer to satisfying accountability demands required by the Perkins Act, students may be drawn to classes offering certification opportunities because of the possibility to earn certification and gain what is viewed to be an employability advantage over non-certified individuals (Randall & Zirkle, 2005). Ironically, the research points to educational institutions and vendors as parties benefiting from

certification. Educational institutions are thought to benefit because of access to ready-made curriculum aligning to state and national standards. Vendors are believed to benefit because it is perceived that loyalty to their products will be cultivated among teachers and students as well as others involved in the certification process. Where Randall and Zirkle explore who benefits and what is needed, Cegielski examines who values technology certification.

Value of Certification to Employer

According to Cegielski (2004), "when it comes to gauging the value of IT certification for assessing the competency of job candidates, it really all depends on who's doing the hiring" (p. 103). An interviewer may or may not choose to rely upon certification a means to verify a candidate's skill and knowledge. More information on Cegielski's findings regarding who values certification can be found in the employability section of the review of literature. While Cegielski examines who values technology certification, Michlitsch and Sidle (2002) study the assessment of student learning outcomes from the standpoint more commonly used in classroom situations.

Certification as an Assessment of Student Learning Outcomes

Simply put, certification testing is an assessment. Either a student will be able to demonstrate the requisite amount of skill proficiency during the certification exam in order to earn certification or the student will not. According to Michlitsch and Sidle (2002), a quality education is one that should help students gain skills needed in order to be successful. Regarding education, "public and government units have been calling for more accountability . . . showing that students are learning to apply important knowledge" (Michlitsch & Sidle, 2002, p. 125) as a result.

In conducting their research of assessments used, Michlitsch and Sidle (2002) focused on business schools because these schools are considered to be a direct pipeline of employees into the business community. As such, business schools tend to be subjected to more scrutiny from business leaders. Their research involved using a questionnaire to gather data concerning the assessment of student learning from business professors. Results reported case studies, observations, and item analysis of multiple-choice questions were considered to be the most effective in measuring student learning and were also the most frequently used assessments. Although viewed as methods also effective for measuring student learning, concept mapping, simple questionnaires, computerized simulations, student presentations, and student writing assignments were less commonly used.

Michlitsch and Sidle's work (2002) was particularly noteworthy as Management Information Systems professors represented a subgroup of business professors. Management Information Systems would have the most direct correlation to IT certification. Interestingly, the Management Information Systems business professors reported greater concentration on processes than professors from other subgroups of the study. While assessing students through certification exams was not mentioned in the study, certification exams do concentrate on processes.

One of the recommendations made by researchers dealt with the area of technology. It was further recommended that technology as an assessment tool be investigated. Final performances and recitals were also equated to simulations. The concept of a simulation was defined as a "test for ascertaining whether students can apply what they should have learned" (Michlitsch & Sidle, 2002, p. 129). Certification is not considered a simulation. Nevertheless, certification is most certainly a test for ascertaining if a student is able to apply what should have

been learned. A central concern beyond what scholars and experts have determined in regard to who benefits from certification, what is needed for certification, who values certification, and a general assessment of student learning outcomes is related to employability. The connection between certification and employability must be explored.

Connection between Employability and Certification

"Certification not only offers a means for communicating standards required and standards reached, it gives students an advantage when they enter the workplace" (Foster & Pritz, 2006, p. 15). In order for certification to be accepted as a credible tool, certification must be based on quality principles and the assessment must be valid, reliable, and fair. Quality is thought to be present when industry standards and certification are directly linked through standards recognized and valued by employers.

Foster and Pritz (2006) also make the concept of certification synonymous with the words authority and promise. Authority is bestowed because of the respect garnered by the group granting certification. Promise because the person earning the certification has achieved certification status by demonstrating knowledge and skills at a pre-set standard level. Achieving certification is also an indication of ability and, therefore, thought to be an important career credential for students and employees.

Hitchcock (2005) describes industry certification as a "veritable juggernaut driven by several dynamics" (p. 59) from candidates, industry and professional associations, employers, consumers, vendors, and academic institutions. Job candidates desire to boost knowledge, skills, status, employability, and remuneration. Industry and professional associates want to set minimum standards while raising competency levels. Employers hope to be able to select the best candidates to hire. Consumers expect companies to be staffed by skilled professionals.

Vendors need to be represented by knowledgeable employees capable of providing excellent product support. Academic institutions integrate certification into curriculum.

Supporting Hitchcock (2005), Foster and Pritz (2006) agree that certification benefits individuals, companies, and institutions. A certifying student benefits through a sense of accomplishment and the possibility of earning transferable credit for a postsecondary degree program. Because certification is a professional credential, it is "of high value in business and industry, which helps make individuals more employable . . . will be paid higher starting salaries . . . and may reduce the time they spend looking for a position" (p. 15). Employers hiring candidates holding a certificate benefit through a "systematic process for recruiting, screening and quality improvement" (p. 15). Higher sales and increased customer satisfaction are two benefits identified by companies.

Certification is costly, especially considering re-certifications likely to be needed as new software versions are released (Hitchcock, 2005). For employers supporting industry certification, Ireland (2003) promulgates that return on investment in certification is visible. This return is visible in decreased turnover among employees, reduced hiring costs when appropriately staffed, improved retention of clients/customers, increased productivity in the workplace, and increased opportunities for employee promotion.

Certification and Preparing Global Workers

Randall and Zirkle (2005) believe the chief reason for obtaining certification is to meet the demand of a global workforce requiring greater technical literacy among secondary and postsecondary graduates. Reinforcing the notion of preparing students to enter a global workforce, certification is valued by countries other than just the United States. This is especially true of IT certifications which are recognized as valuable assets for an employee to possess

(Foster & Pritz, 2006). According to the U.S. Department of Labor, Bureau of Labor Statistics (2005), there is an employer preference to fill computer support roles with candidates possessing at least some postsecondary education. However, it is noted that many employers will set aside the preference for a formal degree for a candidate with prior experience and relevant certification if a certain skill set is needed. Whether a student is preparing for college or career, secondary education serves a pivotal, two-fold role by equipping students with computer skills and preparing students for a global IT workforce (Csapo, 2002). Computer skills are essential for students to achieve academic success, function in the workplace, and operate through routine, daily activities (Randall & Zirkle, 2005).

Anderson, Barrett, and Schwager (2005) note a rapid and dynamic change in information technology caused by new and evolving technologies. Because of this, IT professionals must maintain a marketable portfolio of skills. Since, certification is a "useful tool for enhancing and validating IT professionals' skill portfolios and can play an important key role in the hiring process" (p. 281), certification should be among this portfolio. In a study conducted by Anderson, Barrett, and Schwager, the findings report certification, education, and experience are not perfect substitutes for each other. Additionally, certification, education, and experience each have unique influence on the perceptions of HR professionals. The study findings further report the weight given to certification by HR remain relatively consistent unlike the weight given to education and experience. For instance, as education level increases, emphasis on experience decreases. According to the results of this study, a balanced candidate with a bachelor's degree will have relative weights of 40 percent education, 40 percent experience, and 20 percent certification. Randall and Zirkle (2005) plainly state that "certification alone is not a panacea, and next to education, previous experience is one of the most important factors in obtaining IT

related employment" (p. 291). Furthermore, Randall and Zirkle (2005) caution the use of vendor-specific certifications as those certifications may be disadvantageous for students academically and in the workplace.

Certification and Employee Selection

"When it comes to gauging the value of IT certification for assessing the competency of job candidates, it really all depends on who's doing the hiring" (Cegielski, 2004, p. 103). For an HR professional, Anderson, Barrett, and Schwager (2005) assert that "certifications could possibly be seen as security . . . confirming particular IT knowledge or skills" (p. 300). In Cegielski's research, Cegielski examined whether HR and IT professionals viewed IT certification in the same manner. The 2004 study resulted in 92 paired responses of HR and IT professionals from the 2002 list of Fortune 1000 largest companies. It was determined that these groups do not view certification in the same manner. HR professionals surveyed in Cegielski's study placed a higher value upon certification than IT professionals did. The HR perspective purported a belief that a candidate holding a certification would likely possess a higher degree of competency than a non-certified candidate. Moreover, HR believed hiring a candidate holding certification minimized the need for a candidate's technical competency to be assessed in greater depth by HR. From the perspective of IT professionals, very few believed certification correlated to ability and none found certification as a suitable reason to hire a candidate. Cegielski seems to suggest HR and IT professionals join forces to develop a candidate profile as well as an interactive technical and personal measurement methodology appropriate for determining which candidates are best suited to the company's IT infrastructure as well as organizational culture. Anderson, Barrett, and Schwager (2005) found internal organizational benefits, external organizational benefits, same-job employee benefits, different-job employee benefits, and

certification credibility to be value drivers of IT certification in hiring decisions made by HR professionals. Hiring decisions may also be further influenced by the HR professional's management experience and perception of certification. "Students that hold a certification and have experience carry more weight on a job interview than a high school graduate with a certification and no experience. Hiring managers indicate that the best background for IT employment is previous experience in a related field and a four year college degree (Information Technology Association of America [ITAA], 2004).

Typical vendor information points to increased employability for certification holders as job candidates while attesting to preparedness and "reflect[ing] 21st century skills that signal [a certificate holder] is ready to transition to higher-level learning and earning" (Certiport, 2015). For example, Certiport purports that MOS ensures certified job candidates possess skills needed by employers (Certiport, 2015). As such, IT certifications are a precursor to employment as holding a certification signals the job candidate has relevant knowledge and competencies (Randall & Zirkle, 2005). According to Al-Rawi, Lansari, and Bouslama (2005), companies seek professionals with certification credentials.

Randall and Zirkle (2005) posit the inclusion of IT certifications comes with issues and implications for students, teachers, schools, administrators, and even the workforce. One such issue is a lack of available data to determine effectiveness of certification programs at the district, state, and national levels. Bartlett (2002) concurs with Randall and Zirkle (2005) agreeing that secondary students without further education may find employment success as being short-lived with limited opportunities for advancement in the IT field.

IT workers are in high demand (McGrath, 1998). These IT workers have often documented their credentials through achieving certifications. As such, certifications have become a fact of life and may even be viewed as a necessity among IT professionals because certification is believed to play a role in the technology workplace. However, the extent and nature of how certification is actually valued by employers is unclear (Wireschen & Zhang, 2010). Based on a review of job ads from 2001 to 2006, according to Wireschen and Zhang (2010), it is also noted that educational requirements are increasing while some employer certification requirements have decreased.

Leading Trends in Certification

Featured in Education Week (2014), Adams reports a gaining popularity in career-related certification and acknowledges that such certifications are sometimes integrated into high school CTE programs. Conversely, Adams also points to findings in the *Journal of Educational Evaluation and Policy Analysis* showing very minimal to no positive effects for those holding such credentials. A Washington state study recognizes certificates as a foundation or even a stepping stone for getting into the door for an interview, but underscores the idea that certifications should be stackable credentials and thought of a only a piece of a larger educational picture. The Washington state study, based on college transcripts and unemployment-insurance records, also report a lack of wage gains or increased likelihood of employment because of certification. These findings are said to consistent with other students in Kentucky, North Carolina, and Virginia.

Foster and Pritz (2006) profile success stories from two states. Pennsylvania participates in statewide testing and has infused industry based standards into all CTE programs. Third-party assessment of all CTE completers in the state of Pennsylvania is also mandated. Students

meeting advanced standards as defined by the state of Pennsylvania are also eligible to receive the Pennsylvania Skills Certificate (PSC) also known as the Governor's Certificate since it is signed by the state's governor. Virginia has also approved industry certification exams for CTE classes. In Virginia, a student earning certification may be eligible to earn a CTE seal on his or her high school transcript. To earn this seal in Virginia, a student must fulfill requirements for graduation, complete a qualifying CTE concentration or specialization, maintain a B or better in CTE classes, and pass relevant certification or professional licensure exams. Foster and Pritz (2006) continue "Virginia believes the certification exams offer several benefits to students, including evidence that students have completed advanced education preparation, increased job opportunities for advancement in a career pathway, and increased self-confidence and self-worth" (p. 16).

State of Arkansas (2012) determined that Microsoft IT Academy implementation is expected to help students as well as adult Arkansans "be able to participate and acquire skills to enhance their employability" (p. 2). The release also credits Artee Williams, Director of the Department of Workforce Services and Chair of the Governor's Workforce Cabinet for acknowledging that more than three-quarters of all jobs will require technology skills within the next decade. Williams further expressed "with this program, both students and adults will have access to the skills and certifications they need to improve their career opportunities and earning potential" (State of Arkansas, 2012, p. 2).

No specific data relevant to employability opportunities in Arkansas for certified individuals has been found throughout the research process. As a result, there is a gap in knowledge regarding how IC^3, MOS, and ACA certifications impact employability or even how these certifications are viewed by HR and IT professionals in Arkansas. Students working to earn

certification with the hope of receiving an employability advantage and schools funding certification opportunities through the use of limited funds deserve for this issue to be examined.

Summary

The review of literature investigated the issue of certification. The basics of who is providing the testing, who is paying for said testing opportunities, and what scholars and experts have found to be important for successful certification, and employability after certification have been examined. The focus of this study seeks to address the gap in the literature regarding employability implications for certification holders in the state of Arkansas.

The empirical literature related to industry certification and certification in Arkansas specifically was used to investigate this study's research question 1. Empirical studies related to certification and employability, certification value, perception, and benefits, and information technology career preparation was scrutinized for better understanding of research question 2. Research literature examining certification funding, certification and employability, and certification perception helped to further examine research question 3. The research literature related to workforce preparation, information technology workers, certification and employability, certification value and perception, information technology career preparation, and certification benefits allowed for supporting assessment of research question 4. In Chapter Three, the study's methodology will be presented.

Chapter Three

METHODS

Research design, setting, participants, instrumentation, and data collection and analysis for this study were selected with the purpose of producing relevant and usable information by "collecting numerical data that [is] analyzed using mathematically based methods" (Muijs, 2011, p. 1). Research findings were used to determine if a pattern exists (Onwuegbuzie & Leech, 2005) between the achievement of IC^3, MOS, and/or ACA industry certification and employability opportunities in Arkansas. This chapter provides a description of the research design, setting, participants, and data collection and analysis.

Study Participants

The population of interest for this study was Arkansas HR and IT professionals who were potential employers of individuals with IC^3, MOS, and/or ACA industry certification. The population of interest for selecting the potential HR study participants was the Arkansas Society for Human Resource Management because it is the renowned human resource management group within the state of Arkansas and would be accessible to the researcher. The populations of interest for the potential IT study participants were the .NET User Group and the Environmental and Spatial Technology (EAST) Initiative Alumni Association because of their affiliation with information technology and their accessibility to the researcher. All participation was voluntary. All of the participants met the following criteria:

1. Worked in Arkansas.
2. Self-identified as an IT professional.
3. Self-identified as an HR professional
4. Worked in organizations that employed IT professionals.

Because of the inability to obtain email addresses of potential participants directly, the researcher had to depend upon key contacts within the Arkansas Society for Human Resource Management, .Net User Group and the EAST Initiative Alumni Association. Some organizations will not release members' email but will send out correspondence. Despite population constraints the researcher was able to obtain enough participation to produce a valid response. The response rate for the HR participants was 52/200 or 26% and 36 of those 52 completed the entire survey which yielded a participant survey completion rate of 18%. The response rate for the IT participants was 57/165 which was 34.5% and 36 of those 57 completed the entire survey which yielded a survey completion rate of 21.8 %.

The response rate of this study was not atypical of response rates to other studies using electronic surveys. Many researchers (Baruch & Holtom, 2008; Dommeyer & Moriarty, 1999; Kaplowitz, Hadlock, & Levine, 2004; Nulty, 2008; Sax, Gilmartin, & Bryant, 2003; Sheehan, 2001; Weible & Wallace, 1998) were conflicted regarding what is a low or high response rate. This study falls within the range of what is acceptable and the number of participants are such that the statistical analysis was valid and reliable.

Demographics

To gain a better understanding of the survey participants, descriptive characteristics were gathered during the survey completion process.

Job Title HR. A combined half of HR survey respondents held positions of either HR manager or equivalent (n=9 or 25.00%) or other business title with HR duties (n=9 or 25.00%). Other respondents indicated holding the position of HR vice president or equivalent (n=3 or 8.33%), HR director or equivalent (n=3 or 8.33%), HR specialist or equivalent (n=4 or 11.11%), HR consultant (n=2 or 5.56%), and other HR title (n=6 or 16.67%).

Job Title IT. The most frequently identified job title held by IT survey respondents was middle management IT (n=9 or 25.00%). Other respondents indicated job titles as executive management (n=5 or 13.89%), senior management IT (n=3 or 8.33%), senior management business (n=3 or 8.33%), middle management business (n=2 or 5.56%), staff level IT (n=8 or 22.22%), staff level business (n=1 or 2.78%), IT consultant (n=3 or 8.33%), and other title with IT duties (n=2 or 5.56%).

Education HR. The majority (n=21 or 58.33%) of HR survey respondents held a bachelor degree. Other respondents indicated education levels of high school or equivalent (n=2 or 5.56%), associate degree (n=2 or 5.56%), master degree (n=8 or 22.22%), and doctoral degree (n=3 or 8.33%).

Education IT. The majority (n=19 or 52.78%) of IT survey respondents also held a bachelor degree. Other respondents indicated education levels of high school or equivalent (n=2 or 5.56%), vocational/technical school (n=2 or 5.56%), associate degree (n=4 or 11.11%), master degree (n=8 or 22.22%), and doctoral degree (n=1 or 2.78%).

Experience HR. A large number (n=15 or 41.67%) of HR survey respondents report 15 or more years of experience in the HR field. Other respondents indicated less than one year of experience (n=1 or 2.78%), one to five years (n=7 or 19.44%), five to ten years (n=6 or 16.67%), and ten to 15 years (n=7 or 19.44%).

Experience IT. The majority (n=21 or 63.64%) of IT survey respondents report 15 or more years of experience in the IT field. Other respondents indicated less than one year of experience (n=2 or 6.06%), one to five years (n=1 or 3.03%), five to ten years (n=5 or 15.15%), and ten to 15 years (n=4 or 12.12%).

Certification IT. The majority (n=17 or 50.00%) of IT survey respondents reported holding no IT certifications. Other respondents holding MOS certification (n=6 or 17.65%) and other or even multiple certifications (n=11 or 32.35%). Two participants did not answer this question. IT certification was not applicable to the HR participants.

Of the 11 respondents holding other or multiple certifications, the following certifications were reported: Mac OS, CDLR, PBS TeacherLine, CCAF, Electronics, MCSE, A+, Network+, Security+, Project+, SCJA, MCT, MCITP, MCDBA, MCSE, ShoreTel Certified Implementation Specialist, CNE, Ubiquiti, MCSA, CNE, ACMT, A+, Dell, Lenovo, IC3, and MOS.

Company Size HR. The majority (n=18 or 50.00%) of HR survey respondents report company size as having 1,000 or more employees. Other respondents indicated a company size of one to nine employees (n=1 or 2.78%), ten to 49 employees (n=5 or 13.89%), 50 to 99 employees (n=1 or 2.78%), 100 to 499 employees (n=10 or 27.78%), and 500 to 599 employees (n=1 or 2.78%).

Company Size IT. Approximately one-third (n=12 or 34.29%) of IT survey respondents report company size as having 1,000 or more employees. Other respondents indicated a company size of one to nine employees (n=4 or 11.43%), ten to 49 employees (n=2 or 5.71%), 50 to 99 employees (n=2 or 5.71%), 100 to 499 employees (n=10 or 28.57%), and 500 to 599 employees (n=5 or 14.29%). One IT participant did not respond to this survey item.

Company Geographic Location HR. Nearly half (n=15 or 41.67%) of HR survey respondents identified the Arkansas Western/River Valley as the geographic region in which they are employed. Other respondents indicated employment in Central Arkansas (n=4 or 11.11%), North Central Arkansas (n=2 or 5.56%), Northeast Arkansas (n=1 or 2.78%),

Northwest Arkansas (n=7 or 19.44%), Southeast Arkansas (n=1 or 3.78%), and Southwest Arkansas (n=6 or 16.67%).

Company Geographic Location IT. A large number (n=15 or 42.86%) of IT survey respondents identified the Arkansas Western/River Valley as the geographic region in which they are employed. Other respondents indicated employment in Central Arkansas (n=5 or 14.29%), North Central Arkansas (n=2 or 5.71%), Northwest Arkansas (n=8 or 22.86%), and Southwest Arkansas (n=5 or 14.29%). One IT participant did not respond to this survey item.

Company Community Profile HR. A large number (n=14 or 38.89%) of HR survey respondents described the area in which they are employed as urban. Other respondents reported a suburban area (n=12 or 33.33%) and a rural area (n=10 or 27.28%).

Company Community Profile IT. Nearly half (n=15 or 44.12%) of IT survey respondents described the area in which they are employed as urban. Other respondents reported a suburban area (n=7 or 20.59%) and a rural area (n=12 or 35.29%). Two IT participants did not respond to this survey item.

While this study's sample cannot be considered representative of the original population of interest, generalizability was not a primary goal -- the major purpose of this study was to determine whether the perceptions of HR and IT professionals towards IC^3, MOS, and/or ACA industry certification for employability purposes. Any effects of their perceptions that is evident in this study can be generalized to specific areas of the state of Arkansas represented by the HR and IT professional participants who have similar characteristics as described (Creswell, 2009).

Sampling Procedure

The procedure for selecting this study's participants was a purposive, convenience sample. A convenience sample is used to gather "statistical data . . . from a specific group of

people" (Conveniencesampling.net, 2015) as they "fit the criteria" (Emerson, 2015, p. 166). Cost effectiveness, availability, and practicality were among the benefits offered by utilizing convenience sampling (Conveniencesampling.net, 2015). Purposive, convenience sampling was appropriate because an expert sample (Trochim & Donnelly, 2007) was sought to find HR and IT professionals who had known or demonstrable experience and expertise in employability of individuals with industry certifications. Further description of the sample population selection is under the study participants section.

Instrumentation

Two quantitative survey measures were used to gather data for this study. The use of two surveys was utilized because one survey was designed for HR professionals and the other survey was designed IT professionals. Arkansas HR professionals were asked to complete the HR version of the CompTIA survey (CompTIA, 2011) which is designed to measure HR employer perceptions of certifications. CompTIA is the Computing Technology Industry Association; a non-profit trade association. The Arkansas IT professionals were asked to complete the IT version of the CompTIA survey (CompTIA, 2011) which is also designed to measure IT employer perceptions of certifications.

Instrumentation was based upon CompTIA's (2011) *Employer Perceptions of IT Training and Certification* which assessed the perceptions of 1,385 IT and business executives and 300 HR professionals from the United States, United Kingdom, and South Africa during late July and early August, 2010, with 95 percent confidence in margin of sampling error.

The key findings in relation to certification from the CompTIA (2011) study upon which this study was based are as follows:

- Education and certification credentials rank second behind experience, track record, and accomplishments when considering job candidates.
- Eighty-six percent of IT hiring managers surveyed reported placing either a medium or high priority on certifications.
- Twenty-five percent of firms surveyed reported a formal HR policy regarding certifications.
- Twenty-nine percent of firms reported an IT driven process regarding certifications.
- Forty-six percent of firms reported either an informal policy or no policy regarding certifications.
- Employers believe certification is indicative of an ability to understand new and/or complex technology, increased productivity, and greater problem solving abilities.
- Certification is valued more in the US and South Africa than in the UK.
- HR professionals anticipate an increase in importance and usefulness of certification.
- Fifty-two percent of US firms pay for certification testing.
- Forty-five percent of US firms pay for either training or materials such as textbooks.

The CompTIA study focused on assessing certification as it related to the hiring process. It also focused on understanding how job candidates were evaluated by HR and IT as well as evaluating professional development support. This study focuses on certification.

Reliability and Validity

Validity, or meaningfulness, is "the primary concern of all researchers who gather educational data" (Suter, 2012, p. 267). While validity addresses meaningfulness, reliability addresses consistency. For this study, the construct validity of the instruments was provided by CompTIA (CompTIA, 2011). The construct of this study is certification knowledge of IT and HR employers. The reliability is also provided by CompTIA because the instruments have been repeated numerous times with reliable results.

Research Design

This study was a quasi-experimental, quantitative research design. Two groups of participants were surveyed to determine their perceptions regarding employability of individuals possessing IC^3, MOS, and/or ACA industry certification in Arkansas. The participants were purposively selected based on their expertise in HR and IT.

The design of the study is appropriate to answer this study's research questions which are as follows:

1. To what degree are HR and IT professionals in the state of Arkansas familiar with IC^3, MOS, and/or ACA certifications?
2. Do HR and IT professionals perceive that their organizations give preference to candidates possessing one or more IC^3, MOS, and/or ACA certification?
3. Are employees with IC^3, MOS, and/or ACA certifications compensated for these credentials?
4. To what extent do HR and IT professionals value entry-level employee certification credentials upon initial hire?

The following table 4 depicts research questions as they are correlated with survey instrument questions:

Table 4

Research Questions Correlated with Survey Instrument Questions

Research Question	HR Survey Items	IT Survey Items
1	15	15
2	12, 17, 18, 20, 22, 23	16, 19, 22, 23, 27, 34
3	24, 25, 26	31, 32, 33
4	12, 16, 18, 20, 22, 23	16, 18, 19, 20, 21, 27, 34, 35

Data Collection and Analysis

Data was collected using the two survey instruments from Arkansas HR and IT professionals who were contacted via outreach to established HR and IT organizations: The Arkansas Society for Human Resource Management, .Net User Group, and the EAST Initiative Alumni Association. The potential participants were pre-notified that the survey would be coming within a week. Pre-notification (Schuldt & Totten, 1994) was sent to HR and IT organization officers or individuals in leadership positions. The identified organizations were electronically sent an informational letter that explained the purpose of the study, invited participation amongst members, shared the dates of survey availability which was July 15-August 31, 2015, and provided necessary information for accessing the survey. Two follow-up reminders to complete survey were also sent, one at end of July and one during the week before August 31. Participation may have been affected by vacation schedules of potential participants during the summer months.

The use of electronic surveys was selected as a suitable approach for collecting data (Sproull, 1986) for many reasons including environmental friendliness, user-friendliness, and cost effectiveness (Parker, 1992). Additionally, the nature of the electronic survey facilitated was expected to provide a quicker response (Schuldt & Totten, 1994). Refusal rates of an electronic survey also showed little difference as compared with a personal telephone survey (Havice, 1990). Of the traditional survey methods of telephone, interview, mall intercept, and mail, traditional mail surveys have the poorest response rate (Schuldt & Totten, 1994). The researcher did not have the funding to provide incentives to participants which may have better enhanced the response rate.

The survey instrument items were inputted into and administered using Qualtrics. Survey collection, data analysis and reporting was also performed using Qualtrics (Qualtrics, 2015) which is available to students and faculty of the University of Arkansas. As needed, the Analysis ToolPak in Microsoft Excel was utilized to produce two way factorial ANOVA results and "determine the extent to which two factors [certification and employability] are related" (Privitera, 2014, p. 240).

Statistical analysis also included Chi-Square and Analysis of Variance testing. Chi-Square, Goodness-of-Fit test, "one of the most commonly used statistical tests" (Lind, Marchal, & Wathen, 2005, p. 523), was used to compare the actual distribution with the expected distribution. Two way ANOVA was used to determine whether any difference in the variation of the question responses existed. Through data analysis, the questions of familiarity of HR and IT professionals in Arkansas concerning IC^3, MOS, and ACA certifications, perceived preference for candidates possessing certification, compensation for certification credentials, and value of employee certification credentials upon hire were addressed.

Summary

Chapter three provided a detailed account through which participants were selected, data collected, and how it is to be analyzed with this study. By analyzing the numerical data generated from the surveys that were disseminated to professionals in HR and IT, a better understanding of the perception of HR and IT in the state Arkansas towards IC^3, MOS, and/or ACA industry certification. This will provide students, educators, and the workforce with insight into the value and/or need for attaining these certifications.

Chapter Four

RESULTS

The purpose of this study was to investigate how achieving IC^3, MOS, and ACA industry certification relates to employability opportunities in Arkansas as perceived by human resource (HR) and information technology (IT) professionals. To narrow the gap in the knowledge base, the following research questions were addressed:

1. To what degree are HR and IT professionals in the state of Arkansas familiar with IC^3, MOS, and/or ACA certifications?
2. Do HR and IT professionals perceive that their organizations give preference to candidates possessing one or more IC^3, MOS, and/or ACA certification?
3. Are employees with IC^3, MOS, and/or ACA certifications compensated for these credentials?
4. To what extent do HR and IT professionals value entry-level employee certification credentials upon initial hire?

Surveys of HR and IT professionals were used to answer the research questions. In an effort to garner participation from among human resource professionals, a key contact from the Arkansas Society for Human Resource Management was established. From this community, 36 HR professionals participated in the survey. Again, in an effort to solicit participation from information technology professionals, key contacts with .NET User Group and EAST (Environmental and Spatial Technology) Initiative Alumni Association were established. From these communities, 36 IT professionals participated in the survey. This chapter details the findings of those surveys.

Research Question Results

This study was directed by four research questions. Research Question 1 corresponds with HR Survey Question 15 and IT Survey Question 15. Research Question 2 corresponds with HR Survey Questions 12, 17, 18, 20, 22, and 23 as well as IT Survey Questions 16, 19, 22, 23, 27, and 34. Research Question 3 corresponds with HR Survey Questions 24, 25, and 26 as well as IT Survey Questions 31, 32, and 33. Research Question 4 corresponds with Survey Questions 12, 16, 18, 20, 22, and 23 as well as IT Survey Questions 16, 18, 19, 20, 21, 27, 34, and 35.

The researcher performed a Chi-Square Goodness-of-Fit Test throughout the study. The researcher expected each category to be equally likely. All of the following results were examined at the.05 alpha level.

Research Question 1: To what degree are HR and IT professionals in the state of Arkansas familiar with IC^3, MOS, and/or ACA certifications?

HR Survey Question 15 and IT Survey Question 15. What is your overall perception of the value of IT certifications for a potential candidate seeking an IT position at your organization? In regard to IC^3, a majority (n=21 or 60.00%) of HR respondents reported no knowledge prior to the survey. Other respondents rated themselves as slightly knowledgeable (n=7 or 20.00%), somewhat knowledgeable (n=4 or 11.43%), fairly knowledgeable (n=2 or 5.71%) and very knowledgeable (n=1 or 2.86). Since the Chi-Square value is 38.00, it is determined that there is a difference in response related to knowledge level. This difference exists based on participants with no knowledge having the highest Chi square value.

In regard to IC^3, the most frequent response given by IT respondents was no knowledge (n=14 or 40.00%) prior to the survey. Other respondents rated themselves as slightly knowledgeable (n=8 or 22.86%), somewhat knowledgeable (n=4 or 11.43%), fairly

knowledgeable (n=2 or 5.71%) and very knowledgeable (n=7 or 20.00). Since the Chi-Square value is 12.00, it is determined that there is a difference in response related to knowledge level. This difference exists based on participants with no knowledge having the highest Chi square value. Table 5 provides a visual comparison of the levels of knowledge of IC^3 certification as expressed by HR and IT survey respondents.

Table 5

IC^3 Knowledge Level of HR and IT Survey Respondents

Knowledge Level	HR Respondents			IT Respondents		
	N	*%*	X^2	*N*	*%*	X^2
No knowledge	21	60.00	28.00	14	40.00	7.00
Slightly knowledgeable	7	20.00	0.00	8	22.86	0.14
Somewhat knowledgeable	4	11.43	1.29	4	11.43	1.29
Fairly knowledgeable	2	5.71	3.57	2	5.71	3.57
Very knowledgeable	1	2.86	5.14	7	20.00	0.00
Total	35	100.00	38.00	35	100.00	12.00

Note. One participant from each group did not respond.

In regard to MOS, a large number (n=11 or 31.43%) of HR respondents reported no knowledge prior to the survey. Other respondents rated themselves as slightly knowledgeable (n=5 or 14.29%), somewhat knowledgeable (n=8 or 22.86%), fairly knowledgeable (n=4 or 11.43%) and very knowledgeable (n=7 or 20.00%). Since the Chi-Square value is 4.29, it is determined that there is no difference in response related to knowledge level.

In regard to MOS, a large number (n=11 or 31.43%) of IT respondents reported knowledge levels as very knowledgeable prior to the survey. Other respondents rated themselves as having no knowledge (n=7 or 20.00%), slightly knowledgeable (n=8 or 22.86%), somewhat knowledgeable (n=3 or 8.57%), and fairly knowledgeable (n=6 or 17.14%). Since the Chi-Square value is 4.86, it is determined that there is no difference in response related to knowledge level. Table 6 provides a visual comparison of the levels of knowledge of MOS certification as expressed by HR and IT survey respondents.

Table 6

MOS Knowledge Level of HR and IT Survey Respondents

Knowledge Level	HR Respondents			IT Respondents		
	N	*%*	X^2	*N*	*%*	X^2
o knowledge	11	31.43	2.29	7	20.00	0.00
Slightly knowledgeable	5	14.29	0.57	8	22.86	0.14
Somewhat knowledgeable	8	22.86	0.14	3	8.57	2.29
Fairly knowledgeable	4	11.43	1.29	6	17.14	0.14
Very knowledgeable	7	20.00	0.00	11	31.43	2.29
Total	35	100.01	4.29	35	100.00	4.86

In regard to ACA, nearly half (n=16 or 45.71%) of HR respondents reported no knowledge prior to the survey. Other respondents rated themselves as slightly knowledgeable (n=6 or 17.14%), somewhat knowledgeable (n=5 or 14.29%), fairly knowledgeable (n=4 or 11.43%) and very knowledgeable (n=4 or 11.43%). Since the Chi-Square value is 20.80, it is

determined that there is a difference in response related to knowledge level. This difference exists based on participants with no knowledge having the highest Chi square value.

In regard to ACA, approximately one-third (n=12 or 34.29%) of IT respondents reported no knowledge prior to the survey. Other respondents rated themselves as slightly knowledgeable (n=8 or 22.86%), somewhat knowledgeable (n=7 or 20.00%), fairly knowledgeable (n=2 or 5.71%) and very knowledgeable (n=6 or 17.14%). Since the Chi-Square value is 10.40, it is determined that there is a difference in response related to knowledge level. This difference exists based on participants with no knowledge having the highest Chi square value. Table 7 provides a visual comparison of the levels of knowledge of ACA certification as expressed by HR and IT survey respondents.

Table 7

ACA Knowledge Level of HR and IT Survey Respondents

Knowledge Level	HR Respondents			IT Respondents		
	N	*%*	X^2	*N*	*%*	X^2
No knowledge	16	45.71	16.20	12	34.29	5.00
Slightly knowledgeable	6	17.14	0.20	8	22.86	0.20
Somewhat knowledgeable	5	14.29	0.80	7	20.00	0.00
Fairly knowledgeable	4	11.43	1.80	2	5.71	5.00
Very knowledgeable	4	11.43	1.80	6	17.14	0.20
Total	35	100.00	20.80	35	100.00	10.40

Note. One participant from each group did not answer.

After completing Chi-Square analysis based on equal expected frequencies, relevant demographics (job title, education, experience, certification, company size, and company geographic location) have been merged into a Two-Way Analysis of Variance, ANOVA. This was done to determine whether any difference in the variation of the question responses existed, and if so, was the difference attributable to demographic factors. For IC^3, in regard to knowledge, a difference exists on the knowledge (cv=2.56, F=19.83, p=0.00). Many have no knowledge indicated. For IC^3, in regard to demographics, a difference exists in the demographic variables (cv=4.03, F=5.46, p=0.02). Demographics show no significant deviation. Overall, the demographics did not affect respondents' knowledge of IC^3. For MOS, in regard to knowledge, a difference exists on the knowledge (cv=2.56, F=4.35, p=0.00). Many have no knowledge indicated. For MOS, in regard to demographics, a difference exists in the demographic variables (cv=4.03, F=10.14, p=0.00). Demographics show HR at no knowledge whereas IT was very knowledgeable. Overall, knowledge of MOS was based on professional choice, HR versus IT. For ACA, in regard to knowledge, a difference exists on the knowledge (cv=2.56, F=14.20, p=0.00). Many have no knowledge indicated. For ACA, in regard to demographics, a difference exists in the demographic variables (cv=4.03, F=8.00, p=0.01). Demographics show no significant deviation. Overall, the demographics did not affect respondents' knowledge of ACA. Visual representations have been provided for IC^3 (see Table 8), MOS (see Table 9), and ACA (see Table 10).

Table 8

Analysis of Variance by Demographic Factors for IC³ Knowledge of HR and IT Respondents

Source of Variation	*SS*	*Df*	*MS*	*F*	*P-value*	*F crit*
Demographics	74.82	1.00	74.82	5.46	0.02	4.03
Knowledge	1,086.27	4.00	271.57	19.83	0.00	2.56
Interaction	86.27	4.00	21.57	1.57	0.20	2.56
Within	684.83	50.00	13.70			
Total	1,932.18	59.00				

Table 9

Analysis of Variance by Demographic Factors for MOS Knowledge of HR and IT Respondents

Source of Variation	*SS*	*Df*	*MS*	*F*	*P-value*	*F crit*
Demographics	74.82	1.00	74.82	10.14	0.00	4.03
Knowledge	128.27	4.00	32.07	4.35	0.00	2.56
Interaction	152.27	4.00	38.07	5.16	0.00	2.56
Within	368.83	50.00	7.38			
Total	724.18	59.00				

Table 10

Analysis of Variance by Demographic Factors for ACA Knowledge of HR and IT Respondents

Source of Variation	*SS*	*Df*	*MS*	*F*	*P-value*	*F crit*
Demographics	74.82	1.00	74.82	8.00	0.01	4.03
Knowledge	531.27	4.00	132.82	14.20	0.00	2.56
Interaction	44.60	4.00	11.15	1.19	0.33	2.56
Within	467.50	50.00	9.35			
Total	1,118.18	59.00				

Research Question 2: Do HR and IT professionals perceive that their organizations give preference to candidates possessing one or more IC^3, MOS, and/or ACA certification?

HR Perceptions

HR Survey Question 18. What is your overall perception of the value of IT certifications for a potential candidate seeking an IT position at your organization? In regard to overall perception of the value of IT certifications for a potential candidate seeking an IT position, a large number of HR respondents reported IT certifications to be valuable (n=13 or 37.14%) for a potential candidate seeking an IT position while another (n=13 or 37.14%) reported IT certifications to be somewhat valuable, somewhat not valuable. Other respondents rated IT certifications as very valuable (n=9 or 25.71%). Since the Chi-Square value is 24.85, it is determined that there is a difference in response related to overall perception. This difference exists based on participants believing certification to be very valuable, valuable, or somewhat valuable, somewhat not valuable responding directly to the survey. Table 11 provides a visual comparison of the overall perception of IT certifications as expressed by HR survey respondents.

Table 11

Overall Perception of IT Certifications Held by HR Survey Respondents

Overall Perception	*N*	*%*	X^2
Very valuable	9	25.71	0.57
Valuable	13	37.14	5.14
Somewhat valuable, somewhat not valuable	13	37.14	5.14
Not valuable	0	0.00	7.00
Not at all valuable	0	0.00	7.00
Total	35	99.99	24.85

Note. One participant did not answer.

HR Survey Question 20. If you answered that your overall perception of the value of IT certifications was either very valuable, valuable, or somewhat valuable, somewhat not valuable, please consider the factors that may or may not affect your perception of the value of IT certifications. When identifying overall perception of the value of IT certifications, five factors were considered by survey participants. These five factors were reputation of certification vendor/body, knowledge-based certification exam, performance-based certification exam, continuing education requirements, and date of certification. An examination of each factor is provided.

Almost half (n=14 or 46.67%) of HR survey respondents identified reputation of certification vendor/body as a major factor. Other respondents rated the reputation of certification vendor/body as not a factor (n=5 or 16.67%) or a minor factor (n=11 or 36.67%). Since the Chi-Square value is 4.20, it is determined that there is no difference in response related

to reputation of certification vendor/body. Table 12 provides a visual comparison of the impact of reputation of certification vendor/body on the overall perception of IT certifications as expressed by HR survey respondents.

Table 12

Impact of Reputation of Certification Vendor/Body on Perception Held by HR Respondents

Reputation of Certification Vendor/Body	*N*	*%*	X^2
Not a factor	5	16.67	2.50
Minor factor	11	36.67	0.10
Major factor	14	46.67	1.60
Total	30	100.01	4.20

Note. Six participants did not answer.

A majority (n=20 or 66.67%) of HR survey respondents identified knowledge-based certification exam format as a major factor. Other respondents rated knowledge-based certification exam format as not a factor (n=2 or 6.67%) or a minor factor (n=8 or 26.67%). Since the Chi-Square value is 16.80, it is determined that there is a difference in response related to knowledge-based certification exam format. This difference exists based on participants considering a knowledge-based certification exam to be a major factor having the highest Chi square value.

Table 13 provides a visual comparison of the impact of knowledge-based certification exam format on the overall perception of IT certifications as expressed by HR survey respondents.

Table 13

Impact of Knowledge-Based Certification Exam Format on Perception Held by HR Respondents

Knowledge-Based Certification Exam	*N*	*%*	X^2
Not a factor	2	6.67	6.40
Minor factor	8	26.67	0.40
Major factor	20	66.67	10.00
Total	30	100.01	16.80

Note. Six participants did not answer.

A majority (n=20 or 66.67%) of HR survey respondents identified performance-based certification exam format as a major factor. Other respondents rated performance-based certification exam format as not a factor (n=2 or 6.67%) or a minor factor (n=8 or 26.67%). Since the Chi-Square value is 16.80, it is determined that there is a difference in response related to performance-based certification exam format. This difference exists based on participants considering a performance-based certification exam to be a major factor having the highest Chi square value. Table 14 provides a visual comparison of the impact of performance-based certification exam format on the overall perception of IT certifications as expressed by HR survey respondents.

Table 14

Impact of Performance-Based Certification Exam Format on Perception Held by HR Respondents

Performance-Based Certification Exam	*N*	*%*	X^2
Not a factor	2	6.67	6.40
Minor factor	8	26.67	0.40
Major factor	20	66.67	10.00
Total	30	100.01	16.80

Note. Six participants did not answer.

A majority (n=16 or 53.33%) of HR survey respondents identified continuing education requirements as a minor factor. Other respondents rated continuing education requirements as not a factor (n=3 or 10.00%) or a major factor (n=11 or 36.67%). Since the Chi-Square value is 8.60, it is determined that there is a difference in response related to continuing education requirements. This difference exists based on participants considering continuing education requirements to be not a factor having the highest Chi square value. Table 15 provides a visual comparison of the impact of continuing education requirements on the overall perception of IT certifications as expressed by HR survey respondents.

Table 15

Impact of Continuing Education Requirements on Perception Held by HR Respondents

Continuing Education Requirements	*N*	*%*	X^2
Not a factor	3	10.00	4.90
Minor factor	16	53.33	3.60
Major factor	11	36.67	0.10
Total	30	100.00	8.60

Note. Six participants did not answer.

Nearly half (n=14 or 46.67%) of HR survey respondents identified date of certification as a minor factor. Other respondents rated date of certification as not a factor (n=6 or 20.00%) or a major factor (n=10 or 33.33%). Since the Chi-Square value is 3.20, it is determined that there is no difference in response related to date of certification. Table 16 provides a visual comparison of the impact of date of certification on the overall perception of IT certifications as expressed by HR survey respondents.

Table 16

Impact of Date of Certification on Perception Held by HR Respondents

Date of Certification	*N*	*%*	X^2
Not a factor	6	20.00	1.60
Minor factor	14	46.67	1.60
Major factor	10	33.33	0.00
Total	30	100.00	3.20

Note. Six participants did not answer.

HR Survey Question 23. Next, please consider the following statements about potential IT job candidates and IT certifications at your organization. How much do you agree or disagree with each of the following statements about them? Survey participants considered seven statements in regard to potential IT job candidates and IT certifications. These seven statements related to IT certifications as a baseline of knowledge, job performance, promotion potential, starting salaries, evaluation potential, learning speed, and credibility of potential employees. Respondents rated each from strongly disagree to strongly agree. An examination of each is provided.

A majority (n=19 or 63.33%) of HR survey respondents reported agreement with the statement that IT certifications provide a baseline set of knowledge for certain IT positions. Other respondents reported disagreement (n=1 or 3.33%), neither agreement nor disagreement (n=7 or 23.33%), and strong agreement (n=3 or 10.00%). Since the Chi-Square value is 40.01, it is determined that there is a difference in response related to IT certifications providing a baseline set of knowledge. This difference exists based on participants in agreement having the

highest Chi square value. Table 17 provides a visual comparison of agreement levels in regard to IT certifications providing a baseline set of knowledge as expressed by HR survey respondents.

Table 17

Level of Agreement to Certifications as a Baseline Set of Knowledge Held by HR Respondents

Baseline Set of Knowledge	*N*	*%*	X^2
Strongly disagree	0	0.00	6.00
Disagree	1	3.33	4.17
Neither agree nor disagree	7	23.33	0.17
Agree	19	63.33	28.17
Strongly agree	3	10.00	1.50
Total	30	99.99	40.01

Note. Six participants did not answer.

A majority (n=18 or 60.00%) of HR survey respondents reported neither agreement nor disagreement with the statement that IT certified individuals tend to perform better than non-IT certified individuals in similar IT job roles. Other respondents reported disagreement (n=2 or 6.67%), and agreement (n=10 or 33.33%). Since the Chi-Square value is 41.34, it is determined that there is a difference in response related to IT certified individuals tend to perform better than non-IT certified individuals in similar IT job roles. This difference exists based on participants responding neither agree nor disagree having the highest Chi square value. Table 18 provides a visual comparison of agreement levels in regard to IT certified individuals tend to perform better than non-IT certified individuals in similar IT job roles as expressed by HR survey respondents.

Table 18

Level of Agreement to Performance of Certified Held by HR Respondents

IT Certified Perform Better	*N*	*%*	X^2
Strongly disagree	0	0.00	6.00
Disagree	2	6.67	2.67
Neither agree nor disagree	18	60.00	24.00
Agree	10	33.33	2.67
Strongly agree	0	0.00	6.00
Total	30	100.00	41.34

Note. Six participants did not answer.

A majority (n=15 or 50.00%) of HR survey respondents reported neither agreement nor disagreement with the statement that IT certified individuals are more likely to be promoted than those without IT certifications. Other respondents reported disagreement (n=4 or 13.33%), agreement (n=10 or 33.33%), and strong agreement (n=1 or 3.33%). Since the Chi-Square value is 27.01, it is determined that there is a difference in response related to IT certified individuals being more likely to be promoted than those without IT certifications. This difference exists based on participants responding neither agree nor disagree having the highest Chi square value. Table 19 provides a visual comparison of agreement levels in regard to IT certified individuals are more likely to be promoted than those without IT certifications as expressed by HR survey respondents.

Table 19

Level of Agreement to Promotion Potential of Certified Held by HR Respondents

IT Certified More Likely to be Promoted	*N*	*%*	X^2
Strongly disagree	0	0.00	6.00
Disagree	4	13.33	0.67
Neither agree nor disagree	15	50.00	13.50
Agree	10	33.33	2.67
Strongly agree	1	3.33	4.17
Total	30	99.99	27.01

Note. Six participants did not answer.

A majority (n=17 or 56.67%) of HR survey respondents reported agreement with the statement that IT certified individuals receive higher starting salaries than those without IT certifications. Other respondents reported disagreement (n=1 or 3.33%), neither agreement nor disagreement (n=11 or 36.67%), and strong agreement (n=1 or 3.33%). Since the Chi-Square value is 38.68, it is determined that there is a difference in response related to IT certified individuals receiving higher starting salaries than those without IT certifications. This difference exists based on participants responding neither agree nor disagree having the highest Chi square value. Table 20 provides a visual comparison of agreement levels in regard to IT certified individuals receiving higher starting salaries than those without IT certifications as expressed by HR survey respondents.

Table 20

Level of Agreement to Higher Starting Salaries of Certified Held by HR Respondents

IT Certified Receive Higher Starting Salaries	*N*	*%*	X^2
Strongly disagree	0	0.00	6.00
Disagree	1	3.33	4.17
Neither agree nor disagree	11	36.67	4.17
Agree	17	56.67	20.17
Strongly agree	1	3.33	4.17
Total	30	100.00	38.68

Note. Six participants did not answer.

Nearly half (n=14 or 46.67%) of HR survey respondents reported neither agreement nor disagreement with the statement that IT certifications save employers time and resources in evaluating potential IT job candidates. Other respondents reported disagreement (n=2 or 6.67%), agreement (n=13 or 43.33%), and strong agreement (n=1 or 3.33%). Since the Chi-Square value is 31.68, it is determined that there is a difference in response related to IT certifications saving employers time and resources in evaluating potential IT job candidates. This difference exists based on participants responding neither agree nor disagree having the highest Chi square value. Table 21 provides a visual comparison of agreement levels in regard to IT certifications saving employers time and resources in evaluating potential IT job candidates as expressed by HR survey respondents.

Table 21

Level of Agreement to Saving Employer Time and Resources Held by HR Respondents

IT Certifications Save Time and Resources	*N*	*%*	X^2
Strongly disagree	0	0.00	6.00
Disagree	2	6.67	2.67
Neither agree nor disagree	14	46.67	10.67
Agree	13	43.33	8.17
Strongly agree	1	3.33	4.17
Total	30	100.00	31.68

Note. Six participants did not answer.

A majority (n=17 or 56.67%) of HR survey respondents reported neither agreement nor disagreement with the statement that IT certifications enable IT employees to learn faster once starting a job. Other respondents reported disagreement (n=4 or 13.33%) and agreement (n=9 or 30.00%). Since the Chi-Square value is 34.34, it is determined that there is a difference in response related to IT certifications enabling IT employees to learn faster once starting a job. This difference exists based on participants responding neither agree nor disagree having the highest Chi square value. Table 22 provides a visual comparison of agreement levels in regard to IT certifications enabling IT employees to learn faster once starting a job as expressed by HR survey respondents.

Table 22

Level of Agreement to Enabling Faster Learning Held by HR Respondents

IT Certifications Enable Faster Learning	*N*	*%*	X^2
Strongly disagree	0	0.00	6.00
Disagree	4	13.33	0.67
Neither agree nor disagree	17	56.67	20.17
Agree	9	30.00	1.50
Strongly agree	0	0.00	6.00
Total	30	100.00	34.34

Note. Six participants did not answer.

Nearly half (n=14 or 46.67%) of HR survey respondents reported neither agreement nor disagreement with the statement that IT certifications ensure credibility of IT employees. Other respondents reported strong disagreement (n=1 or 3.33%), disagreement (n=3 or 10.00%), and agreement (n=12 or 40.00%). Since the Chi-Square value is 28.34, it is determined that there is a difference in response related to IT certifications ensuring credibility of IT employees. This difference exists based on participants responding neither agree nor disagree having the highest Chi square value. Table 23 provides a visual comparison of agreement levels in regard to IT certifications ensuring credibility of IT employees as expressed by HR survey respondents.

Table 23

Level of Agreement to Ensuring Credibility Held by HR Respondents

IT Certifications Ensure Credibility	*N*	*%*	X^2
Strongly disagree	1	3.33	4.17
Disagree	3	10.00	1.50
Neither agree nor disagree	14	46.67	10.67
Agree	12	40.00	6.00
Strongly agree	0	0.00	6.00
Total	30	100.00	28.34

Note. Six participants did not answer.

HR Survey Question 12. Please think about the typical hiring process at your organization. Starting at the beginning, how do you weight the following types of information when evaluating a candidate's résumé? In terms of the typical hiring process and how certification is weighted, respondents addressed 11 factors when evaluating a candidate's résumé. These 11 factors were total years of experience, quality of experience, experience in very specific areas, track record of steady growth/accomplishments/responsibilities, prestige of previous employers, prestige of college/university, college degree subject matter, master or other advanced degree, certifications held, programming languages/technical skills listed, and look/feel of résumé. An examination of each factor is provided.

Nearly half (n=17 or 48.57%) of HR survey respondents rated total years of experience as a high priority. Other respondents rated total years of experience as a low priority (n=2 or 5.71%) or a medium priority (n=16 or 45.71%). Since the Chi-Square value is 43.43, it is determined

that there is a difference in response related to priority level. This difference exists based on participants responding medium and high priority having the highest Chi square values. Table 24 provides a visual comparison of the priority level of total years of experience as expressed by HR survey respondents.

Table 24

Priority Level of Total Years of Experience as Expressed by HR Respondents

Total Years of Experience	*N*	*%*	X^2
Not a priority	0	0.00	7.00
Low priority	2	5.71	3.57
Medium priority	16	45.71	11.57
High priority	17	48.57	14.29
Essential priority	0	0.00	7.00
Total	35	99.99	43.43

Note. One participant did not answer.

A majority (n=18 or 51.43%) of HR survey respondents rated quality of experience as a high priority. Other respondents rated quality of experience as a low priority (n=1 or 2.86%), medium priority (n=9 or 25.71%), and essential priority (n=7 or 20.00%). Since the Chi-Square value is 30.00, it is determined that there is a difference in response related to priority level. This difference exists based on participants responding medium and high priority having the highest Chi square values. Table 25 provides a visual comparison of the priority level of quality of experience as expressed by HR survey respondents.

Table 25

Priority Level of Quality of Experience as Expressed by HR Respondents

Quality of Experience	*N*	*%*	X^2
Not a priority	0	0.00	7.00
Low priority	1	2.86	5.14
Medium priority	9	25.71	0.57
High priority	18	51.43	17.29
Essential priority	7	20.00	0.00
Total	35	100.00	30.00

Note. One participant did not answer.

A majority (n=21 or 58.33%) of HR survey respondents rated experience in very specific areas as a high priority. Other respondents rated experience in very specific areas as a medium priority (n=5 or 13.89%) and essential priority (n=10 or 27.78%). Since the Chi-Square value is 42.61, it is determined that there is a difference in response related to priority level. This difference exists based on participants responding high priority having the highest Chi square value. Table 26 provides a visual comparison of the priority level of experience in very specific areas as expressed by HR survey respondents.

Table 26

Priority Level of Experience in Very Specific Areas as Expressed by HR Respondents

Experience in Very Specific Areas	*N*	*%*	X^2
Not a priority	0	0.00	7.20
Low priority	0	0.00	7.20
Medium priority	5	13.89	0.67
High priority	21	58.33	26.45
Essential priority	10	27.78	1.09
Total	36	100.00	42.61

Note. All participants answered.

A large number (n=15 or 42.86%) of HR survey respondents rated track record of steady growth/accomplishments/responsibilities as a high priority. Other respondents rated track record of steady growth/accomplishments/responsibilities as a low priority (n=1 or 2.86%), medium priority (n=12 or 34.29%), and essential priority (n=7 or 20.00%). Since the Chi-Square value is 24.85, it is determined that there is a difference in response related to priority level. This difference exists based on participants responding high priority having the highest Chi square value. Table 27 provides a visual comparison of the priority level of track record of steady growth/accomplishments/responsibilities as expressed by HR survey respondents.

Table 27

Priority Level of Track Record of Steady Growth as Expressed by HR Respondents

Track Record	*N*	*%*	X^2
Not a priority	0	0.00	7.00
Low priority	1	2.86	5.14
Medium priority	12	34.29	3.57
High priority	15	42.86	9.14
Essential priority	7	20.00	0.00
Total	35	100.01	24.85

Note. One participant did not answer.

A majority (n=18 or 51.42%) of HR survey respondents rated prestige of previous employers as a low priority. Other respondents rated prestige of previous employers as not a priority (n=6 or 17.14%), medium priority (n=8 or 22.86%), and high priority (n=3 or 8.57%). Since the Chi-Square value is 26.86, it is determined that there is a difference in response related to priority level. This difference exists based on participants responding low priority having the highest Chi square value. Table 28 provides a visual comparison of the priority level of prestige of previous employers as expressed by HR survey respondents.

Table 28

Priority Level of Prestige of Previous Employers as Expressed by HR Respondents

Prestige of Previous Employers	*N*	*%*	X^2
Not a priority	6	17.14	0.14
Low priority	18	51.42	17.29
Medium priority	8	22.86	0.14
High priority	3	8.57	2.29
Essential priority	0	0.00	7.00
Total	35	100.00	26.86

Note. One participant did not answer.

More than one-third (n=13 or 37.14%) of HR survey respondents rated prestige of college/university as a low priority. Other respondents rated prestige of college/university as not a priority (n=12 or 34.29%), medium priority (n=8 or 22.86%), and high priority (n=2 or 5.71%). Since the Chi-Square value is 19.42, it is determined that there is a difference in response related to priority level. This difference exists based on participants responding essential priority having the highest Chi square value. Table 29 provides a visual comparison of the priority level of prestige of college/university as expressed by HR survey respondents.

Table 29

Priority Level of Prestige of College/University as Expressed by HR Respondents

Prestige of College/University	*N*	*%*	X^2
Not a priority	12	34.29	3.57
Low priority	13	37.14	5.14
Medium priority	8	22.86	0.14
High priority	2	5.71	3.57
Essential priority	0	0.00	7.00
Total	35	100.00	19.42

Note. One participant did not answer.

Nearly half (n=16 or 45.71%) of HR survey respondents rated college degree subject matter, e.g. computer science, business, etc. as a medium priority. Other respondents rated college degree subject matter as not a priority (n=2 or 5.71%), low priority (n=6 or 17.14%), high priority (n=9 or 25.71%), and essential priority (n=2 or 5.71%). Since the Chi-Square value is 19.42, it is determined that there is a difference in response related to priority level. This difference exists based on participants responding medium priority having the highest Chi square value. Table 30 provides a visual comparison of the priority level of college degree subject matter as expressed by HR survey respondents.

Table 30

Priority Level of College Degree Subject Matter as Expressed by HR Respondents

College Degree Subject Matter	*N*	*%*	X^2
Not a priority	2	5.71	3.57
Low priority	6	17.14	0.14
Medium priority	16	45.71	11.57
High priority	9	25.71	0.57
Essential priority	2	5.71	3.57
Total	35	99.98	19.42

Note. One participant did not answer.

More than one-third (n=13 or 37.14%) of HR survey respondents rated master or other advanced degree as a medium priority. Other respondents rated master or other advanced degree as not a priority (n=5 or 14.29%), low priority (n=11 or 31.43%), high priority (n=4 or 11.43%), and essential priority (n=2 or 5.71%). Since the Chi-Square value is 12.86, it is determined that there is a difference in response related to priority level. This difference exists based on participants responding medium priority having the highest Chi square value. Table 31 provides a visual comparison of the priority level of master or other advanced degree as expressed by HR survey respondents.

Table 31

Priority Level of Master or Other Advanced Degree as Expressed by HR Respondents

Master or Other Advance Degree	*N*	*%*	X^2
Not a priority	5	14.29	0.57
Low priority	11	31.43	2.29
Medium priority	13	37.14	5.14
High priority	4	11.43	1.29
Essential priority	2	5.71	3.57
Total	35	100.00	12.86

Note. One participant did not answer.

A large number (n=15 or 41.67%) of HR survey respondents rated certifications held as a medium priority. Other respondents rated certifications held as not a priority (n=2 or 5.56%), low priority (n=7 or 19.44%), high priority (n=9 or 25.00%), and essential priority (n=3 or 8.33%). Since the Chi-Square value is 15.12, it is determined that there is a difference in response related to priority level. This difference exists based on participants responding medium priority having the highest Chi square value. Table 32 provides a visual comparison of the priority level of certifications held as expressed by HR survey respondents.

Table 32

Priority Level of Certifications Held as Expressed by HR Respondents

Certifications Held	*N*	*%*	X^2
Not a priority	2	5.56	3.76
Low priority	7	19.44	0.01
Medium priority	15	41.67	8.45
High priority	9	25.00	0.45
Essential priority	3	8.33	2.45
Total	36	100.00	15.12

Note. One participant did not answer.

Almost one-third (n=11 or 30.56%) of HR survey respondents rated programming languages/technical skills listed as a high priority. Other respondents rated programming languages/technical skills listed as not a priority (n=7 or 19.44%), low priority (n=10 or 27.78%), medium priority (n=6 or 16.67%), and essential priority (n=2 or 5.56%). Since the Chi-Square value is 7.07, it is determined that there is no difference in response related to priority level. Table 33 provides a visual comparison of the priority level of programming languages/technical skills listed as expressed by HR survey respondents.

Table 33

Priority Level of Programming Languages/Technical Skills as Expressed by HR Respondents

Programming Languages/Technical Skills	*N*	*%*	X^2
Not a priority	7	19.44	0.01
Low priority	10	27.78	1.09
Medium priority	6	16.67	0.20
High priority	11	30.56	2.01
Essential priority	2	5.56	3.76
Total	36	100.01	7.07

Note. All participants answered.

Almost half (n=17 or 48.57%) of HR survey respondents rated look and feel of résumé as a medium priority. Other respondents rated look and feel of résumé as not a priority (n=4 or 11.43%), low priority (n=7 or 20.00%), high priority (n=5 or 14.29%), and essential priority (n=2 or 5.71%). Since the Chi-Square value is 19.72, it is determined that there is a difference in response related to priority level. This difference exists based on participants responding medium priority having the highest Chi square value. Table 34 provides a visual comparison of the priority level of look and feel of résumé as expressed by HR survey respondents.

Table 34

Priority Level of Look and Feel of Résumé as Expressed by HR Respondents

Look and Feel of Résumé	*N*	*%*	X^2
Not a priority	4	11.43	1.29
Low priority	7	20.00	0.00
Medium priority	17	48.57	14.29
High priority	5	14.29	0.57
Essential priority	2	5.71	3.57
Total	35	100.00	19.72

Note. One participant did not answer.

HR Survey Question 22. Who mandates or recommends IT certifications for candidates seeking IT job roles within your organization? Choose all that apply. In regard to who mandates or recommends IT certifications for candidates seeking IT job roles within a business/organization, almost one-fourth of HR respondents reported IT certifications to be mandated or recommended by the company's IT hiring managers (n=9 or 23.08%) while another (n=9 or 23.08%) reported IT certifications to be mandated or recommended by human resources. Other respondents listed a Chief Information Officer (n=5 or 12.82%), IT director (n=5 or 12.82%), other identified as executive positions and other departments (n=6 or 15.38%), and non-mandated or recommended (n=5 or 12.82%). Since the Chi-Square value is 3.01, it is determined that there is no difference in response related to who mandates or recommends IT certifications for candidates seeking IT job roles. Table 35 provides a visual comparison of who

mandates or recommends IT certifications for candidates seeking IT job roles as expressed by HR survey respondents. Respondents could select as many as applied.

Table 35

Personnel Mandating/Recommending IT Certifications as Expressed by HR Survey Respondents

Mandating or Recommending Personnel	*N*	*%*	X^2
Chief Information Officer (CIO)	5	12.82	0.35
IT Director	5	12.82	0.35
IT Hiring Manager	9	23.08	0.96
Human Resources	9	23.08	0.96
Other executives or departments	6	15.38	0.04
Not mandated or recommended	5	12.82	0.35
Total	39	100.00	3.01

HR Survey Question 17. In regard to industry certifications, such as information technology (IT) certifications; do you think they will grow in importance or diminish in importance? In regard to importance of industry certifications, a large number (n=13 or 43.33%) reported an expectation of IT industry certifications growing somewhat in importance. Other respondents reported an expectation of IT industry certifications growing significantly in importance (n=10 or 33.33%), diminishing in importance (n=3 or 10.00%), and no change expected (n=4 or 13.33%). Since the Chi-Square value is 9.19, it is determined that there is a

difference in response related to expectation of growth. This difference exists based on participants who responded grow somewhat in importance having the highest Chi square value. Table 36 provides a visual comparison of expected growth as expressed by HR survey respondents.

Table 36

Expected Growth of IT Certifications as Expressed by HR Survey Respondents

Expected Growth	*N*	*%*	X^2
Grow significantly in importance	10	33.33	0.83
Grow somewhat in importance	13	43.33	4.03
Diminish in importance	3	10.00	2.70
No change	4	13.33	1.63
Total	30	99.99	9.19

Note. Six participants did not answer.

IT Perceptions

IT Survey Question 27. Next, please consider the factors that may or may not affect your perception of the value of IT certifications. How do you rate each of the following?

When identifying factors affecting perception of the value of IT certifications, five factors were considered by survey participants. These five factors were reputation of certification vendor/body, knowledge-based certification exam, performance-based certification exam, continuing education requirements, and date of certification. An examination of each factor is provided.

Nearly half (n=14 or 45.16%) of IT survey respondents identified reputation of certification vendor/body as a major factor. Other respondents rated the reputation of certification vendor/body as not a factor (n=6 or 19.35%) or a minor factor (n=11 or 35.48%). Since the Chi-Square value is 3.16, it is determined that there is no difference in response related to reputation of certification vendor/body. Table 37 provides a visual comparison of the impact of reputation of certification vendor/body on the overall perception of IT certifications as expressed by IT survey respondents.

Table 37

Impact of Reputation of Certification Vendor/Body on Perception Held by IT Respondents

Reputation of Certification Vendor/Body	*N*	*%*	X^2
Not a factor	6	19.35	1.82
Minor factor	11	35.48	0.04
Major factor	14	45.16	1.30
Total	31	99.99	3.16

Note. Five participants did not answer.

A majority (n=17 or 54.84%) of IT survey respondents identified knowledge-based certification exam format as a minor factor. Other respondents rated knowledge-based certification exam format as not a factor (n=3 or 9.68%) or a major factor (n=11 or 35.48%). Since the Chi-Square value is 9.54, it is determined that there is a difference in response related to knowledge-based certification exam format. This difference exists based on participants considering a knowledge-based certification exam to be a minor factor having the highest Chi square value. Table 38 provides a visual comparison of the impact of knowledge-based

certification exam format on the overall perception of IT certifications as expressed by IT survey respondents.

Table 38

Impact of Knowledge-Based Certification Exam Format on Perception Held by IT Respondents

Knowledge-Based Certification Exam	*N*	%	X^2
Not a factor	3	9.68	5.20
Minor factor	17	54.84	4.30
Major factor	11	35.48	0.04
Total	31	100.00	9.54

Note. Five participants did not answer.

A majority (n=17 or 54.84%) of IT survey respondents identified performance-based certification exam format as a major factor. Other respondents rated performance-based certification exam format as not a factor (n=2 or 6.45%) or a minor factor (n=12 or 38.71%). Since the Chi-Square value is 11.29, it is determined that there is a difference in response related to performance-based certification exam format. This difference exists based on participants considering a performance-based certification exam to be not a factor having the highest Chi square value. Table 39 provides a visual comparison of the impact of performance-based certification exam format on the overall perception of IT certifications as expressed by IT survey respondents.

Table 39

Impact of Performance-Based Certification Exam Format on Perception Held by IT Respondents

Performance-Based Certification Exam	*N*	%	X^2
Not a factor	2	6.45	6.72
Minor factor	12	38.71	0.27
Major factor	17	54.84	4.30
Total	31	100.00	11.29

Note. Five participants did not answer.

Approximately one-third (n=11 or 35.48%) of HR survey respondents identified continuing education requirements as a minor factor. Other respondents rated continuing education requirements as not a factor (n=10 or 32.26%) or a major factor (n=10 or 32.26%). Since the Chi-Square value is 0.06, it is determined that there is no difference in response related to continuing education requirements. Table 40 provides a visual comparison of the impact of continuing education requirements on the overall perception of IT certifications as expressed by IT survey respondents.

Table 40

Impact of Continuing Education Requirements on Perception Held by IT Respondents

Continuing Education Requirements	*N*	*%*	X^2
Not a factor	10	32.26	0.01
Minor factor	11	35.48	0.04
Major factor	10	32.26	0.01
Total	31	100.00	0.06

Note. Five participants did not answer.

Nearly half (n=15 or 48.39%) of IT survey respondents identified date of certification as a major factor. Other respondents rated date of certification as not a factor (n=6 or 19.35%) or a minor factor (n=10 or 32.26%). Since the Chi-Square value is 3.94, it is determined that there is no difference in response related to date of certification. Table 41 provides a visual comparison of the impact of date of certification on the overall perception of IT certifications as expressed by IT survey respondents.

Table 41

Impact of Date of Certification on Perception Held by IT Respondents

Date of Certification	*N*	*%*	X^2
Not a factor	6	19.35	1.82
Minor factor	10	32.26	0.01
Major factor	15	48.39	2.11
Total	31	100.00	3.94

Note. Five participants did not answer.

IT Survey Question 34. Next, please consider the following statements about potential IT job candidates and IT certifications at your organization. How much do you agree or disagree with each of the following items about them? Survey participants considered seven statements in regard to potential IT job candidates and IT certifications. These seven statements related to IT certifications as a baseline of knowledge, job performance, promotion potential, starting salaries, evaluation potential, learning speed, and credibility of potential employees. Respondents rated each from strongly disagree to strongly agree. An examination of each is provided.

A majority (n=17 or 56.67%) of IT survey respondents reported agreement with the statement that IT certifications provide a baseline set of knowledge for certain IT positions. Other respondents reported strong disagreement (n=1 or 3.33%), disagreement (n=1 or 3.33%), neither agreement nor disagreement (n=8 or 26.67%), and strong agreement (n=3 or 10.00%). Since the Chi-Square value is 30.68, it is determined that there is a difference in response related to IT certifications providing a baseline set of knowledge. This difference exists based on

participants responding agree having the highest Chi square value. Table 42 provides a visual comparison of agreement levels in regard to IT certifications providing a baseline set of knowledge as expressed by HR survey respondents.

Table 42

Level of Agreement to Certifications as a Baseline Set of Knowledge Held by IT Respondents

Baseline Set of Knowledge	*N*	*%*	X^2
Strongly disagree	1	3.33	4.17
Disagree	1	3.33	4.17
Neither agree nor disagree	8	26.67	0.67
Agree	17	56.67	20.17
Strongly agree	3	10.00	1.50
Total	30	100.00	30.68

Note. Six participants did not answer.

Almost half (n=14 or 46.67%) of IT survey respondents reported neither agreement nor disagreement with the statement that IT certified individuals tend to perform better than non-IT certified individuals in similar IT job roles. Other respondents reported strong disagreement (n=4 or 13.33%), disagreement (n=6 or 20.00%), and agreement (n=6 or 20.00%). Since the Chi-Square value is 17.34, it is determined that there is a difference in response related to IT certified individuals tend to perform better than non-IT certified individuals in similar IT job roles. This difference exists based on participants responding neither agree nor disagree having the highest Chi square value. Table 43 provides a visual comparison of agreement levels in regard to IT

certified individuals tend to perform better than non-IT certified individuals in similar IT job roles as expressed by IT survey respondents.

Table 43

Level of Agreement to Performance of Certified Held by IT Respondents

IT Certified Perform Better	*N*	*%*	X^2
Strongly disagree	4	13.33	0.67
Disagree	6	20.00	0.00
Neither agree nor disagree	14	46.67	10.67
Agree	6	20.00	0.00
Strongly agree	0	0.00	6.00
Total	30	100.00	17.34

Note. Six participants did not answer.

Almost half (n=14 or 46.67%) of IT survey respondents reported neither agreement nor disagreement with the statement that IT certified individuals are more likely to be promoted than those without IT certifications. Other respondents reported strong disagreement (n=2 or 6.67%), disagreement (n=5 or 16.67%), agreement (n=7 or 23.33%), and strong agreement (n=2 or 6.67%). Since the Chi-Square value is 16.35, it is determined that there is a difference in response related to IT certified individuals being more likely to be promoted than those without IT certifications. This difference exists based on participants responding neither agree nor disagree having the highest Chi square value. Table 44 provides a visual comparison of agreement levels in regard to IT certified individuals are more likely to be promoted than those without IT certifications as expressed by IT survey respondents.

Table 44

Level of Agreement to Promotion Potential of Certified Held by IT Respondents

IT Certified More Likely to be Promoted	*N*	*%*	X^2
Strongly disagree	2	6.67	2.67
Disagree	5	16.67	0.17
Neither agree nor disagree	14	46.67	10.67
Agree	7	23.33	0.17
Strongly agree	2	6.67	2.67
Total	30	100.01	16.35

Note. Six participants did not answer.

More than one-third (n=11 or 36.67%) of IT survey respondents reported neither disagreement nor agreement with the statement that IT certified individuals receive higher starting salaries than those without IT certifications. Other respondents reported strong disagreement (n=2 or 6.67%), disagreement (n=6 or 20.00%), agreement (n=10 or 33.33%), and strong agreement (n=1 or 3.33%). Since the Chi-Square value is 13.68, it is determined that there is a difference in response related to IT certified individuals receiving higher starting salaries than those without IT certifications. This difference exists based on participants responding neither agree nor disagree and strongly agree having the highest Chi square values. Table 45 provides a visual comparison of agreement levels in regard to IT certified individuals receiving higher starting salaries than those without IT certifications as expressed by IT survey respondents.

Table 45

Level of Agreement to Higher Starting Salaries of Certified Held by IT Respondents

IT Certified Receive Higher Starting Salaries	*N*	*%*	X^2
Strongly disagree	2	6.67	2.67
Disagree	6	20.00	0.00
Neither agree nor disagree	11	36.67	4.17
Agree	10	33.33	2.67
Strongly agree	1	3.33	4.17
Total	30	100.00	13.68

Note. Six participants did not answer.

Almost half (n=14 or 46.67%) of IT survey respondents reported neither agreement nor disagreement with the statement that IT certifications save employers time and resources in evaluating potential IT job candidates. Other respondents reported strong disagreement (n=1 or 3.33%), disagreement (n=4 or 13.33%), agreement (n=10 or 33.33%), and strong agreement (n=1 or 3.33%). Since the Chi-Square value is 22.35, it is determined that there is a difference in response related to IT certifications saving employers time and resources in evaluating potential IT job candidates. This difference exists based on participants responding neither agree nor disagree having the highest Chi square value. Table 46 provides a visual comparison of agreement levels in regard to IT certifications saving employers time and resources in evaluating potential IT job candidates as expressed by IT survey respondents.

Table 46

Level of Agreement to Saving Employer Time and Resources Held by IT Respondents

IT Certifications Save Time and Resources	*N*	*%*	X^2
Strongly disagree	1	3.33	4.17
Disagree	4	13.33	0.67
Neither agree nor disagree	14	46.67	10.67
Agree	10	33.33	2.67
Strongly agree	1	3.33	4.17
Total	30	99.99	22.35

Note. Six participants did not answer.

A large number (n=12 or 40.00%) of IT survey respondents reported agreement with the statement that IT certifications enable IT employees to learn faster once starting a job. Other respondents reported strong disagreement (n=2 or 6.67%), disagreement (n=6 or 20.00%), neither agreement nor disagreement (n=9 or 30.00%), and strong agreement (n=1 or 3.33%). Since the Chi-Square value is 14.34, it is determined that there is a difference in response related to IT certifications enabling IT employees to learn faster once starting a job. This difference exists based on participants responding agree having the highest Chi square value. Table 47 provides a visual comparison of agreement levels in regard to IT certifications enabling IT employees to learn faster once starting a job as expressed by IT survey respondents.

Table 47

Level of Agreement to Enabling Faster Learning Held by IT Respondents

IT Certifications Enable Faster Learning	*N*	*%*	X^2
Strongly disagree	2	6.67	2.67
Disagree	6	20.00	0.00
Neither agree nor disagree	9	30.00	1.50
Agree	12	40.00	6.00
Strongly agree	1	3.33	4.17
Total	30	100.00	14.34

Note. Six participants did not answer.

Approximately one-third (n=11 or 36.67%) of IT survey respondents reported neither agreement nor disagreement with the statement that IT certifications ensure credibility of IT employees. Other respondents reported strong disagreement (n=4 or 13.33%), disagreement (n=6 or 20.00%), agreement (n=8 or 26.67%), and strong agreement (n=1 or 3.33%). Since the Chi-Square value is 9.68, it is determined that there is a difference in response related to IT certifications ensuring credibility of IT employees. This difference exists based on participants responding neither agree nor disagree and strongly agree having the highest Chi square value. Table 48 provides a visual comparison of agreement levels in regard to IT certifications ensuring credibility of IT employees as expressed by IT survey respondents.

Table 48

Level of Agreement to Ensuring Credibility Held by IT Respondents

IT Certifications Ensure Credibility	*N*	*%*	X^2
Strongly disagree	4	13.33	0.67
Disagree	6	20.00	0.00
Neither agree nor disagree	11	36.67	4.17
Agree	8	26.67	0.67
Strongly agree	1	3.33	4.17
Total	30	100.00	9.68

Note. Six participants did not answer.

IT Survey Question 16. Please think about the typical hiring process at your organization. Starting at the beginning, how do you weight the following types of information when evaluating a candidate's résumé? In terms of the typical hiring process and how certification is weighted, respondents addressed 11 factors when evaluating a candidate's résumé. These 11 factors were total years of experience, quality of experience, experience in very specific areas, track record of steady growth/accomplishments/responsibilities, prestige of previous employers, prestige of college/university, college degree subject matter, master or other advanced degree, certifications held, programming languages/technical skills listed, and look/feel of résumé. An examination of each factor is provided.

A large number (n=15 or 42.86%) of IT survey respondents rated total years of experience as a medium priority. Other respondents rated total years of experience as not a priority (n=1 or 2.86%), low priority (n=2 or 5.71%), high priority (n=14 or 40.00%), and

essential priority (n=3 or 8.57%). Since the Chi-Square value is 27.14, it is determined that there is a difference in response related to priority level. This difference exists based on participants responding medium and high priority having the highest Chi square values. Table 49 provides a visual comparison of the priority level of total years of experience as expressed by IT survey respondents.

Table 49

Priority Level of Total Years of Experience as Expressed by IT Respondents

Total Years of Experience	*N*	*%*	X^2
Not a priority	1	2.86	5.14
Low priority	2	5.71	3.57
Medium priority	15	42.86	9.14
High priority	14	40.00	7.00
Essential priority	3	8.57	2.29
Total	35	100.00	27.14

Note. One participant did not answer.

A majority (n=19 or 54.29%) of IT survey respondents rated quality of experience as a high priority. Other respondents rated quality of experience as a medium priority (n=10 or 28.57%) and essential priority (n=6 or 17.14%). Since the Chi-Square value is 36.00, it is determined that there is a difference in response related to priority level. This difference exists based on participants responding high priority having the highest Chi square value. Table 50 provides a visual comparison of the priority level of quality of experience as expressed by IT survey respondents.

Table 50

Priority Level of Quality of Experience as Expressed by IT Respondents

Quality of Experience	*N*	*%*	X^2
Not a priority	0	0.00	7.00
Low priority	0	0.00	7.00
Medium priority	10	28.57	1.29
High priority	19	54.29	20.57
Essential priority	6	17.14	0.14
Total	35	100.00	36.00

Note. One participant did not answer.

A majority (n=19 or 54.29%) of IT survey respondents rated experience in very specific areas as a high priority. Other respondents rated experience in very specific areas as a low priority (n=2 or 5.71%), medium priority (n=8 or 22.86%) and essential priority (n=6 or 17.14%). Since the Chi-Square value is 31.42, it is determined that there is a difference in response related to priority level. This difference exists based on participants responding high priority having the highest Chi square value. Table 51 provides a visual comparison of the priority level of experience in very specific areas as expressed by IT survey respondents.

Table 51

Priority Level of Experience in Very Specific Areas as Expressed by IT Respondents

Experience in Very Specific Areas	*N*	*%*	X^2
Not a priority	0	0.00	7.00
Low priority	2	5.71	3.57
Medium priority	8	22.86	0.14
High priority	19	54.29	20.57
Essential priority	6	17.14	0.14
Total	35	100.00	31.42

Note. One participant did not answer.

A majority (n=18 or 51.43%) of IT survey respondents rated track record of steady growth/accomplishments/responsibilities as a medium priority. Other respondents rated track record of steady growth/accomplishments/responsibilities as a low priority (n=2 or 5.71%), high priority (n=12 or 34.29%), and essential priority (n=3 or 8.57%). Since the Chi-Square value is 33.72, it is determined that there is a difference in response related to priority level. This difference exists based on participants responding medium priority having the highest Chi square value. Table 52 provides a visual comparison of the priority level of track record of steady growth/ accomplishments/responsibilities as expressed by IT survey respondents.

Table 52

Priority Level of Track Record of Steady Growth as Expressed by IT Respondents

Track Record	*N*	*%*	X^2
Not a priority	0	0.00	7.00
Low priority	2	5.71	3.57
Medium priority	18	51.43	17.29
High priority	12	34.29	3.57
Essential priority	3	8.57	2.29
Total	35	100.00	33.72

Note. One participant did not answer.

Approximately one-third (n=11 or 31.43%) of IT survey respondents rated prestige of previous employers as a low priority while another (n=11 or 31.43%) rated prestige of previous employers as a medium priority. Other respondents rated prestige of previous employers as not a priority (n=7 or 20.00%), high priority (n=5 or 14.29%), and essential priority (n=1 or 2.86%). A Chi-Square Goodness-of-Fit Test: Equal Expected Frequencies analysis has been used to determine if there is a difference in response based on priority level. Using a probability distribution for four degrees of freedom with a .05 level of significance, the critical value is 9.488. Since the Chi-Square value is 10.29, it is determined that there is a difference in response related to priority level. This difference exists based on participants placing low and medium priority responding directly to the survey. Table 53 provides a visual comparison of the priority level of prestige of previous employers as expressed by IT survey respondents.

Table 53

Priority Level of Prestige of Previous Employers as Expressed by IT Respondents

Prestige of Previous Employers	*N*	*%*	X^2
Not a priority	7	20.00	0.00
Low priority	11	31.43	2.29
Medium priority	11	31.43	2.29
High priority	5	14.29	0.57
Essential priority	1	2.86	5.14
Total	35	100.01	10.29

Note. One participant did not answer.

Approximately one-third (n=12 or 34.29%) of IT survey respondents rated prestige of college/university as not a priority while another (n=12 or 34.29%) rated prestige of college/university as low priority. Other respondents rated prestige of college/university as medium priority (n=10 or 28.57%), and high priority (n=1 or 2.86%). Since the Chi-Square value is 20.57, it is determined that there is a difference in response related to priority level. This difference exists based on participants responding essential priority having the highest Chi square value. Table 54 provides a visual comparison of the priority level of prestige of college/university as expressed by IT survey respondents.

Table 54

Priority Level of Prestige of College/University as Expressed by IT Respondents

Prestige of College/University	*N*	*%*	X^2
Not a priority	12	34.29	3.57
Low priority	12	34.29	3.57
Medium priority	10	28.57	1.29
High priority	1	2.86	5.14
Essential priority	0	0.00	7.00
Total	35	100.01	20.57

Note. One participant did not answer.

Nearly half (n=16 or 45.71%) of IT survey respondents rated college degree subject matter, e.g. computer science, business, etc. as a medium priority. Other respondents rated college degree subject matter as not a priority (n=3 or 8.57%), low priority (n=5 or 14.29%), high priority (n=7 or 20.00%), and essential priority (n=4 or 11.43%). Since the Chi-Square value is 15.72, it is determined that there is a difference in response related to priority level. This difference exists based on participants responding medium priority having the highest Chi square value. Table 55 provides a visual comparison of the priority level of college degree subject matter as expressed by IT survey respondents.

Table 55

Priority Level of College Degree Subject Matter as Expressed by IT Respondents

College Degree Subject Matter	*N*	*%*	X^2
Not a priority	3	8.57	2.29
Low priority	5	14.29	0.57
Medium priority	16	45.71	11.57
High priority	7	20.00	0.00
Essential priority	4	11.43	1.29
Total	35	100.00	15.72

Note. One participant did not answer.

Approximately one-third (n=12 or 34.29%) of IT survey respondents rated master or other advanced degree as a low priority. Other respondents rated master or other advanced degree as not a priority (n=6 or 17.14%), medium priority (n=11 or 31.43%), high priority (n=4 or 11.43%), and essential priority (n=2 or 5.71%). Since the Chi-Square value is 10.86, it is determined that there is a difference in response related to priority level. This difference exists based on participants responding low and essential priority having the highest Chi square values. Table 56 provides a visual comparison of the priority level of master or other advanced degree as expressed by IT survey respondents.

Table 56

Priority Level of Master or Other Advanced Degree as Expressed by IT Respondents

Master or Other Advance Degree	*N*	*%*	X^2
Not a priority	6	17.14	0.14
Low priority	12	34.29	3.57
Medium priority	11	31.43	2.29
High priority	4	11.43	1.29
Essential priority	2	5.71	3.57
Total	35	100.00	10.86

Note. One participant did not answer.

Approximately one-third of IT survey respondents rated certifications held as a low priority (n=12 or 34.29%) and medium priority (n=12 or 34.29%). Other respondents rated certifications held as not a priority (n=3 or 8.57%), high priority (n=6 or 17.14%), and essential priority (n=2 or 5.71%). Since the Chi-Square value is 13.14, it is determined that there is a difference in response related to priority level. This difference exists based on participants responding low, medium, and essential priority having the highest Chi square value. Table 57 provides a visual comparison of the priority level of certifications held as expressed by IT survey respondents.

Table 57

Priority Level of Certifications Held as Expressed by IT Respondents

Certifications Held	*N*	*%*	X^2
Not a priority	3	8.57	2.29
Low priority	12	34.29	3.57
Medium priority	12	34.29	3.57
High priority	6	17.14	0.14
Essential priority	2	5.71	3.57
Total	35	100.00	13.14

Note. One participant did not answer.

The most frequent response (n=10 or 28.57%) from IT survey respondents rated programming languages/technical skills listed as a high priority. Other respondents rated programming languages/technical skills listed as not a priority (n=4 or 11.43%), low priority (n=5 or 14.29%), medium priority (n=9 or 25.71%), and essential priority (n=7 or 20.00%). Since the Chi-Square value is 3.72, it is determined that there is no difference in response related to priority level. Table 58 provides a visual comparison of the priority level of programming languages/technical skills listed as expressed by IT survey respondents.

Table 58

Priority Level of Programming Languages/Technical Skills as Expressed by IT Respondents

Programming Languages/Technical Skills	*N*	*%*	X^2
Not a priority	4	11.43	1.29
Low priority	5	14.29	0.57
Medium priority	9	25.71	0.57
High priority	10	28.57	1.29
Essential priority	7	20.00	0.00
Total	35	100.00	3.72

Note. One participant did not answer.

A large number (n=15 or 42.86%) of IT survey respondents rated look and feel of résumé as a medium priority. Other respondents rated look and feel of résumé as not a priority (n=4 or 11.43%), low priority (n=9 or 25.71%), and high priority (n=7 or 20.00%). Since the Chi-Square value is 18.00, it is determined that there is a difference in response related to priority level. This difference exists based on participants responding medium priority having the highest Chi square value. Table 59 provides a visual comparison of the priority level of look and feel of résumé as expressed by IT survey respondents.

Table 59

Priority Level of Look and Feel of Résumé as Expressed by IT Respondents

Look and Feel of Résumé	*N*	*%*	X^2
Not a priority	4	11.43	1.29
Low priority	9	25.71	0.57
Medium priority	15	42.86	9.14
High priority	7	20.00	0.00
Essential priority	0	0.00	7.00
Total	35	100.00	18.00

Note. One participant did not answer.

IT Survey Question 19. If you indicated IT certifications factor into the hiring process at least sometimes for certain IT positions, how would you characterize the policy of factoring certification into the hiring process? In regard to a policy of factoring IT certifications into the hiring process, a majority of IT respondents reported an informal or ad hoc policy for factoring certifications into the hiring process (n=26 or 83.87%). Other respondents indicated a formal policy specific to IT department directed by the company's CIO or IT department head (n=5 or 16.13%). Since the Chi-Square value is 36.83, it is determined that there is a difference in response related to policy of factoring IT certification into the hiring process. This difference exists based on participants responding informal or ad hoc policy for factoring certifications into the hiring process having the highest Chi square value. Table 60 provides a visual comparison of policies for factoring certifications into the hiring process as expressed by IT survey respondents.

Table 60

Policy of Factoring Certifications into Hiring Process as Expressed by IT Survey Respondents

Policy	*N*	%	X^2
Formal corporate-wide policy directed by HR	0	0.00	10.33
Formal policy specific to IT directed by CIO/IT	5	16.13	2.75
Informal or ad hoc	26	83.67	23.75
Total	31	100.00	36.83

Note. Five participants did not answer.

IT Survey Question 23. How do you verify IT certifications listed on a job candidate's résumé? Pertaining to the process of verifying IT certification listed on a job candidate's résumé, a large number (n=15 or 44.12%) reported questioning candidate in an attempt to verify during the interview. Other respondents reported interviewer or someone else in IT verifies by checking with the certification vendor (n=5 or 14.71%), HR department verifies by checking with certification vendor (n=5 or 14.71%), and no verification is typically done (n=9 or 26.47%). Since the Chi-Square value is 7.88, it is determined that there is a difference in response related to verification of certification. This difference exists based on participants responding question candidate during interview in attempt having the highest Chi square value. Table 61 provides a visual comparison of verification of certification as expressed by IT survey respondents.

Table 61

Verification of Certification as Expressed by IT Survey Respondents

Verification Method	*N*	*%*	X^2
You/other IT verifies with vendor	5	14.71	1.44
HR verifies with vendor	5	14.71	1.44
Question candidate during interview in attempt	15	44.12	4.97
Do not verify	9	26.47	0.03
Total	34	100.01	7.88

Note. Two participants did not answer.

IT Survey Question 22. Next, please think about your interaction with your HR staff. How do you think your HR colleagues at your organization perceive IT certifications? Concerning IT perception of HR knowledge of IT certification, a majority of IT respondents (n=24 or 70.59%) believed HR colleagues to have little or no understanding. Other respondents reported solid understanding (n=2 or 5.88%) and basic understanding (n=8 or 23.53%). Since the Chi-Square value is 22.83, it is determined that there is a difference in response related to perception of HR knowledge. This difference exists based on participants responding little or no understanding having the highest Chi square value. Table 62 provides a visual comparison of verification of certification as expressed by IT survey respondents.

Table 62

IT Perception of HR Knowledge of Certification as Expressed by IT Survey Respondents

Perceived HR Knowledge	*N*	*%*	X^2
Solid understanding	2	5.88	7.69
Basic understanding	8	23.53	0.98
Little or no understanding	24	70.59	14.16
Total	34	100.00	22.83

Note. Two participants did not answer.

HR and IT Further Analysis

HR Survey Question 18. What is your overall perception of the value of the IT certifications for a potential candidate seeking an IT position at your organization? After completing Chi-Square analysis based on equal expected frequencies, relevant demographics (job title, education, experience, certification, company size, and company geographic location) have been merged into a Two-Way Analysis of Variance, ANOVA. This was done to determine whether any difference in the variation of the question responses existed, and if so, was the difference attributable to demographic factors. Concerning perceived value, a difference exists on the value (cv=2.56, F=5.19, p=0.00). Concerning demographics, a difference exists in the demographic variables (cv=4.03, F=29.24, p=0.00). A visual representation has been provided for overall perception (see Table 63).

Table 63

Analysis of Variance by Demographic Factors for Overall Perception of IT Certification Value

Source of Variation	*SS*	*Df*	*MS*	*F*	*P-value*	*F crit*
Demographics	326.67	1.00	326.67	29.24	0.00	4.03
Perception	232.00	4.00	58.00	5.19	0.00	2.56
Interaction	232.00	4.00	58.00	5.19	0.00	2.56
Within	558.67	50.00	11.18			
Total	1,349.33	59.00				

HR Survey Question 20 and IT Survey Question 27. If you answered that your overall perception of the value of IT certifications was either very valuable, valuable, or somewhat valuable, somewhat not valuable, please consider the factors that may or may not affect your perception of the value of IT certifications. After completing Chi-Square analysis based on equal expected frequencies, due to ordinal level data the best further analysis was a comparison between HR and IT of major factors affecting perception. With respect to factors affecting perception of IT certification value, using modes, major factors for both HR and IT were reputation of certification vendor/body (n=14 for HR, n=14 for IT) and performance-based certification exams (n=20 for HR, 17 for IT). Additionally, HR rated knowledge-based certification exams as a major factor (n=20), while IT rated date of certification as a major factor (n=15). A visual representation has been provided for major factors affecting preferences (see Table 64).

Table 64

Major Factors Affecting Preferences of HR and IT Respondents

Major Factors	*HR Mode*	*IT Mode*
Reputation of certification vendor/body	14	14
Knowledge-based certification exam	20	n/a
Performance-based certification exam	20	17
Date of certifications	n/a	15

HR Survey Question 23 and IT Survey Question 34. Next, please consider the following statements about potential IT job candidates and IT certifications at your organization. How much do you agree or disagree with each of the following statements about them? After completing Chi-Square analysis based on equal expected frequencies, due to ordinal level data the best further analysis was a comparison between HR and IT regarding agreement levels to statements regarding IT job candidates with IT certifications. Concerning potential IT job candidates and IT certification, using modes, both HR and IT were neutral regarding IT certified individuals tend to perform better than non-IT certified individuals in similar IT job roles (n=18 HR, n=14 IT), IT certified individuals are more likely to be promoted than those without IT certifications (n=15 HR, n=14 IT), IT certifications save employers time and resources in evaluating potential IT job candidates (n=14 HR, n=14 IT), and IT certifications ensure credibility of IT employees (n=14 HR, n=11 IT). Additionally, both HR and IT were agreed that IT certifications provide a baseline set of knowledge for certain IT positions (n=19

HR, n=17 IT). A visual representation has been provided for agreement levels to statements regarding IT job candidates with IT certifications (see Table 65).

Table 65

Agreement Levels Regarding Candidates with IT Certifications by HR and IT Respondents

Category	*Level*	*HR Mode*	*IT Mode*
Baseline set of knowledge	Agree	19	17
Better performance	Neutral	18	14
More likely to be promoted	Neutral	15	14
Save employer time/resources	Neutral	14	14
Ensure credibility	Neutral	14	11

HR Survey Question 12 and IT Survey Question 16. Please think about the typical hiring process at your organization. Starting at the beginning, how do you weight the following types of information when evaluating a candidate's résumé? After completing Chi-Square analysis based on equal expected frequencies, due to ordinal level data the best further analysis was a comparison between HR and IT regarding weighting of candidate résumés. Regarding weighting of candidate résumés, using modes, both HR and IT gave high priority to quality of experience (n=18 HR, n=19 IT), experience in very specific areas (n=21 HR, n=19 IT), and programming languages/technical skills (n=11 HR, n=10 IT). Again, using modes, HR and IT gave medium priority to college degree subject matter (n=16 HR, n=16 IT), certifications held (n=15 HR, n=12 IT), and look/feel of résumé (n=17 HR, n=15 IT). Additionally, HR and IT gave low priority to prestige of previous employers (n=18 HR, n=11 IT) and prestige of

college/university (n=13 HR, n=12 IT). A visual representation has been provided for priority ratings to statements regarding evaluating candidate résumés (see Table 66).

Table 66

Priority Ratings Regarding Candidate Résumés by HR and IT Respondents

Category	*Level*	*HR Mode*	*IT Mode*
Quality of experience	High priority	18	19
Experience in very specific areas	High priority	21	19
Programming languages/technical skills	High priority	11	10
College degree subject matter	Medium priority	16	16
Certifications held	Medium priority	15	12
Look/feel of résumé	Medium priority	17	15
Prestige of previous employer	Low priority	18	11
Prestige of college/university	Low priority	13	12

HR Survey Question 22. Who mandates or recommends IT certifications for candidates seeking IT job roles within your organization? After completing Chi-Square analysis based on equal expected frequencies, relevant demographics (job title, education, experience, certification, company size, and company geographic location) have been merged

into a Two-Way Analysis of Variance, ANOVA. This was done to determine whether any difference in the variation of the question responses existed, and if so, was the difference attributable to demographic factors. In regard to who mandates or recommends certification, no difference exists on the mandating or recommending of certification (cv=2.37, F=0.86, p=0.52). Concerning demographics, a difference exists in the demographic variables (cv=4.00, F=55.71, p=0.00). A visual representation has been provided for mandating/recommending IT certification (see Table 67).

Table 67

Analysis of Variance by Demographic Factors for Mandating/Recommending IT Certification

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Demographics	338.00	1.00	338.00	55.71	0.00	4.00
Recommendation	26.00	5.00	5.20	0.86	0.52	2.37
Interaction	26.00	5.00	5.20	0.86	0.52	2.37
Within	364.00	60.00	6.07			
Total	754.00	71.00				

HR Survey Question 17. In regard to industry certifications, such as information technology (IT) certifications; do you think they will grow in importance or diminish in importance? After completing Chi-Square analysis based on equal expected frequencies, relevant demographics (job title, education, experience, certification, company size, and company geographic location) have been merged into a Two-Way Analysis of Variance, ANOVA. This was done to determine whether any difference in the variation of the question responses existed, and if so, was the difference attributable to demographic factors. In regard to the perception of certifications growing or diminishing in importance, a difference exists in

perception (cv=2.84, F=3.13, p=0.04). Concerning demographics, a difference exists (cv=2.84, F=30.61, p=0.00). A visual representation has been provided for the perception of certification future growth (see Table 68).

Table 68

Analysis of Variance by Demographic Factors for Perception of Certification Growth

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Demographics	300.00	1.00	300.00	30.61	0.00	4.08
Perception	92.00	3.00	30.67	3.13	0.04	2.84
Interaction	92.00	3.00	30.67	3.13	0.04	2.84
Within	392.00	40.00	9.80			
Total	876.00	47.00				

IT Survey Question 19. If you indicated IT certifications factor into the hiring process at least sometimes for certain IT positions, how would you characterize the policy of factoring certifications into the hiring process? After completing Chi-Square analysis based on equal expected frequencies, relevant demographics (job title, education, experience, certification, company size, and company geographic location) have been merged into a Two-Way Analysis of Variance, ANOVA. This was done to determine whether any difference in the variation of the question responses existed, and if so, was the difference attributable to demographic factors. Concerning the policy of factoring certifications into the hiring process, a difference exists in perception (cv=3.32, F=12,497.50, p=0.00). Concerning demographics, a difference exists (cv=4.17, F=21,160.00, p=0.00). A visual representation has been provided for the perception of policy for factoring certifications into the hiring process (see Table 69).

Table 69

Analysis of Variance by Demographic Factors for Factoring Certification into the Hiring Process

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Demographics	940.44	1.00	940.44	21,160.00	0.00	4.17
Perception	1,110.89	2.00	555.44	12,497.50	0.00	3.32
Interaction	1,110.89	2.00	555.44	12,497.50	0.00	3.32
Within	1.33	30.00	0.04			
Total	3,163.56	35.00				

IT Survey Question 23. How do you verify IT certifications listed on a job candidate's résumé? After completing Chi-Square analysis based on equal expected frequencies, relevant demographics (job title, education, experience, certification, company size, and company geographic location) have been merged into a Two-Way Analysis of Variance, ANOVA. This was done to determine whether any difference in the variation of the question responses existed, and if so, was the difference attributable to demographic factors. Concerning the verification of certifications listed on job candidate résumés, a difference exists in procedure (cv=2.84, F=1,060.00, p=0.00). Concerning demographics, a difference exists (cv=4.08, F=14,285.71, p=0.00). A visual representation has been provided for the verification procedure (see Table 70).

Table 70

Analysis of Variance by Demographic Factors for Certification Verification Procedure

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Demographics	833.33	1.00	1,122.25	15,538.85	0.00	4.17
Procedure	185.50	3.00	391.08	5,415.00	0.00	3.32
Interaction	185.50	3.00	391.08	5,415.00	0.00	3.32
Within	2.33	40.00	0.07			
Total	1,206.67	47.00				

IT Survey Question 22. Next, please think about your interaction with your HR staff. How do you think your HR colleagues at your organization perceive IT certification? After completing Chi-Square analysis based on equal expected frequencies, relevant demographics (job title, education, experience, certification, company size, and company geographic location) have been merged into a Two-Way Analysis of Variance, ANOVA. This was done to determine whether any difference in the variation of the question responses existed, and if so, was the difference attributable to demographic factors. Concerning the perception of HR's view of IT certifications, a difference exists in perception (cv=3.32, F=5,415.00, p=0.00). Concerning demographics, a difference exists (cv=4.17, F=15,538.85, p=0.00). A visual representation has been provided for the perception of HR's view of IT certification (see Table 71).

Table 71

Analysis of Variance by Demographic Factors for Perception of HR's View of IT Certification

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Demographics	1,122.25	1.00	833,33	14,285.71	0.00	4.08
Perception	782.17	2.00	61.83	1,060.00	0.00	2.84
Interaction	782.17	2.00	61.83	1,060.00	0.00	2.84
Within	2.17	30.00	0.06			
Total	2,688.75	35.00				

Research Question 3: Are employees with IC^3, MOS, and/or ACA certifications compensated for these credentials?

HR Survey Question 26. If monetary benefit for passing certification exams is provided, which of the following characterizes how your organization handles monetary rewards for employees that pass IT certification exams? Based on survey results, a majority (n=22 or 66.67%) of HR respondents reported no monetary benefit is provided based on passing a certification exam. Other respondents reported a formal company policy to reward employees that pass IT certification with a pay increase or bonus (n=2 or 6.06%) and a non-formal policy handled on a case by case basis (n=9 or 27.27%). Since the Chi-Square value is 18.72, it is determined that there is a difference in response related to monetary benefit. This difference exists based on participants with employers who do not provide any monetary benefit for achieving certification having the highest Chi square value.

IT Survey Question 33. If monetary benefit for passing certification exams is provided, which of the following characterizes how your organization handles monetary rewards for employees that pass IT certification exams? Based on survey results, a majority

(n=25or 83.33%) of IT respondents reported no monetary benefit is provided based on passing a certification exam. Other respondents reported a non-formal policy handled on a case by case basis (n=5 or 16.67%). Since the Chi-Square value is 35.00, it is determined that there is a difference in response related to monetary benefit. This difference exists based on participants with employers who do not provide any monetary benefit for achieving certification having the highest Chi square value. Table 72 provides a visual comparison of the monetary benefit for passing IT certification exams as expressed by HR and IT survey respondents.

Table 72

Monetary Benefit for Achieving Certification as Expressed by HR and IT Survey Respondents

Monetary Benefit	HR Respondents			IT Respondents		
	N	*%*	X^2	*N*	*%*	X^2
Formal Company Policy to reward employees with a pay increase or bonus	2	6.06	7.36	0	0.00	10.00
Non-formal policy handled on a case by case basis	9	27.27	0.36	5	16.67	2.50
No monetary benefit is provided	22	66.67	11.00	25	83.33	22.50
Total	33	100.00	18.72	30	100.00	35.00

Note. Three HR participants did not answer; six IT participants did not answer.

HR Survey Question 24. In which of the following ways, if any, does your organization provide support for IT certifications? To provide information regarding organizational support for IT certification, respondents were able to identify multiple items of support. Prior to taking a certification exam, HR respondents reported the most frequently occurring support as being employer paying for all certification expenses, e.g. exam cost (n=13

or 25.00%). Other respondents reported the employer paying for all training expenses, e.g. books, classes (n=10 or 19.23%), offering paid time-off for taking the exam (n=5 or 9.62%), providing training at work (n=11 or 21.15%), offering paid time-off for studying or training (n=1 or 1.92%), other as specified (n=3 or 5.77%), and no support provided (n=9 or 17.31%). Since the Chi-Square value is 16.09, it is determined that there is a difference in response related to employer support. This difference exists based on participants where employers paid for certification expenses, e.g. exam cost, or provided training at work responding directly to the survey.

IT Survey Question 31. In which of the following ways, if any, does your organization provide support for IT certifications? Prior to taking a certification exam, IT respondents reported the most frequently occurring support as being no organizational support provided for certifications (n=14 or 31.11%). Other respondents did report organizational support in the form of paying for certification expenses, e.g. exam cost (n=10 or 22.22%), paying for all training expenses, e.g. books, classes (n=8 or 17.78%), training at work (n=6 or 13.33%), offering paid time-off for taking exam (n=4 or 8.89%), other identified as reimbursement (n=2 or 4.44%), and offering paid time-off for studying/training (n=1 or 2.22%). Since the Chi-Square value is 19.95, it is determined that there is a difference in response related to employer support. This difference exists based on participants where employers either paid for certification expenses, e.g. exam cost, or employers provided no support having the highest Chi square value. Participants could select as many supports as applicable. Table 73 provides a visual comparison of employer support provided to IT certification candidates as expressed by HR and IT survey respondents.

Table 73

Employer Support of Certification Candidates as Expressed by HR and IT Survey Respondents

Employer Support	HR Respondents			IT Respondents		
	N	*%*	X^2	*N*	*%*	X^2
Pay for all certification expenses, e.g. exam cost	13	25.00	4.17	10	22.22	1.98
Pay for all training expenses, e.g. books, classes	10	19.23	0.89	8	17.78	0.38
Offer paid time-off for taking the exam	5	9.62	0.79	4	8.89	0.92
Provide training at work	11	21.15	1.71	6	13.33	0.13
Offer paid time-off for studying/training	1	1.92	5.56	1	2.22	4.58
Other	3	5.77	2.64	2	4.44	3.05
No support is provided	9	17.31	0.33	14	31.11	8.91
Total	52	100.00	16.09	45	99.99	19.95

Other as specified occurred three times in HR responses. In the first instance of other as specified, other was identified as being reimbursement of a percentage of expenses. The second instance identified employer reimbursement of exam costs upon proof of successful certification. In the third instance, the respondent identified employer support in the form of sponsorship dependent upon direct relation to the needs of the business. Other as specified occurred twice in IT responses. Both times were identified as general reimbursement without further explanation. Table 74 provides a visual representation of other as specified by HR and IT respondents.

Table 74

Other Employer Supports as Expressed by HR and IT Survey Respondents

Other Employer Supports	HR Respondents	IT Respondents
Reimbursement of a percentage of expenses	1	0
Reimbursement of exam costs upon successful certification	1	0
Sponsorship if certification is directly related to needs of the business	1	0
Reimbursement	0	2
Total	3	2

HR Survey Question 25. As a result of passing the certification exams, do employees within your organization receive any of the following? After earning certification, the most common form of recognition identified by approximately one-third (n=12 or 36.36%) of HR respondents is no recognition being provided for successful certification candidates. Other respondents reported public recognition, such as highlighting the employee's achievement in a newsletter, during a meeting, etc. (n=12 or 36.67%), salary or pay increase (n=7 or 21.21%), bonus (n=0 or 0.00%), and promotion (n=2 or 6.06%). Since the Chi-Square value is 29.00, it is determined that there is a difference in response related to resultant recognition. This difference exists based on participants with employers providing either public recognition or no recognition having the highest Chi square value.

IT Survey Question 32. As a result of passing the certification exams, do employees within your organization receive any of the following? After earning certification, the most

common form of recognition identified by a majority (n=17 or 56.67%) of IT respondents is no recognition being provided for successful certification candidates. Other respondents reported public recognition, such as highlighting the employee's achievement in a newsletter, during a meeting, etc. (n=9 or 30.00%), salary or pay increase (n=2 or 6.67%), bonus (n=1 or 3.33%), and promotion (n=1 or 3.33%). Since the Chi-Square value is 45.20, it is determined that there is a difference in response related to resultant recognition. This difference exists based on participants with employers providing either public recognition or no recognition having the highest Chi square value. Table 75 provides a visual comparison of resultant recognition for achieving IT certification exams as expressed by HR and IT survey respondents.

Table 75

Resultant Recognition for Achieving Certification per HR and IT Survey Respondents

Resultant Recognition	HR Respondents			IT Respondents		
	N	*%*	X^2	*N*	*%*	X^2
Salary or pay increase	7	21.21	0.41	2	6.67	1.80
Bonus	0	0.00	5.50	1	3.33	3.20
Promotion	2	6.06	2.23	1	3.33	3.20
Public recognition (newsletter, meeting, etc.)	12	36.36	7.68	9	30.00	3.20
Other recognition	0	0.00	5.50	0	0.00	5.00
No recognition	12	36.36	7.68	17	56.67	28.80
Total	33	99.99	29.00	30	100.00	45.20

Note. Three HR participants did not answer; six IT participants did not answer.

HR Survey Question 26 and IT Survey Question 33. If monetary benefit for passing certification exams is provided, which of the following characterizes how your organizations monetary rewards for employees that pass IT certification exams? After completing Chi-Square analysis based on equal expected frequencies, relevant demographics (job title, education, experience, certification, company size, and company geographic location) have been merged into a Two-Way Analysis of Variance, ANOVA. This was done to determine whether any difference in the variation of the question responses existed, and if so, was the difference attributable to demographic factors. In regard to monetary benefit, a difference exists (cv=3.32, F=47.15, p=0.00). Many indicate no monetary benefit being provided. In regard to demographics related to monetary benefit, no difference exists in the demographic variables (cv=4.17, F=2.53, p=0.12). Overall, the demographics did not affect respondent responses concerning compensation for certification. In regard to employer support for certification, a difference exists (cv=2.23, F=12.71, p=0.00).

HR Survey Question 24 and IT Survey Question 31. In which of the following ways, if any, does your organization provide support for IT certifications? Many have indicated various forms of employer support. In regard to demographics, a difference exists in the demographic variables (cv=3.98, F=4.30, p=0.04). Demographics show IT respondents more frequently reported no employer support for IT certification than HR respondents. Overall, employer support was based on perception of professional choice, HR versus IT. See Table 77.

HR Survey Question 25 and IT Survey Question 32. As a result of passing the certification exams, do employees within your organization receive any of the following? In regard to resultant recognition, a difference exists (cv=2.37, F=40.72, p=0.00). Many have indicated various forms of resultant recognition. In regard to demographics, a difference exists in

the demographic variables (cv=4.00, F=4.22, p=0.04). Demographics show IT respondents more frequently reported no resultant recognition for IT certification. Overall, resultant recognition was based on perception of professional choice, HR versus IT. Visual representations have been provided for monetary benefit (see Table 76), employer support (see Table 77), and resultant recognition (see Table 78).

Table 76

Analysis of Variance by Demographic Factors for Monetary Benefit of HR and IT Respondents

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Demographics	64.00	1.00	64.00	2.53	0.12	4.17
Monetary Benefit	2,384.67	2.00	1,192.33	47.15	0.00	3.32
Interaction	264.67	2.00	132.33	5.23	0.01	3.32
Within	758.67	30.00	25.29			
Total	3,472.00	35.00				

Table 77

Analysis of Variance by Demographic Factors for Employer Support of HR and IT Respondents

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Demographics	41.44	1.00	41.44	4.30	0.04	3.98
Support	734.74	6.00	122.46	12.71	0.00	2.23
Interaction	356.64	6.00	59.44	6.17	0.00	2.23
Within	674.17	70.00	9.63			
Total	1,806.99	83.00				

Table 78

Analysis of Variance by Demographic Factors for Resultant Recognition of HR and IT Respondents

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Demographics	32.00	1.00	32.00	4.22	0.04	4.00
Recognition	1,542.67	5.00	308.53	40.72	0.00	2.37
Interaction	238.67	5.00	47.73	6.30	0.00	2.37
Within	454.67	60.00	7.58			
Total	2,268.00	71.00				

Research Question 4: To what extent do HR and IT professionals value entry-level employee certification credentials upon initial hire?

HR Perceptions

HR Survey Question 18. What is your overall perception of the value of IT certifications for a potential candidate seeking an IT position at your organization? In regard to overall perception of the value of IT certifications for a potential candidate seeking an IT position, more than one-third of HR respondents reported IT certifications to be valuable (n=13 or 37.14%) for a potential candidate seeking an IT position while another (n=13 or 37.14%) reported IT certifications to be somewhat valuable, somewhat not valuable. Other respondents rated IT certifications as very valuable (n=9 or 25.71%). Since the Chi-Square value is 24.85, it is determined that there is a difference in response related to overall perception. This difference exists based on participants believing certification to be very valuable, valuable, or somewhat valuable, somewhat not valuable responding directly to the survey. Table 11 provides

a visual comparison of the overall perception of IT certifications as expressed by HR survey respondents.

HR Survey Question 20. If you answered that your overall perception of the value of IT certifications was either very valuable, valuable, or somewhat valuable, somewhat not valuable, please consider the factors that may or may not affect your perception of the value of IT certifications. How do you rate each of the following? When identifying overall perception of the value of IT certifications, five factors were considered by survey participants. These five factors were reputation of certification vendor/body, knowledge-based certification exam, performance-based certification exam, continuing education requirements, and date of certification. An examination of each factor is provided.

Almost half (n=14 or 46.67%) of HR survey respondents identified reputation of certification vendor/body as a major factor. Other respondents rated the reputation of certification vendor/body as not a factor (n=5 or 16.67%) or a minor factor (n=11 or 36.67%). Since the Chi-Square value is 4.20, it is determined that there is no difference in response related to reputation of certification vendor/body. Table 12 provides a visual comparison of the impact of reputation of certification vendor/body on the overall perception of IT certifications as expressed by HR survey respondents.

A majority (n=20 or 66.67%) of HR survey respondents identified knowledge-based certification exam format as a major factor. Other respondents rated knowledge-based certification exam format as not a factor (n=2 or 6.67%) or a minor factor (n=8 or 26.67%). A Chi-Square Goodness-of-Fit Test: Equal Expected Frequencies analysis has been used to determine if there is a difference in response based on overall perception. Using a probability distribution for two degrees of freedom with a .05 level of significance, the critical value is

5.991. Since the Chi-Square value is 16.80, it is determined that there is a difference in response related to knowledge-based certification exam format. This difference exists based on participants considering a knowledge-based certification exam to be a major factor having the highest Chi square value. Table 13 provides a visual comparison of the impact of knowledge-based certification exam format on the overall perception of IT certifications as expressed by HR survey respondents.

A majority (n=20 or 66.67%) of HR survey respondents identified performance-based certification exam format as a major factor. Other respondents rated performance-based certification exam format as not a factor (n=2 or 6.67%) or a minor factor (n=8 or 26.67%). Since the Chi-Square value is 16.80, it is determined that there is a difference in response related to performance-based certification exam format. This difference exists based on participants considering a performance-based certification exam to be a major factor having the highest Chi square value. Table 14 provides a visual comparison of the impact of performance-based certification exam format on the overall perception of IT certifications as expressed by HR survey respondents.

A majority (n=16 or 53.33%) of HR survey respondents identified continuing education requirements as a minor factor. Other respondents rated continuing education requirements as not a factor (n=3 or 10.00%) or a major factor (n=11 or 36.67%). Since the Chi-Square value is 8.60, it is determined that there is a difference in response related to continuing education requirements. This difference exists based on participants considering continuing education requirements to be a minor factor having the highest Chi square value. Table 15 provides a visual comparison of the impact of continuing education requirements on the overall perception of IT certifications as expressed by HR survey respondents.

Almost half (n=14 or 46.67%) of HR survey respondents identified date of certification as a minor factor. Other respondents rated date of certification as not a factor (n=6 or 20.00%) or a major factor (n=10 or 33.33%). Since the Chi-Square value is 3.20, it is determined that there is no difference in response related to date of certification. Table 16 provides a visual comparison of the impact of date of certification on the overall perception of IT certifications as expressed by HR survey respondents.

HR Survey Question 23. Next, please consider the following statements about potential IT job candidates and IT certifications at your organization. How much do you agree or disagree with each of the following statements about them. Survey participants considered seven statements in regard to potential IT job candidates and IT certifications. These seven statements related to IT certifications as a baseline of knowledge, job performance, promotion potential, starting salaries, evaluation potential, learning speed, and credibility of potential employees. Respondents rated each from strongly disagree to strongly agree. An examination of each is provided.

A majority (n=19 or 63.33%) of HR survey respondents reported agreement with the statement that IT certifications provide a baseline set of knowledge for certain IT positions. Other respondents reported disagreement (n=1 or 3.33%), neither agreement nor disagreement (n=7 or 23.33%), and strong agreement (n=3 or 10.00%). Since the Chi-Square value is 40.01, it is determined that there is a difference in response related to IT certifications providing a baseline set of knowledge. This difference exists based on participants in agreement having the highest Chi square value. Table 17 provides a visual comparison of agreement levels in regard to IT certifications providing a baseline set of knowledge as expressed by HR survey respondents.

A majority (n=18 or 60.00%) of HR survey respondents reported neither agreement nor disagreement with the statement that IT certified individuals tend to perform better than non-IT certified individuals in similar IT job roles. Other respondents reported disagreement (n=2 or 6.67%), and agreement (n=10 or 33.33%). Since the Chi-Square value is 41.34, it is determined that there is a difference in response related to IT certified individuals tend to perform better than non-IT certified individuals in similar IT job roles. This difference exists based on participants responding neither agree nor disagree having the highest Chi square value. Table 18 provides a visual comparison of agreement levels in regard to IT certified individuals tend to perform better than non-IT certified individuals in similar IT job roles as expressed by HR survey respondents.

A majority (n=15 or 50.00%) of HR survey respondents reported neither agreement nor disagreement with the statement that IT certified individuals are more likely to be promoted than those without IT certifications. Other respondents reported disagreement (n=4 or 13.33%), agreement (n=10 or 33.33%), and strong agreement (n=1 or 3.33%). Since the Chi-Square value is 27.01, it is determined that there is a difference in response related to IT certified individuals being more likely to be promoted than those without IT certifications. This difference exists based on participants holding responding neither agree nor disagree having the highest Chi square value. Table 19 provides a visual comparison of agreement levels in regard to IT certified individuals are more likely to be promoted than those without IT certifications as expressed by HR survey respondents.

A majority (n=17 or 56.67%) of HR survey respondents reported agreement with the statement that IT certified individuals receive higher starting salaries than those without IT certifications. Other respondents reported disagreement (n=1 or 3.33%), neither agreement nor disagreement (n=11 or 36.67%), and strong agreement (n=1 or 3.33%). Since the Chi-Square

value is 38.68, it is determined that there is a difference in response related to IT certified individuals receiving higher starting salaries than those without IT certifications. This difference exists based on participants neither agree nor disagree having the highest Chi square value. Table 20 provides a visual comparison of agreement levels in regard to IT certified individuals receiving higher starting salaries than those without IT certifications as expressed by HR survey respondents.

Nearly half (n=14 or 46.67%) of HR survey respondents reported neither agreement nor disagreement with the statement that IT certifications save employers time and resources in evaluating potential IT job candidates. Other respondents reported disagreement (n=2 or 6.67%), agreement (n=13 or 43.33%), and strong agreement (n=1 or 3.33%). Since the Chi-Square value is 31.68, it is determined that there is a difference in response related to IT certifications saving employers time and resources in evaluating potential IT job candidates. This difference exists based on participants responding neither agree nor disagree. Table 21 provides a visual comparison of agreement levels in regard to IT certifications saving employers time and resources in evaluating potential IT job candidates as expressed by HR survey respondents.

A majority (n=17 or 56.67%) of HR survey respondents reported neither agreement nor disagreement with the statement that IT certifications enable IT employees to learn faster once starting a job. Other respondents reported disagreement (n=4 or 13.33%) and agreement (n=9 or 30.00%). Since the Chi-Square value is 34.34, it is determined that there is a difference in response related to IT certifications enabling IT employees to learn faster once starting a job. This difference exists based on participants responding neither agree nor disagree having the highest Chi square value. Table 22 provides a visual comparison of agreement levels in regard to

IT certifications enabling IT employees to learn faster once starting a job as expressed by HR survey respondents.

Almost half (n=14 or 46.67%) of HR survey respondents reported neither agreement nor disagreement with the statement that IT certifications ensure credibility of IT employees. Other respondents reported strong disagreement (n=1 or 3.33%), disagreement (n=3 or 10.00%), and agreement (n=12 or 40.00%). Since the Chi-Square value is 28.34, it is determined that there is a difference in response related to IT certifications ensuring credibility of IT employees. This difference exists based on participants responding neither agree nor disagree having the highest Chi square value. Table 23 provides a visual comparison of agreement levels in regard to IT certifications ensuring credibility of IT employees as expressed by HR survey respondents.

HR Survey Question 12. Please think about the typical hiring process at your organization. Starting at the beginning, how do you weight the following types of information when evaluating a candidate's résumé? In terms of the typical hiring process and how certification is weighted, respondents addressed 11 factors when evaluating a candidate's résumé. These 11 factors were total years of experience, quality of experience, experience in very specific areas, track record of steady growth/accomplishments/responsibilities, prestige of previous employers, prestige of college/university, college degree subject matter, master or other advanced degree, certifications held, programming languages/technical skills listed, and look/feel of résumé. An examination of each factor is provided.

Almost half (n=17 or 48.57%) of HR survey respondents rated total years of experience as a high priority. Other respondents rated total years of experience as a low priority (n=2 or 5.71%) or a medium priority (n=16 or 45.71%). Since the Chi-Square value is 43.43, it is determined that there is a difference in response related to priority level. This difference exists

based on participants placing medium and high priority having the highest Chi square value. Table 24 provides a visual comparison of the priority level of total years of experience as expressed by HR survey respondents.

A majority (n=18 or 51.43%) of HR survey respondents rated quality of experience as a high priority. Other respondents rated quality of experience as a low priority (n=1 or 2.86%), medium priority (n=9 or 25.71%), and essential priority (n=7 or 20.00%). Since the Chi-Square value is 30.00, it is determined that there is a difference in response related to priority level. This difference exists based on participants placing medium and high priority having the highest Chi square value. Table 25 provides a visual comparison of the priority level of total years of experience as expressed by HR survey respondents.

A majority (n=21 or 58.33%) of HR survey respondents rated experience in very specific areas as a high priority. Other respondents rated experience in very specific areas as a medium priority (n=5 or 13.89%) and essential priority (n=10 or 27.78%). Since the Chi-Square value is 42.61, it is determined that there is a difference in response related to priority level. This difference exists based on participants placing high having the highest Chi square values. Table 26 provides a visual comparison of the priority level of total years of experience as expressed by HR survey respondents.

A large number (n=15 or 42.86%) of HR survey respondents rated track record of steady growth/accomplishments/responsibilities as a high priority. Other respondents rated track record of steady growth/accomplishments/responsibilities as a low priority (n=1 or 2.86%), medium priority (n=12 or 34.29%), and essential priority (n=7 or 20.00%). Since the Chi-Square value is 24.85, it is determined that there is a difference in response related to priority level. This difference exists based on participants placing high priority having the highest Chi square value.

Table 27 provides a visual comparison of the priority level of track record of steady growth/accomplishments/responsibilities as expressed by HR survey respondents.

A majority (n=18 or 51.43%) of HR survey respondents rated prestige of previous employers as a low priority. Other respondents rated prestige of previous employers as not a priority (n=6 or 17.14%), medium priority (n=8 or 22.86%), and high priority (n=3 or 8.57%). Since the Chi-Square value is 26.86, it is determined that there is a difference in response related to priority level. This difference exists based on participants placing low priority having the highest Chi square value. Table 28 provides a visual comparison of the priority level of prestige of previous employers as expressed by HR survey respondents.

More than one-third (n=13 or 37.14%) of HR survey respondents rated prestige of college/university as a low priority. Other respondents rated prestige of college/university as not a priority (n=12 or 34.29%), medium priority (n=8 or 22.86%), and high priority (n=2 or 5.71%). Since the Chi-Square value is 19.42, it is determined that there is a difference in response related to priority level. This difference exists based on participants placing low priority having the highest Chi square values. Table 29 provides a visual comparison of the priority level of prestige of previous employers as expressed by HR survey respondents.

Nearly half (n=16 or 45.71%) of HR survey respondents rated college degree subject matter, e.g. computer science, business, etc. as a medium priority. Other respondents rated college degree subject matter as not a priority (n=2 or 5.71%), low priority (n=6 or 17.14%), high priority (n=9 or 25.71%), and essential priority (n=2 or 5.71%). Since the Chi-Square value is 19.42, it is determined that there is a difference in response related to priority level. This difference exists based on participants placing medium priority having the highest Chi square

value. Table 30 provides a visual comparison of the priority level of college degree subject matter as expressed by HR survey respondents.

More than one-third (n=13 or 37.14%) of HR survey respondents rated master or other advanced degree as a medium priority. Other respondents rated master or other advanced degree as not a priority (n=5 or 14.29%), low priority (n=11 or 31.43%), high priority (n=4 or 11.43%), and essential priority (n=2 or 5.71%). Since the Chi-Square value is 12.86, it is determined that there is a difference in response related to priority level. This difference exists based on participants placing medium priority having the highest Chi square values. Table 31 provides a visual comparison of the priority level of master or other advanced degree as expressed by HR survey respondents.

A large number (n=15 or 41.67%) of HR survey respondents rated certifications held as a medium priority. Other respondents rated certifications held as not a priority (n=2 or 5.56%), low priority (n=7 or 19.44%), high priority (n=9 or 25.00%), and essential priority (n=3 or 8.33%). Since the Chi-Square value is 15.12, it is determined that there is a difference in response related to priority level. This difference exists based on participants placing medium priority having the highest Chi square value. Table 32 provides a visual comparison of the priority level of certifications held as expressed by HR survey respondents.

Approximately one-third (n=11 or 30.56%) of HR survey respondents rated programming languages/technical skills listed as a high priority. Other respondents rated programming languages/technical skills listed as not a priority (n=7 or 19.44%), low priority (n=10 or 27.78%), medium priority (n=6 or 16.67%), and essential priority (n=2 or 5.57%). Since the Chi-Square value is 7.07, it is determined that there is no difference in response related to priority

level. Table 33 provides a visual comparison of the priority level of programming languages/technical skills listed as expressed by HR survey respondents.

Almost half (n=17 or 48.57%) of HR survey respondents rated look and feel of résumé as a medium priority. Other respondents rated look and feel of résumé as not a priority (n=4 or 11.43%), low priority (n=7 or 20.00%), high priority (n=5 or 14.29%), and essential priority (n=2 or 5.71%). Since the Chi-Square value is 19.72, it is determined that there is a difference in response related to priority level. This difference exists based on participants placing medium priority having the highest Chi square value. Table 34 provides a visual comparison of the priority level of look and feel of résumé as expressed by HR survey respondents.

HR Survey Question 22. Who mandates or recommends IT certifications for candidates seeking IT job roles within your organization? In regard to who mandates or recommends IT certifications for candidates seeking IT job roles within a business/organization, nearly one-fourth of HR respondents reported IT certifications to be mandated or recommended by the company's IT hiring managers (n=9 or 23.08%) while another (n=9 or 23.08%) reported IT certifications to be mandated or recommended by human resources. Other respondents listed a Chief Information Officer (n=5 or 12.82%), IT director (n=5 or 12.82%), other identified as executive positions and other departments (n=6 or 15.38%), and non-mandated or recommended (n=5 or 12.82%). Since the Chi-Square value is 3.01, it is determined that there is no difference in response related to who mandates or recommends IT certifications for candidates seeking IT job roles. Table 35 provides a visual comparison of who mandates or recommends IT certifications for candidates seeking IT job roles as expressed by HR survey respondents. Respondents could select as many as applied.

HR Survey Question 16. In which of the following way(s), do certifications factor into the hiring process at your organization? Pertaining to how certifications factor into the hiring process, survey participants considered six statements. These six statements related to IT certifications as a screening mechanism, requirement for certain job roles, facilitation of matching applicant skills with departmental needs, differentiation between otherwise equally qualified applicants, conformation of subject matter knowledge and expertise, and measurement of a candidate's willingness to work hard and meet goals. Respondents rated each factor as never, rarely, sometimes, often, or always. An examination of each is provided.

A large number (n=14 or 40.00%) of HR survey respondents indicated that certifications are sometimes used as a screening mechanism. Other respondents reported never (n=6 or 17.14%), rarely (n=2 or 5.71%), often (n=11 or 31.43%), and always (n=2 or 5.71%). Since the Chi-Square value is 16.57, it is determined that there is a difference in response related to the use of certification as a screening mechanism. This difference exists based on participants who sometimes use certifications as a screening mechanism having the highest Chi square value. Table 79 provides a visual comparison of the use of certifications as a screening mechanism as expressed by HR survey respondents.

Table 79

Use of Certifications as a Screening Mechanism as Expressed by HR Survey Respondents

Used as a Screening Mechanism	*N*	*%*	X^2
Never	6	17.14	0.14
Rarely	2	5.71	3.57
Sometimes	14	40.00	7.00
Often	11	31.43	2.29
Always	2	5.71	3.57
Total	35	99.99	16.57

Note. One participant did not answer.

Almost half (n=16 or 45.71%) of HR survey respondents indicated that certifications are sometimes required for certain job roles. Other respondents reported never (n=3 or 8.57%), rarely (n=1 or 2.86%), often (n=10 or 28.57%), and always (n=5 or 14.29%). Since the Chi-Square value is 20.86, it is determined that there is a difference in response related to the requirement of certification for certain job roles. This difference exists based on participants reporting sometimes and often responding directly to the survey. Table 80 provides a visual comparison of certification as a requirement for certain job roles as expressed by HR survey respondents.

Table 80

Use of Certifications as a Requirement for Job Roles as Expressed by HR Survey Respondents

Required for Certain Job Roles	*N*	*%*	X^2
Never	3	8.57	2.29
Rarely	1	2.86	5.14
Sometimes	16	45.71	11.57
Often	10	28.57	1.29
Always	5	14.29	0.57
Total	35	100.00	20.86

Note. One participant did not answer.

A large number (n=15 or 42.86%) of HR survey respondents indicated that certifications are sometimes used to facilitate matching applicant skills with departmental needs. Other respondents reported never (n=2 or 5.71%), rarely (n=5 or 14.29%), often (n=10 or 28.57%), and always (n=3 or 8.57%). Since the Chi-Square value is 16.86, it is determined that there is a difference in response related to using certification to facilitate matching applicant skills with departmental needs. This difference exists based on participants reporting sometimes having the highest Chi square value. Table 81 provides a visual comparison of certification to facilitate matching applicant skills with departmental needs as expressed by HR survey respondents.

Table 81

Use of Certifications to Facilitate Matching Applicant Skills with Departmental Needs as Expressed by HR Survey Respondents

Match Applicant Skills/Departmental Needs	*N*	*%*	X^2
Never	3	8.57	2.29
Rarely	1	2.86	5.14
Sometimes	16	45.71	11.57
Often	10	28.57	1.29
Always	5	14.29	0.57
Total	35	100.00	16.86

Note. One participant did not answer.

A large number (n=15 or 42.86%) of HR survey respondents indicated that certifications are sometimes used to differentiate between otherwise equally qualified applicants. Other respondents reported never (n=2 or 5.71%), rarely (n=3 or 8.57%), often (n=11 or 31.43%), and always (n=4 or 11.43%). Since the Chi-Square value is 18.58, it is determined that there is a difference in response related to using certification to differentiate between otherwise equally qualified applicants. This difference exists based on participants reporting sometimes and often responding directly to the survey. Table 82 provides a visual comparison of certification to differentiate between otherwise equally qualified applicants as expressed by HR survey respondents.

Table 82

Use of Certifications to Differentiate between Otherwise Equally Qualified Applicants as Expressed by HR Survey Respondents

Differentiate Equally Qualified Applicants	*N*	*%*	X^2
Never	2	5.71	3.57
Rarely	3	8.57	2.29
Sometimes	15	42.86	9.14
Often	11	31.43	2.29
Always	4	11.43	1.29
Total	35	100.00	18.58

Note. One participant did not answer.

Almost half (n=17 or 47.22%) of HR survey respondents indicated that certifications are sometimes used to help confirm subject matter knowledge and expertise. Other respondents reported never (n=2 or 5.56%), rarely (n=1 or 2.78%), often (n=10 or 27.78%), and always (n=6 or 16.67%). Since the Chi-Square value is 23.73, it is determined that there is a difference in response related to using certification to help confirm subject matter knowledge and expertise. This difference exists based on participants reporting sometimes having the highest Chi square value. Table 83 provides a visual comparison of certification to help confirm subject matter knowledge and expertise as expressed by HR survey respondents.

Table 83

Use of Certifications to Help Confirm Subject Matter Knowledge and Expertise as Expressed by HR Survey Respondents

Confirm Subject Matter Knowledge/Expertise	*N*	*%*	X^2
Never	2	5.56	3.76
Rarely	1	2.78	5.34
Sometimes	17	47.22	13.34
Often	10	27.78	1.09
Always	6	16.67	0.20
Total	36	100.01	23.73

Note. All participants answered.

A large number (n=15 or 41.67%) of HR survey respondents indicated that certifications are sometimes used to measure a candidate's willingness to work hard and meet a goal. Other respondents reported never (n=3 or 8.33%), rarely (n=7 or 19.44%), often (n=8 or 22.22%), and always (n=3 or 8.33%). Since the Chi-Square value is 13.45, it is determined that there is a difference in response related to using certification to measure a candidate's willingness to work hard and meet a goal. This difference exists based on participants reporting sometimes having the highest Chi square value. Table 84 provides a visual comparison of certification to measure a candidate's willingness to work hard and meet a goal as expressed by HR survey respondents.

Table 84

Use of Certifications to Measure a Candidate's Willingness to Work Hard and Meet a Goal as Expressed by HR Survey Respondents

Measure Willingness to Work Hard/Meet Goal	*N*	%	X^2
Never	3	8.33	2.45
Rarely	7	19.44	0.01
Sometimes	15	41.67	8.45
Often	8	22.22	0.09
Always	3	8.33	2.45
Total	36	99.99	13.45

Note. All participants answered.

IT Perceptions

IT Survey Question 27. Next, please consider the factors that may or may not affect your perception of the value of IT certifications. When identifying factors affecting perception of the value of IT certifications, five factors were considered by survey participants. These five factors were reputation of certification vendor/body, knowledge-based certification exam, performance-based certification exam, continuing education requirements, and date of certification. An examination of each factor is provided.

Almost half (n=14 or 45.16%) of IT survey respondents identified reputation of certification vendor/body as a major factor. Other respondents rated the reputation of certification vendor/body as not a factor (n=6 or 19.35%) or a minor factor (n=11 or 35.48%)..

Since the Chi-Square value is 3.16, it is determined that there is no difference in response related to reputation of certification vendor/body. Table 37 provides a visual comparison of the impact of reputation of certification vendor/body on the overall perception of IT certifications as expressed by IT survey respondents.

A majority (n=17 or 54.84%) of IT survey respondents identified knowledge-based certification exam format as a minor factor. Other respondents rated knowledge-based certification exam format as not a factor (n=3 or 9.68%) or a major factor (n=11 or 35.48%). Since the Chi-Square value is 9.54, it is determined that there is a difference in response related to knowledge-based certification exam format. This difference exists based on participants considering a knowledge-based certification exam to be a minor factor having the highest Chi square value. Table 38 provides a visual comparison of the impact of knowledge-based certification exam format on the overall perception of IT certifications as expressed by IT survey respondents.

A majority (n=17 or 54.84%) of IT survey respondents identified performance-based certification exam format as a major factor. Other respondents rated performance-based certification exam format as not a factor (n=2 or 6.45%) or a minor factor (n=12 or 38.71%). Since the Chi-Square value is 11.29, it is determined that there is a difference in response related to performance-based certification exam format. This difference exists based on participants considering a performance-based certification exam to be a not a factor having the highest Chi square value. Table 39 provides a visual comparison of the impact of performance-based certification exam format on the overall perception of IT certifications as expressed by IT survey respondents.

Approximately one-third (n=11 or 35.48%) of HR survey respondents identified continuing education requirements as a minor factor. Other respondents rated continuing education requirements as not a factor (n=10 or 32.26%) or a major factor (n=10 or 32.26%). Since the Chi-Square value is 0.06, it is determined that there is no difference in response related to continuing education requirements. Table 40 provides a visual comparison of the impact of continuing education requirements on the overall perception of IT certifications as expressed by IT survey respondents.

Almost half (n=15 or 48.39%) of IT survey respondents identified date of certification as a major factor. Other respondents rated date of certification as not a factor (n=6 or 19.35%) or a minor factor (n=10 or 32.26%). A Chi-Square Goodness-of-Fit Test: Equal Expected Frequencies analysis has been used to determine if there is a difference in response based on overall perception. Using a probability distribution for two degrees of freedom with a .05 level of significance, the critical value is 5.991. Since the Chi-Square value is 3.94, it is determined that there is no difference in response related to date of certification. Table 41 provides a visual comparison of the impact of date of certification on the overall perception of IT certifications as expressed by IT survey respondents.

IT Survey Question 34. Next, please consider the following statements about potential IT job candidates and IT certifications at your organization. Survey participants considered seven statements in regard to potential IT job candidates and IT certifications. These seven statements related to IT certifications as a baseline of knowledge, job performance, promotion potential, starting salaries, evaluation potential, learning speed, and credibility of potential employees. Respondents rated each from strongly disagree to strongly agree. An examination of each is provided.

A majority (n=17 or 56.67%) of IT survey respondents reported agreement with the statement that IT certifications provide a baseline set of knowledge for certain IT positions. Other respondents reported strong disagreement (n=1 or 3.33%), disagreement (n=1 or 3.33%), neither agreement nor disagreement (n=8 or 26.67%), and strong agreement (n=3 or 10.00%). Since the Chi-Square value is 30.68, it is determined that there is a difference in response related to IT certifications providing a baseline set of knowledge. This difference exists based on participants in agreement having the highest Chi square value. Table 42 provides a visual comparison of agreement levels in regard to IT certifications providing a baseline set of knowledge as expressed by HR survey respondents.

Almost half (n=14 or 46.67%) of IT survey respondents reported neither agreement nor disagreement with the statement that IT certified individuals tend to perform better than non-IT certified individuals in similar IT job roles. Other respondents reported strong disagreement (n=4 or 13.33%), disagreement (n=6 or 20.00%), and agreement (n=6 or 20.00%). Since the Chi-Square value is 17.34, it is determined that there is a difference in response related to IT certified individuals tend to perform better than non-IT certified individuals in similar IT job roles. This difference exists based on participants responding neither agree nor disagree having the highest Chi square value. Table 43 provides a visual comparison of agreement levels in regard to IT certified individuals tend to perform better than non-IT certified individuals in similar IT job roles as expressed by IT survey respondents.

Almost half (n=14 or 46.67%) of IT survey respondents reported neither agreement nor disagreement with the statement that IT certified individuals are more likely to be promoted than those without IT certifications. Other respondents reported strong disagreement (n=2 or 6.67%), disagreement (n=5 or 16.67%), agreement (n=7 or 23.33%), and strong agreement (n=2 or

6.67%). Since the Chi-Square value is 16.35, it is determined that there is a difference in response related to IT certified individuals being more likely to be promoted than those without IT certifications. This difference exists based on participants responding neither agree nor disagree having the highest Chi square value. Table 44 provides a visual comparison of agreement levels in regard to IT certified individuals are more likely to be promoted than those without IT certifications as expressed by IT survey respondents.

Approximately one-third (n=11 or 36.67%) of IT survey respondents reported neither disagreement nor agreement with the statement that IT certified individuals receive higher starting salaries than those without IT certifications. Other respondents reported strong disagreement (n=2 or 6.67%), disagreement (n=6 or 20.00%), agreement (n=10 or 33.33%), and strong agreement (n=1 or 3.33%). Since the Chi-Square value is 13.68, it is determined that there is a difference in response related to IT certified individuals receiving higher starting salaries than those without IT certifications. This difference exists based on participants responding neither agree nor disagree having the highest Chi square value. Table 45 provides a visual comparison of agreement levels in regard to IT certified individuals receiving higher starting salaries than those without IT certifications as expressed by IT survey respondents.

Almost half (n=14 or 46.67%) of IT survey respondents reported neither agreement nor disagreement with the statement that IT certifications save employers time and resources in evaluating potential IT job candidates. Other respondents reported strong disagreement (n=1 or 3.33%), disagreement (n=4 or 13.33%), agreement (n=10 or 33.33%), and strong agreement (n=1 or 3.33%). Since the Chi-Square value is 22.35, it is determined that there is a difference in response related to IT certifications saving employers time and resources in evaluating potential IT job candidates. This difference exists based on participants responding neither agree nor

disagree having the highest Chi square value. Table 46 provides a visual comparison of agreement levels in regard to IT certifications saving employers time and resources in evaluating potential IT job candidates as expressed by IT survey respondents.

A large number (n=12 or 40.00%) of IT survey respondents reported agreement with the statement that IT certifications enable IT employees to learn faster once starting a job. Other respondents reported strong disagreement (n=2 or 6.67%), disagreement (n=6 or 20.00%), neither agreement nor disagreement (n=9 or 30.00%), and strong agreement (n=1 or 3.33%). Since the Chi-Square value is 14.34, it is determined that there is a difference in response related to IT certifications enabling IT employees to learn faster once starting a job. This difference exists based on participants responding neither agree nor disagree having the highest Chi square value. Table 47 provides a visual comparison of agreement levels in regard to IT certifications enabling IT employees to learn faster once starting a job as expressed by IT survey respondents.

Approximately one-third (n=11 or 36.67%) of IT survey respondents reported neither agreement nor disagreement with the statement that IT certifications ensure credibility of IT employees. Other respondents reported strong disagreement (n=4 or 13.33%), disagreement (n=6 or 20.00%), agreement (n=8 or 26.67%), and strong agreement (n=1 or 3.33%). Since the Chi-Square value is 9.68, it is determined that there is a difference in response related to IT certifications ensuring credibility of IT employees. This difference exists based on participants responding neither disagree nor agree having the highest Chi square value. Table 48 provides a visual comparison of agreement levels in regard to IT certifications ensuring credibility of IT employees as expressed by IT survey respondents.

IT Survey Question 16. Please think about the typical hiring process at your organization. Starting at the beginning, how do you weight the following types of information when evaluating a candidate's résumé? In terms of the typical hiring process and how certification is weighted, respondents addressed 11 factors when evaluating a candidate's résumé. These 11 factors were total years of experience, quality of experience, experience in very specific areas, track record of steady growth/accomplishments/responsibilities, prestige of previous employers, prestige of college/university, college degree subject matter, master or other advanced degree, certifications held, programming languages/technical skills listed, and look/feel of résumé. An examination of each factor is provided.

A large number (n=15 or 42.86%) of IT survey respondents rated total years of experience as a medium priority. Other respondents rated total years of experience as not a priority (n=1 or 2.86%), low priority (n=2 or 5.71%), high priority (n=14 or 40.00%), and essential priority (n=3 or 8.57%). Since the Chi-Square value is 27.14, it is determined that there is a difference in response related to priority level. This difference exists based on participants placing medium and high priority having the highest Chi square values. Table 49 provides a visual comparison of the priority level of total years of experience as expressed by IT survey respondents.

A majority (n=19 or 54.29%) of IT survey respondents rated quality of experience as a high priority. Other respondents rated quality of experience as a medium priority (n=10 or 28.57%) and essential priority (n=6 or 17.14%). Since the Chi-Square value is 36.00, it is determined that there is a difference in response related to priority level. This difference exists based on participants placing high priority having the highest Chi square values. Table 50

provides a visual comparison of the priority level of quality of experience as expressed by IT survey respondents.

A majority (n=19 or 54.29%) of IT survey respondents rated experience in very specific areas as a high priority. Other respondents rated experience in very specific areas as a low priority (n=2 or 5.71%), medium priority (n=8 or 22.86%) and essential priority (n=6 or 17.14%). Since the Chi-Square value is 31.42, it is determined that there is a difference in response related to priority level. This difference exists based on participants placing high priority having the highest Chi square value. Table 51provides a visual comparison of the priority level of experience in very specific areas as expressed by IT survey respondents.

A majority (n=18 or 51.43%) of IT survey respondents rated track record of steady growth/accomplishments/responsibilities as a medium priority. Other respondents rated track record of steady growth/accomplishments/responsibilities as a low priority (n=2 or 5.71%), high priority (n=12 or 34.29%), and essential priority (n=3 or 8.57%). Since the Chi-Square value is 33.72, it is determined that there is a difference in response related to priority level. This difference exists based on participants placing medium priority having the highest Chi square value. Table 52 provides a visual comparison of the priority level of track record of steady growth/accomplishments/responsibilities as expressed by IT survey respondents.

Approximately one-third (n=11 or 31.43%) of IT survey respondents rated prestige of previous employers as a low priority while another (n=11 or 31.43%) rated prestige of previous employers as a medium priority. Other respondents rated prestige of previous employers as not a priority (n=7 or 20.00%), high priority (n=5 or 14.29%), and essential priority (n=1 or 2.86%). Since the Chi-Square value is 10.29, it is determined that there is a difference in response related to priority level. This difference exists based on participants placing low and medium priority

having the highest Chi square value. Table 53 provides a visual comparison of the priority level of prestige of previous employers as expressed by IT survey respondents.

Approximately one-third (n=12 or 34.29%) of IT survey respondents rated prestige of college/university as not a priority while another (n=12 or 34.29%) rated prestige of college/university as low priority. Other respondents rated prestige of college/university as medium priority (n=10 or 28.57%), and high priority (n=1 or 2.86%). Since the Chi-Square value is 20.57, it is determined that there is a difference in response related to priority level. This difference exists based on participants placing low and medium priority having the highest Chi square values. Table 54 provides a visual comparison of the priority level of prestige of college/university as expressed by IT survey respondents.

Nearly half (n=16 or 45.71%) of IT survey respondents rated college degree subject matter, e.g. computer science, business, etc. as a medium priority. Other respondents rated college degree subject matter as not a priority (n=3 or 8.57%), low priority (n=5 or 14.29%), high priority (n=7 or 20.00%), and essential priority (n=4 or 11.43%). Since the Chi-Square value is 15.72, it is determined that there is a difference in response related to priority level. This difference exists based on participants placing medium priority having the highest Chi square value. Table 55 provides a visual comparison of the priority level of college degree subject matter as expressed by IT survey respondents.

Approximately one-third (n=12 or 34.29%) of IT survey respondents rated master or other advanced degree as a low priority. Other respondents rated master or other advanced degree as not a priority (n=6 or 17.14%), medium priority (n=11 or 31.43%), high priority (n=4 or 11.43%), and essential priority (n=2 or 5.71%). Since the Chi-Square value is 10.86, it is determined that there is a difference in response related to priority level. This difference exists

based on participants placing low and essential priority having the highest Chi square values. Table 56 provides a visual comparison of the priority level of master or other advanced degree as expressed by IT survey respondents.

Approximately one-third of IT survey respondents rated certifications held as a low priority (n=12 or 34.29%) and medium priority (n=12 or 34.29%). Other respondents rated certifications held as not a priority (n=3 or 8.57%), high priority (n=6 or 17.14%), and essential priority (n=2 or 5.71%). Since the Chi-Square value is 13.14, it is determined that there is a difference in response related to priority level. This difference exists based on participants placing low and essential priority having the highest Chi square values. Table 57 provides a visual comparison of the priority level of certifications held as expressed by IT survey respondents.

Less than one-third (n=10 or 28.57%) of IT survey respondents rated programming languages/technical skills listed as a high priority. Other respondents rated programming languages/technical skills listed as not a priority (n=4 or 11.43%), low priority (n=5 or 14.29%), medium priority (n=9 or 25.71%), and essential priority (n=7 or 20.00%). Since the Chi-Square value is 3.72, it is determined that there is no difference in response related to priority level. Table 58 provides a visual comparison of the priority level of programming languages/technical skills listed as expressed by IT survey respondents.

A large number (n=15 or 42.86%) of IT survey respondents rated look and feel of résumé as a medium priority. Other respondents rated look and feel of résumé as not a priority (n=4 or 11.43%), low priority (n=9 or 25.71%), and high priority (n=7 or 20.00%). Since the Chi-Square value is 18.00, it is determined that there is a difference in response related to priority level. This difference exists based on participants placing medium priority having the highest Chi square

value. Table 59 provides a visual comparison of the priority level of look and feel of résumé as expressed by IT survey respondents.

IT Survey Question 19. If indicated IT certifications factor into the hiring process at least sometimes for certain IT positions, how would you characterize the policy of factoring certifications into the hiring process? In regard to a policy of factoring IT certifications into the hiring process, a majority of IT respondents reported an informal or ad hoc policy for factoring certifications into the hiring process (n=26 or 83.87%). Other respondents indicated a formal policy specific to IT department directed by the company's CIO or IT department head (n=5 or 16.13%). Since the Chi-Square value is 36.83, it is determined that there is a difference in response related to policy of factoring IT certification into the hiring process. This difference exists based on participants with a work policy of informal or ad hoc policy for factoring certifications into the hiring process having the highest Chi square value. Table 60 provides a visual comparison of policies for factoring certifications into the hiring process as expressed by IT survey respondents.

IT Survey Question 18. In which of the following way(s), if any, do IT certifications factor into the hiring process at your organization? Pertaining to how certifications factor into the hiring process, survey participants considered six statements. These six statements related to IT certifications as a screening mechanism, requirement for certain job roles, facilitation of matching applicant skills with departmental needs, differentiation between otherwise equally qualified applicants, conformation of subject matter knowledge and expertise, and measurement of a candidate's willingness to work hard and meet goals. Respondents rated each factor as never, rarely, sometimes, often, or always. An examination of each is provided.

A large number (n=15 or 42.86%) of IT survey respondents indicated that certifications are sometimes used as a screening mechanism. Other respondents reported never (n=4 or 11.43%), rarely (n=5 or 14.29%), often (n=10 or 28.57%), and always (n=1 or 2.86%). Since the Chi-Square value is 17.43, it is determined that there is a difference in response related to the use of certification as a screening mechanism. This difference exists based on participants who responded sometimes use certifications as a screening mechanism having the highest Chi square value. Table 85 provides a visual comparison of the use of certifications as a screening mechanism as expressed by IT survey respondents.

Table 85

Use of Certifications as a Screening Mechanism as Expressed by IT Survey Respondents

Used as a Screening Mechanism	*N*	*%*	X^2
Never	4	11.43	1.29
Rarely	5	14.29	0.57
Sometimes	15	42.86	9.14
Often	10	28.57	1.29
Always	1	2.86	5.14
Total	35	100.01	17.43

Note. One participant did not answer.

Approximately one-third (n=11 or 31.43%) of IT survey respondents indicated that certifications are sometimes required for certain job roles. Other respondents reported never (n=7 or 20.00%), rarely (n=8 or 22.86%), often (n=8 or 22.86%), and always (n=1 or 2.86%). Since the Chi-Square value is 7.71, it is determined that there is no difference in response related to the

requirement of certification for certain job roles. Table 86 provides a visual comparison of certification as a requirement for certain job roles as expressed by IT survey respondents.

Table 86

Use of Certifications as a Requirement for Job Roles as Expressed by IT Survey Respondents

Required for Certain Job Roles	*N*	*%*	X^2
Never	7	20.00	0.00
Rarely	8	22.86	0.14
Sometimes	11	31.43	2.29
Often	8	22.86	0.14
Always	1	2.86	5.14
Total	35	100.01	7.71

Note. One participant did not answer.

Approximately one-fourth of IT survey respondents indicated that certifications are rarely (n=9 or 25.71%) and sometimes (n=9 or 25.71%) used to facilitate matching applicant skills with departmental needs. Other respondents reported never (n=6 or 17.14%), often (n=8 or 22.86%), and always (n=3 or 8.57%). Since the Chi-Square value is 3.71, it is determined that there is no difference in response related to using certification to facilitate matching applicant skills with departmental needs. Table 87 provides a visual comparison of certification to facilitate matching applicant skills with departmental needs as expressed by IT survey respondents.

Table 87

Use of Certifications to Facilitate Matching Applicant Skills with Departmental Needs as Expressed by IT Survey Respondents

Match Applicant Skills/Departmental Needs	*N*	*%*	X^2
Never	6	17.14	0.14
Rarely	9	25.71	0.57
Sometimes	9	25.71	0.57
Often	8	22.86	0.14
Always	3	8.57	2.29
Total	35	99.99	3.71

Note. One participant did not answer.

A majority (n=18 or 51.43%) of IT survey respondents indicated that certifications are sometimes used to differentiate between otherwise equally qualified applicants. Other respondents reported never (n=5 or 14.29%), rarely (n=1 or 2.86%), often (n=9 or 25.71%), and always (n=2 or 5.71%). Since the Chi-Square value is 27.14, it is determined that there is a difference in response related to using certification to differentiate between otherwise equally qualified applicants. This difference exists based on participants reporting sometimes having the highest Chi square value. Table 88 provides a visual comparison of certification to differentiate between otherwise equally qualified applicants as expressed by IT survey respondents.

Table 88

Use of Certifications to Differentiate between Otherwise Equally Qualified Applicants as Expressed by IT Survey Respondents

Differentiate Equally Qualified Applicants	*N*	*%*	X^2
Never	5	14.29	0.57
Rarely	1	2.86	5.14
Sometimes	18	51.43	17.29
Often	9	25.71	0.57
Always	2	5.71	3.57
Total	35	100.00	27.14

Note. One participant did not answer.

Approximately one-third (n=12 or 34.29%) of IT survey respondents indicated that certifications are often used to help confirm subject matter knowledge and expertise. Other respondents reported never (n=5 or 14.29%), rarely (n=6 or 17.14%), sometimes (n=10 or 28.57%), and always (n=2 or 5.71%). Since the Chi-Square value is 9.14, it is determined that there is no difference in response related to using certification to help confirm subject matter knowledge and expertise. Table 89 provides a visual comparison of certification to help confirm subject matter knowledge and expertise as expressed by IT survey respondents.

Table 89

Use of Certifications to Help Confirm Subject Matter Knowledge and Expertise as Expressed by IT Survey Respondents

Confirm Subject Matter Knowledge/Expertise	*N*	%	X^2
Never	5	14.29	0.57
Rarely	6	17.14	0.14
Sometimes	10	28.57	1.29
Often	12	34.29	3.57
Always	2	5.71	3.57
Total	35	100.00	9.14

Note. One participant did not answer.

Approximately one-third (n=12 or 34.29%) of IT survey respondents indicated that certifications are often used to measure a candidate's willingness to work hard and meet a goal. Other respondents reported never (n=7 or 20.00%), rarely (n=7 or 20.00%), sometimes (n=6 or 17.14%), and always (n=3 or 8.57%). Since the Chi-Square value is 6.00, it is determined that there is no difference in response related to using certification to measure a candidate's willingness to work hard and meet a goal. Table 90 provides a visual comparison of certification to measure a candidate's willingness to work hard and meet a goal as expressed by IT survey respondents.

Table 90

Use of Certifications to Measure a Candidate's Willingness to Work Hard and Meet a Goal as Expressed by IT Survey Respondents

Measure Willingness to Work Hard/Meet Goal	*N*	%	X^2
Never	7	20.00	0.00
Rarely	7	20.00	0.00
Sometimes	6	17.14	0.14
Often	12	34.29	3.57
Always	3	8.57	2.29
Total	35	100.00	6.00

Note. One participant did not answer.

IT Survey Question 20. Again, thinking about IT certifications, what goes through your mind when you see an IT certification listed on someone's résumé? With respect to what goes through the mind of another IT professional upon seeing IT certification credentials listed on a résumé, respondents were able to identify multiple items. Approximately one-fourth (n=25 or 26.04%) indicated the belief of certification as a show of initiative. Other respondents reported subject matter expertise (n=18 or 18.75%), hard worker (n=6 or 6.25%), commitment to a career in IT (n=16 or 16.67%), deep knowledge (n=11 or 11.46%), up to date knowledge of a subject (n=14 or 14.58%), other identified as testing skills and résumé building (n=5 or 5.21%), and none (n=1 or 1.04%). Since the Chi-Square value is 35.98, it is determined that there is a difference in response related to perception. This difference exists based on participants believing certification shows initiative having the highest Chi square value. Table 91 provides a

visual comparison of the perceptions upon seeing IT certification credentials listed on a résumé as expressed by IT survey respondents.

Table 91

Perceptions of IT Certification Credentials on Individual as Expressed by IT Survey Respondents

Perceptions of IT Certified Individual	*N*	*%*	X^2
Shows initiative	25	26.04	14.08
Subject matter expertise	18	18.75	3.00
Hard worker	6	6.25	3.00
Committed to a career in IT	16	16.67	1.33
Deep knowledge	11	11.46	0.08
Up to date knowledge of a subject	14	14.58	0.33
Other	5	5.21	4.08
None of the above	1	1.04	10.08
Total	96	100.00	35.98

IT Survey Question 21. What is your overall opinion of IT industry certifications to validate skills or expertise in a particular area? Concerning the overall opinion of IT industry certification as a means to validate skills or expertise, a majority (n=20 or 58.82%) of IT respondents reported certification as a moderately valuable means to validate skills and expertise. Other respondents reported extremely valuable (n=3 or 8.82%), very valuable (n=4 or

11.76%), slightly valuable (n=6 or 17.65%), and not at all valuable (n=1 or 2.94%). Since the Chi-Square value is 33.93, it is determined that there is a difference in response related to overall opinion. This difference exists based on participants reporting moderately valuable having the highest Chi square value. Table 92 provides a visual comparison of the overall opinion of IT certifications to validate skills or expertise as expressed by IT survey respondents.

Table 92

Overall Opinion of IT Certifications to Validate Skills/Expertise as Expressed by IT Respondents

Overall Opinion for Skills/Expertise Validation	*N*	*%*	X^2
Extremely valuable	3	8.82	2.12
Very valuable	4	11.76	1.15
Moderately valuable	20	58.82	25.62
Slightly valuable	6	17.65	0.09
Not at all valuable	1	2.94	4.95
Total	34	99.99	33.93

Note. Two participants did not answer.

IT Survey Question 35. What benefit(s) has your organization realized as a result of employees being IT certified? With respect to benefits reaped by employers in terms of employees being IT certified, respondents were able to identify multiple items. The most frequently occurring response (n=15 or 19.48%) indicated more insightful problem solving. Other respondents reported more productive (n=6 or 7.79%), better communication skills (n=5 or 6.49%), better project management skills (n=5 or 6.49%), better able to finish projects within

budget (n=2 or 2.60%), better able to finish projects on or ahead of time (n=5 or 6.49%), better able to understand new and complex technologies (n=12 or 15.58%), higher customer satisfaction (n=2 or 2.60%), higher performance reviews (n=2 or 2.60%), ability to promote IT certified staff to current and potential customers (n=4 or 5.19%), ability to charge higher billable rate (n=2 or 2.60%), facilitates pride (n=10 or 12.99%), other (n=2 or 2.60%), and not applicable as no employees are certified (n=5 or 6.49%). Since the Chi-Square value is 37.35, it is determined that there is a difference in response related to perception. This difference exists based on those reporting employer benefits of more insightful problem solving having the highest Chi square value. Table 93 provides a visual comparison of the benefits realized by employers as a result of having IT certified employees as expressed by IT survey respondents.

Table 93

Benefits Realized as a Result of IT Certified Employees as Expressed by IT Survey Respondents

Benefits Realized	*N*	*%*	X^2
More productive	6	7.79	0.05
More insightful problem solving	15	19.48	16.41
Better communication skills	5	6.49	0.05
Better project management skills	5	6.49	0.05
Better able to finish project within budget	2	2.60	2.23
Better able to finish projects on/ahead of time	5	6.49	0.05
Better able to understand new/complex tech	12	15.58	7.68

Benefits Realized	*N*	*%*	X^2
Higher customer satisfaction	2	2.60	2.23
Higher performance reviews	2	2.60	2.23
Ability to promote IT certified staff to clients	4	5.19	0.41
Facilitates pride	10	12.99	3.68
Other	2	2.60	2.23
Not applicable as no certified employees	5	6.49	0.05
Total	96	100.00	37.35

HR and IT Further Analysis

HR Survey Question 18. What is your overall perception of the value of IT certifications for a potential candidate seeking an IT position at your organization? After completing Chi-Square analysis based on equal expected frequencies, relevant demographics (job title, education, experience, certification, company size, and company geographic location) have been merged into a Two-Way Analysis of Variance, ANOVA. This was done to determine whether any difference in the variation of the question responses existed, and if so, was the difference attributable to demographic factors. Concerning perceived value, a difference exists on the value (cv=2.56, F=5.19, p=0.00). Concerning demographics, a difference exists in the demographic variables (cv=4.03, F=29.24, p=0.00). A visual representation has been provided for overall perception (see Table 63).

HR Survey Question 20 and IT Survey Question 27. If you answered that your overall perception of the value of IT certifications was either very valuable, valuable, or

somewhat valuable, somewhat not valuable, please consider the factors that may or may not affect your perception of the value of IT certifications. After completing Chi-Square analysis based on equal expected frequencies, due to ordinal level data the best further analysis was a comparison between HR and IT of major factors affecting perception. With respect to factors affecting perception of IT certification value, using modes, major factors for both HR and IT were reputation of certification vendor/body (n=14 for HR, n=14 for IT) and performance-based certification exams (n=20 for HR, 17 for IT). Additionally, HR rated knowledge-based certification exams as a major factor (n=20), while IT rated date of certification as a major factor (n=15). A visual representation has been provided for major factors affecting preferences (see Table 64).

HR Survey Question 23 and IT Survey Question 34. Next, please consider the following statements about potential IT job candidates and IT certifications at your organization. After completing Chi-Square analysis based on equal expected frequencies, due to ordinal level data the best further analysis was a comparison between HR and IT regarding agreement levels to statements regarding IT job candidates with IT certifications. Concerning potential IT job candidates and IT certification, using modes, both HR and IT were neutral regarding IT certified individuals tend to perform better than non-IT certified individuals in similar IT job roles (n=18 HR, n=14 IT), IT certified individuals are more likely to be promoted than those without IT certifications (n=15 HR, n=14 IT), IT certifications save employers time and resources in evaluating potential IT job candidates (n=14 HR, n=14 IT), and IT certifications ensure credibility of IT employees (n=14 HR, n=11 IT). Additionally, both HR and IT were agreed that IT certifications provide a baseline set of knowledge for certain IT positions (n=19

HR, n=17 IT). A visual representation has been provided for agreement levels to statements regarding IT job candidates with IT certifications (see Table 65).

HR Survey Question 12 and IT Survey Question 16. Please think about the typical hiring process at your organization. Starting at the beginning, how do you weight the following types of information when evaluating a candidate's résumé? After completing Chi-Square analysis based on equal expected frequencies, due to ordinal level data the best further analysis was a comparison between HR and IT regarding weighting of candidate résumés. Regarding weighting of candidate résumés, using modes, both HR and IT gave high priority to quality of experience (n=18 HR, n=19 IT), experience in very specific areas (n=21 HR, n=19 IT), and programming languages/technical skills (n=11 HR, n=10 IT). Again, using modes, HR and IT gave medium priority to college degree subject matter (n=16 HR, n=16 IT), certifications held (n=15 HR, n=12 IT), and look/feel of résumé (n=17 HR, n=15 IT). Additionally, HR and IT gave low priority to prestige of previous employers (n=18 HR, n=11 IT) and prestige of college/university (n=13 HR, n=12 IT). A visual representation has been provided for priority ratings to statements regarding evaluating candidate résumés (see Table 66).

HR Survey Question 22. Who mandates or recommends IT certifications for candidates seeking IT job roles within your organization? After completing Chi-Square analysis based on equal expected frequencies, relevant demographics (job title, education, experience, certification, company size, and company geographic location) have been merged into a Two-Way Analysis of Variance, ANOVA. This was done to determine whether any difference in the variation of the question responses existed, and if so, was the difference attributable to demographic factors. In regard to who mandates or recommends certification, no difference exists on the mandating or recommending of certification (cv=2.37, F=0.86, p=0.52).

Concerning demographics, a difference exists in the demographic variables (cv=4.00, F=55.71, p=0.00). A visual representation has been provided for mandating/recommending IT certification (see Table 67).

HR Survey Question 16 and IT Survey Question 18. In which of the following way(s), if any, do certifications factor into the hiring process at your organization? After completing Chi-Square analysis based on equal expected frequencies, due to ordinal level data the best further analysis was a comparison between HR and IT regarding how certifications factor into the hiring process. Concerning the factoring of certifications into the hiring process, using modes, both HR and IT sometimes used certification as a screening mechanism (n=14 HR, n=15 IT), as a requirement for certain job roles (n=16 HR, n= IT), to facilitate matching applicant skills with departmental needs (n=15 HR, n=9 IT), and to differentiate between otherwise equally qualified applicants (n=15 HR, n=18 IT). Additionally, HR sometimes used certification to confirm subject matter knowledge and expertise (n=17) and as a measure of a candidate's willingness to work hard to meet a goal (n=15). Conversely, IT often used certification to confirm subject matter knowledge and expertise (n=12) and as a measure of a candidate's willingness to work hard to meet a goal (n=12 IT) A visual representation has been provided for the frequency of certifications factoring into the hiring process (see Table 94).

Table 94

Factoring Certifications into the Hiring Process by HR and IT Respondents

Category	*Frequency*	*HR Mode*	*IT Mode*
Screening mechanism	Sometimes	14	15
Required for certain job roles	Sometimes	16	11
Facilitate matching applicant skills with departmental needs	Sometimes	15	9
Differentiate between equally qualified candidates	Sometimes	15	18
Confirm subject matter knowledge and expertise	Sometimes	17	n/a
Confirm subject matter knowledge and expertise	Often	n/a	12
Measure willingness to work hard and meet a goal	Sometimes	15	n/a
Measure willingness to work hard and meet a goal	Often	n/a	12

IT Survey Question 19. If you indicated IT certifications factor into the hiring process at least sometimes for certain IT positions, how would you characterize the policy of factoring certifications into the hiring process? After completing Chi-Square analysis based on equal expected frequencies, relevant demographics (job title, education, experience, certification, company size, and company geographic location) have been merged into a Two-

Way Analysis of Variance, ANOVA. This was done to determine whether any difference in the variation of the question responses existed, and if so, was the difference attributable to demographic factors. Concerning the policy of factoring certifications into the hiring process, a difference exists in perception (cv=3.32, F=12,497.50, p=0.00). Concerning demographics, a difference exists (cv=4.17, F=21,160.00, p=0.00). A visual representation has been provided for the perception of policy for factoring certifications into the hiring process (see Table 68).

IT Survey Question 20. Again, thinking about IT certifications, what goes through your mind when you see an IT certification listed on someone's résumé? After completing Chi-Square analysis based on equal expected frequencies, relevant demographics (job title, education, experience, certification, company size, and company geographic location) have been merged into a Two-Way Analysis of Variance, ANOVA. This was done to determine whether any difference in the variation of the question responses existed, and if so, was the difference attributable to demographic factors. Regarding the perception of certifications listed on a résumé, a difference exists in perception (cv=2.13, F=2,200.86, p=0.00). Concerning demographics, a difference exists (cv=3.96, F=41,507.82, p=0.00). A visual representation has been provided for the perception of seeing a certification listed on a candidate's résumé (see Table 95).

Table 95

Analysis of Variance by Demographic Factors for Perception of Certifications on Résumés

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Demographics	3,372.51	1.00	3,372.51	41,507.82	0.00	3.96
Perception	1,251.74	7.00	178.82	2,200.86	0.00	2.13
Interaction	1,251.74	7.00	178.82	2,200.86	0.00	2.13
Within	6.50	80.00	0.08			
Total	5,882.49	95.00				

IT Survey Question 21. What is your overall opinion of IT industry certifications to validate skills or expertise in a particular area? After completing Chi-Square analysis based on equal expected frequencies, relevant demographics (job title, education, experience, certification, company size, and company geographic location) have been merged into a Two-Way Analysis of Variance, ANOVA. This was done to determine whether any difference in the variation of the question responses existed, and if so, was the difference attributable to demographic factors. Concerning the use of certifications to validate skills or expertise in a particular area, a difference exists in opinion (cv=2.56, F=3,865.77, p=0.00). Concerning demographics, a difference exists (cv=4.03, F=15,538.85, p=0.00). A visual representation has been provided for the overall opinion for the use of certifications to validate skills or expertise in a particular area (see Table 96).

Table 96

Analysis of Variance by Demographic Factors of Certifications to Validate Skills and Expertise

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Demographics	673.35	1.00	673.35	15,538.85	0.00	4.03
Perception	670.07	4.00	167.52	3,865.77	0.00	2.56
Interaction	670.07	4.00	167.52	3,865.77	0.00	2.56
Within	2.17	50.00	0.04			
Total	2,015.65	59.00				

IT Survey Question 35. What benefit(s) has your organization realized as a result of employees being IT certified? After completing Chi-Square analysis based on equal expected frequencies, relevant demographics (job title, education, experience, certification, company size, and company geographic location) have been merged into a Two-Way Analysis of Variance, ANOVA. This was done to determine whether any difference in the variation of the question responses existed, and if so, was the difference attributable to demographic factors. With respect to benefits realized as a result of employees being IT certified, a difference exists in benefits (cv=1.79, F=1,120.51, p=0.00). Concerning demographics, a difference exists (cv=3.91, F=28,880.00, p=0.00). A visual representation has been provided for the benefits realized as a result of employees being IT certified (see Table 97).

Table 97

Analysis of Variance by Demographic Factors for Benefits Realized due to IT Certifications

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Demographics	1,237.71	1.00	1,237.71	28,880.00	0.00	3.91
Perception	624.29	13.00	48.02	1,120.51	0.00	1.79
Interaction	624.29	13.00	48.02	1,120.51	0.00	1.79
Within	6.00	140.00	0.04			
Total	2,482.29	167.00				

Summary

Chapter 4 offered an in-depth review of survey results. Through the analysis of these survey responses, an examination of how HR and IT professionals in Arkansas perceive IC^3, MOS, and ACA industry certifications as related to employability is presented. Chapter 5 will provide a summary, conclusions, and recommendations.

Chapter Five

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This study examined employability as associated with IC^3, MOS, and/or ACA certifications. Chapter 5 provides a summary, conclusions, and recommendations.

Summary

The purpose of this study was to investigate how achieving IC^3, MOS, and ACA industry certification relates to employability potential in Arkansas as perceived by HR and IT professionals. The sample participants were found by using purposive, convenience sampling of perceived experts in HR and IT who were members of the Arkansas Society of Human Resource Management, .NET User Group, and EAST Alumni Association. There were 36 HR and 36 IT respondents. To add to the knowledge base regarding employability opportunities for certification holders in the state of Arkansas, the following research questions were addressed:

1. To what degree are HR and IT professionals in the state of Arkansas familiar with IC^3, MOS, and/or ACA certifications?
2. Do HR and IT professionals perceive that their organizations give preference to candidates possessing one or more IC^3, MOS, and/or ACA certification?
3. Are employees with IC^3, MOS, and/or ACA certifications compensated for these credentials?
4. To what extent do HR and IT professionals value entry-level employee certification credentials upon initial hire?

Randall and Zirkle (2005) suggested that entry-level certification is promoted as a "vehicle to provide students with viable skills needed by the workforce, to satisfy state skill standards, and to prepare students for postsecondary studies" (p. 287). Students have been shown

to be motivated by essential questions (TLC: Community, 2010) such as "what do I need to know," "why do I need to know," and "how am I going to use it," for the student earning industry certification. Beyond intrinsic pride in one's accomplishment and praise received from classroom teachers, there is a need to make the connection for how industry certification relates to employability. Therefore, gaining a better understanding of how achieving industry certification relates to employability opportunities in Arkansas will provide certification candidates with more concrete answers to possible essential questions such as "why should I be certified" and "how am I going to use this certification."

Forrier and Sels (2003) define employability as "an individual's chance of a job on the internal and/or external labor market" (p. 106) and is important (Wittekind, Raeder, & Grote, 2010). Possessing an industry certification may be considered an example of human capital skill. The human capital theory suggests qualifications, knowledge, skills, and experience of individuals may lead to increased earnings or productivity (Becker, 1993; Rosen, 1987; Schultz, 1971). As such, the human capital theory provides a framework for studying perceived employability (Wittekind, Raeder, & Grote, 2010; Verhaar & Smulders, 1999).

According to Yorke (2006), the human capital theory "is seen as vital to the performance of knowledge-based economies" (p. 3) and, in turn, increases productivity. Technology is an ever changing field. According to Lee (2002), professionals in this field "face increasing risks of being made obsolete because of erosion of skills" (p. 26). Furthermore, Lee encourages IT professionals to continually "master new skills and expand their skill portfolio" (p. 29). Certification may offer an avenue for IT professionals to validate skills and prove qualifications as technology advances and new software becomes available.

Implications

Technology evolves at a rapid pace creating the need for highly skilled workers. In response to the rapid pace of technological changes and in an effort to provide students with marketable skills, certification has become one answer in the classroom. There were several key implications upon completion of this study:

1. Results of this study provided answers to two specific questions suggested by Randall (2006) which asked: 1) "Will a student benefit from obtaining an IT certification based on current workforce needs (p.139)?" and 2) "What value will an IT certification add to a student's education and chances for success (p.140)?" Results from study revealed that HR and IT professionals would consider IT certification if it was a workforce. Results also revealed the HR and IT professionals perceived that it was beneficial if the student had a certification even if they did not require it for employment. HR professionals revealed that they were unfamiliar with the three industry certifications assessed during this study, but still showed a willingness to consider certification as a valuable tool. Thus, it appears that IT certifications possess value although it was beyond to scope of this study to ascertain specific value. This reiterates the belief held by Cegielski (2004) of "when it comes to gauging the value of IT certification for assessing the competency of job candidates, it really all depends on who's doing the hiring" (p. 103).
2. In response to the question: Thinking about the past 12 months, approximately how many total employee interviews did you conduct to fill openings at your organization; the influence on hiring by HR and IT professionals is important and it was surprising to learn that 27.8 percent of HR professionals had only hired between 1-9 individuals

within a 12 month period. Sometimes HR is not as engaged in hiring as one would think; although, 44% did hire 50 or more employees in a year. Hiring appears to vary greatly depending upon the organization. Thus, HR may not need to be expected to be fully aware of all the types of certifications that are available for potential hires. It could be that HR and IT professionals who are older were not required to be certified and industry certifications were not popular at the time. The nature of the actual job tasks may not benefit from whether or not an individual holds a certification.

3. In response to the following question: Please think about the typical hiring process at your organization. Starting at the beginning, how do you weight the following types of information when evaluating a candidate's resume? The following table (Table 98) reveals that, experience in very specific areas, quality of experience, track record of steady growth/accomplishments/responsibilities, total years of experience and certifications held all were most valued by hiring professionals. Each of these items directly or indirectly relate to certification. This study did not directly focus on this area of inquiry; however, it provides implications for the continued use of certifications in educational processes.

Table 98

HR Preferred Candidate Attributes

Statistic	Mean	Standard Deviation	Total Responses
Experience in very specific areas	4.14	0.64	36
Quality of experience	3.89	0.76	35
Track record of steady growth/ accomplishments/responsibilities	3.8	0.8	35

Statistic	Mean	Standard Deviation	Total Responses
Total years of experience	3.43	0.61	35
Certifications held	3.11	1.01	36
Look and feel of resume	2.83	1.01	35
Programming languages/technical skills listed	2.75	1.25	36
Master or other advanced degree	2.63	1.06	35
Prestige of previous employers	2.23	0.84	35
Prestige of college/university	2	0.91	35

4. Gaining a better understanding of how achieving industry certification relates to employability opportunities in Arkansas provides certification candidates with more concrete answers to possible essential questions such as “why should I be certified” and “how am I going to use this certification.” It also indicates a strong need for more intentional efforts to be made at the state level as well. Education leaders should consider informing employers in the local community as well as across the state about the meaning of certification and how they relate experience.
5. Students and educators should be cautioned that successful certification does not guarantee employability nor is it considered a replacement for education and experience (Anderson, Barrett, & Schwager, 2005). Even though there is no single ideal mix of qualifications for a candidate to possess, a well-balanced candidate possessing a number of attributes is often favored. Certification may contribute to a

candidate's well-balanced appearance with his or her certification credentials being believed to contribute to the employer's human capital needs (Quan, Dattero, & Galup, 2007, p. 82). As such, a candidate capable of demonstrating the ability to contribute to the human capital needs of the company through his or her KSAs (Molloy & Barney, 2015) may be considered more favorably. According to Molloy and Barney (2015), "human capital has the potential to be a source of competitive advantage" (p. 323). "IT certification [may be] incorporate[d] into a traditional human capital model" (Quan, Dattero, & Galup, 2007, p. 82).

6. IT professionals in this study felt that date of certification was important. It was surprising that they did think it was more than they did. Regardless of whether or not employer encouraged or employee desired, certification may provide an individual with an attractive means of documenting credentials while adding to the human capital of the workplace. Because of the "accelerated pace of change" (Quan, Dattero, & Galup, 2007, p. 81) in information technology, it is incumbent on IT workers to continually update existing knowledge and skills. Additionally, IT workers are also expected to acquire new knowledge and skills. As a result, date of certification is critically important.
7. When asked about perception of knowledge-based and performance-based exams, the performance-based exams were preferred by employers and they felt that certifications were essentially an indicator of baseline knowledge. This was surprising because a student who achieves certification is exceptional in the school but when they reach the employer, it is not perceived as highly. This can be demoralizing for educators and students.

Employers seek the best fit for the position and the company while considering a number of candidate attributes including certifications. According to Greenspan (2000), "the heyday when a high school or college education would serve a graduate for a lifetime is gone. Today's recipients of diplomas expect to have many jobs and to use a wide range of skills over their working lives" (p. 419). Although it may not be considered a necessity, certification may be one way in which today's job candidates seek to prove they possess qualifications, knowledge, skills, and experience that would add to a potential employer's human capital reserves. "Workers . . . are being asked to strengthen their cognitive skills; basic credentials, by themselves, are not enough to ensure success in the workplace. Workers must be equipped not simply with technical know-how but also with the ability to create, analyze, and transform information and to interact effectively" (Greenspan, 2000, p.419).

Certification testing offered to students in the secondary business education classroom "may facilitate the development of prerequisite [skills] appropriate to employment . . . does not guarantee [employment]" (Yorke, 2006, p. 7). This is certainly an appropriate point of view since many are unfamiliar with IC^3, MOS, and ACA industry certification. Yorke (2006) offers a point of interest in an explanation that employability may refer to the potential to obtain a job rather than acquiring a job because of "influences in the environment, a major influence being the state of the economy" (p. 2). Much employability-related learning continues to be taught at the workplace. In order to fully prepare today's students to meet the demands of tomorrow's employers, a real partnership between educators and employers must be cultivated. Quan, Dattero, and Galup (2007) recognize the "complementary nature of IT certifications to formal education" (p. 84) as they caution the fact that "technical skills depreciate quickly and technologies have short lifecycles" (p. 84).

After examining the results of this study some questions that were beyond the scope of this inquiry came to mind. They are as follows:

1. To what extent do teachers consider self-regulation characteristics including proactive process, motivated students, personal initiative, ability to adapt, demonstrate endurance, perform skills without intentional thought and as a natural response and self-concept characteristics including perceived competence, belief of self to be competent, effective and/or skills will earn higher scores than those who do not, higher motivation level for testing and emotion and outcome beliefs can predict attitude when preparing students for certifications?
2. Do HR and IT professionals value practical knowledge over cognitive knowledge when they seek verification of student learning and ability to apply knowledge?

Conclusions

Surveys of HR and IT professionals were used to answer the research questions. Thirty-six HR professionals participated in the survey. Thirty-six IT professionals participated in the survey. From the demographic portion of the surveys, the educational level of the participants was post-secondary in nature by holding either a bachelor or master degree. Further, most survey participants had a paramount base of experience consisting of 15+ years. IT certifications held were in the "other" arena as identified or had no identifiable certifications. Size of the company was either 100-499 or 1,000+ employees in the geographic proximity of the western/river valley area of the state with no discernable community profile.

Research Question 1: To what degree are HR and IT professionals in the state of Arkansas familiar with IC^3, MOS, and/or ACA certifications?

Based upon survey responses (see Tables 5, 6, 7, 8, 9, and 10), most HR and IT professionals in the state of Arkansas have no knowledge of IC^3 and ACA certifications. However, IT professionals do have limited knowledge of MOS certification.

Research Question 2: Do HR and IT professionals perceive that their organizations give preference to candidates possessing one or more IC^3, MOS, and/or ACA certification?

Value of Certification

When considering certifications, HR viewed certification to range from somewhat valuable to very valuable (see Tables 11 and 63). This is especially reflected on education, experience, company size, and company location. HR considers the reputation of the certification vendor/body, knowledge-based certification exam format, performance-based certification exam format, continuing education requirements, and date of certification to be either minor factors or major factors affecting perception of the value of IT certifications (see Tables 12, 13, 14, 15, 16, and 64).

When considering certifications, IT also considers the reputation of the certification vendor/body, knowledge-based certification exam format, performance-based certification exam format, continuing education requirements, and date of certification to be either minor factors or major factors affecting perception of the value of IT certifications (see Tables 37, 38, 39, 40, and 41). It should be noted that IT equally weighted continuing education requirements as not a factor (see Tables 41 and 64).

View of IT Job Candidates with Certification

HR were in agreement or neutral towards potential IT job candidates with certifications. Specifically, HR agreed that IT certifications provide a baseline set of knowledge for certain IT positions (see Table 17). HR expressed neutrality in regard to the beliefs that IT certified individuals tend to perform better than non-IT certified individuals in similar IT job roles, are more likely to be promoted than those without IT certifications, save employer time and resources in evaluating potential IT job candidates, and ensure credibility of IT employees (see Tables 18, 19, 21, and 22). HR agreed that IT certified individuals receive higher starting salaries than those without IT certifications (see Tables 29 and 65).

Regarding potential IT job candidates and IT certifications, IT also expressed views ranging from neutrality to agreement. Specifically, IT agreed that IT certifications provide a baseline set of knowledge for certain IT positions (see Table 42). IT expressed neutrality in regard to the beliefs that IT certified individuals tend to perform better than non-IT certified individuals in similar IT job roles, are more likely to be promoted than those without IT certifications, save employer time and resources in evaluating potential IT job candidates, and ensure credibility of IT employees (see Tables 43, 44, 46, and 48). Interestingly, IT voiced agreement to the belief that IT certifications enable IT employees to learn faster once starting a job (see Table 47). IT expressed neutrality that IT certified individuals receive higher starting salaries than those without IT certifications (see Tables 45 and 65).

Weight of Qualifications

When evaluating a candidate's résumé, HR rated years of experience, quality of experience, experience in very specific areas, track record of growth/steady accomplishments/ responsibilities, college degree subject matter, certifications held, programming languages/

technical skills listed, and look/feel of résumé as either medium or high priorities (see Tables 24, 25, 26, 27, 30, 32, 33, and 34). Conversely, HR rated prestige of previous employers and prestige of college/university as low priorities (see Tables 28 and 29). HR rated master or advanced degree as a medium priority (see Tables 31 and 66).

When evaluating a candidate's résumé, IT rated years of experience, quality of experience, experience in very specific areas, track record of growth/steady accomplishments/ responsibilities, college degree subject matter, certifications held, programming languages/technical skills listed, and look/feel of résumé as either medium or high priorities (see Tables 49, 50, 51, 52, 55, 57, 58, and 59). Conversely, IT rated prestige of previous employers and prestige of college/university as low priorities (see Tables 53 and 54). Although, a significant number of IT respondents rated prestige of previous employers as a medium priority (see Tables 53 and 66).

View of Practice Related to Certification

HR responses conveyed that IT hiring managers or HR mandates or recommends IT certification for candidates seeking IT job roles (see Tables 35 and 67). HR anticipates certification to grow somewhat or grow significantly in importance (see Table 36 and 68). Concerning factoring certification into the hiring process, IT characterizes the policy of factoring certifications into the hiring process as an informal or ad hoc policy (see Tables 60 and 69). IT also asks questions during the interview in an attempt to verify certifications listed on a job candidate's résumé (see Tables 61 and 70). IT believes HR staffs have little or no understanding of IT certifications (see Tables 62 and 71).

Research Question 3: Are employees with IC^3, MOS, and/or ACA certifications compensated for these credentials?

Based upon survey responses (see Tables 72, 73, 75, 76, 77, and 78), HR and IT professionals in the state of Arkansas report no monetary benefit for employees achieving certifications. Although monetary benefit for employees achieving certification is not prevalent, employer support of certification candidates was shown to be more common. The most frequently reported employer supports of certification candidates were paying for certification expenses, paying for training expenses, and providing training at work. However, it is important to note that many HR and IT respondents reported no support as being provided for certification candidates. Furthermore, it should be noted most survey respondents reported no recognition as being given for achieving certification. When resultant recognition was given, the most common form of employer provided resultant recognition was given in the form of public recognition in newsletters, at meetings, or through other means.

Research Question 4: To what extent do HR and IT professionals value entry-level employee certification credentials upon initial hire?

Value of Certification

When considering certifications, HR viewed certification to range from somewhat valuable to very valuable (see Tables 11 and 63). This is especially reflected on education, experience, company size, and company location. HR considers the reputation of the certification vendor/body, knowledge-based certification exam format, performance-based certification exam format, continuing education requirements, and date of certification to be either minor factors or major factors affecting perception of the value of IT certifications (see Tables 12, 13, 14, 15, 16, and 64).

When considering certifications, IT also considers the reputation of the certification vendor/body, knowledge-based certification exam format, performance-based certification exam format, continuing education requirements, and date of certification to be either minor factors or major factors affecting perception of the value of IT certifications (see Tables 37, 38, 39, 40, and 41). It should be noted that IT equally weighted continuing education requirements as not a factor (see Tables 41 and 64).

View of IT Job Candidates with Certification

Regarding potential IT job candidates and IT certifications, HR expressed views ranging from neutrality to agreement. Specifically, HR agreed that IT certifications provide a baseline set of knowledge for certain IT positions (see Table 17). HR expressed neutrality in regard to the beliefs that IT certified individuals tend to perform better than non-IT certified individuals in similar IT job roles, are more likely to be promoted than those without IT certifications, save employer time and resources in evaluating potential IT job candidates, and ensure credibility of IT employees (see Tables 18, 19, 21, and 23). HR agreed that IT certified individuals receive higher starting salaries than those without IT certifications (see Tables 20 and 65).

Regarding potential IT job candidates and IT certifications, IT also expressed views ranging from neutrality to agreement. Specifically, IT agreed that IT certifications provide a baseline set of knowledge for certain IT positions (see Table 42). IT expressed neutrality in regard to the beliefs that IT certified individuals tend to perform better than non-IT certified individuals in similar IT job roles, are more likely to be promoted than those without IT certifications, save employer time and resources in evaluating potential IT job candidates, and ensure credibility of IT employees (see Tables 43, 44, 46, and 48). Interestingly, IT voiced agreement to the belief that IT certifications enable IT employees to learn faster once starting a

job (see Table 47). IT expressed neutrality that IT certified individuals receive higher starting salaries than those without IT certifications (see Tables 45 and 65).

Weight of Qualifications

When evaluating a candidate's résumé, HR rated years of experience, quality of experience, experience in very specific areas, track record of growth/steady accomplishments/ responsibilities, college degree subject matter, certifications held, programming languages/ technical skills listed, and look/feel of résumé as either medium or high priorities (see Tables 24, 25, 26, 27, 30, 32, 33, 27, and 34). Conversely, HR rated prestige of previous employers and prestige of college/university as low priorities (see Tables 28 and 29). HR rated master or advanced degree as a medium priority (see Tables 31 and 66). When evaluating a candidate's résumé, IT rated years of experience, quality of experience, experience in very specific areas, track record of growth/steady accomplishments/ responsibilities, college degree subject matter, certifications held, programming languages/ technical skills listed, and look/feel of résumé as either medium or high priorities (see Tables 49, 50, 51, 52, 55, 57, 58, and 59). Conversely, IT rated prestige of previous employers and prestige of college/university as low priorities (see Tables 53 and 54). Although, a significant number of IT respondents rated prestige of previous employers as a medium priority (see Tables 53 and 66).

Role of Certification

HR responses conveyed that IT hiring managers or HR mandates or recommends IT certification for candidates seeking IT job roles (see Tables 35 and 67). IT characterizes the policy of factoring certifications into the hiring process as an informal or ad hoc policy (see Tables 60 and 69). Concerning factoring certifications into the hiring process, HR sometimes uses certifications as a screening mechanism, as a requirement for certain job roles, to facilitate

matching applicant skills with departmental needs, and to differentiate between otherwise equally qualified applicants (see Tables 79, 80, 81, and 82). Interestingly, HR sometimes uses certifications to confirm subject matter knowledge and expertise and measure a candidate's willingness to work hard and meet a goal as compared to IT's rating of sometimes for these items (see Tables 83 and 84).

Concerning factoring certifications into the hiring process, IT sometimes uses certifications as a screening mechanism, as a requirement for certain job roles, to facilitate matching applicant skills with departmental needs, and to differentiate between otherwise equally qualified applicants (see Tables 85, 86, 87, and 88). Interestingly, IT often uses certifications to confirm subject matter knowledge and expertise and measure a candidate's willingness to work hard and meet a goal as compared to IT's rating of sometimes for these items (see Tables 89, 90, and 94).

Benefits of Certification

When seeing certification listed on a résumé, IT perceives the certificate holder to be someone who shows initiative, has subject matter expertise, is committed to an IT career, has deep knowledge of subject, and has an up-to-date knowledge of the subject (see Tables 91 and 95). IT also believes certifications are moderately valuable as a means to validate skills or expertise in a particular area (see Tables 92 and 96). IT considers more insightful problem solving and ability to understand new or complex technologies to be benefits of having IT certified employees (see Tables 93 and 97).

Recommendations

As this study came to a close, a continued partnership between the Arkansas Department of Career Education, the Arkansas Department of Workforce Services, and the Arkansas

Department of Education with the Microsoft IT Academy and Certiport was announced in the fall of 2015. This expanded partnership details an expansion of certification testing opportunities to include all MOS certifications as well as Microsoft Technology Associate (MTA), and Microsoft Certified Educator (MCE) exams (J. Brock, personal communication, September 2, 2015). These changes suggested that the timing and results of this study is pertinent within the state of Arkansas.

Recommendations for Arkansas education leaders, HR professionals, and IT professionals include:

1. Educational professionals should be cautious in stating that IT certification guarantees employability advantages or even employability in select vocations. In communities where students have certification testing opportunities, school personnel might initiate contact with businesses (Randall, 2006) to determine if these certifications are relevant and, if appropriate, familiarize members of the business community of certifications offered at the local educational institution.
2. Arkansas Department of Career Education personnel as well as other stakeholders should consider reaching out statewide to employers to inform them of certifications and the testing opportunities afforded to today's students as well as potential benefits to employers. This may entail "educating" them of the importance associated with these various certifications.
3. Educational leaders should also consider whether or not teachers who teach IT areas be required to be industry certified in these areas?
4. A follow-up study to determine if certification related expenses are an efficient use of educational funding dollars would help assess the value of certifications.

5. A future study of students who earned certification(s) while in high school to determine how they have since used their certification(s) in their select vocation may also be beneficial. Additionally, what current certification(s) are the most conducive in their field could better defined. Students who may be doing internships while in high school could also be examined.
6. Another follow up study of HR and IT professionals could be performed to determine if perceptions have changed or remained the same over time as more students holding IT certifications enter the workforce.
7. Expanding the scope of possible participants beyond the state Arkansas by duplicating this study across other populations would extend the knowledge base.
8. An additional follow-up study could examine the students' perceptions of the characteristics of self-regulation and self-concept on their achievement of certification.

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Appendix A: CompTIA Study Request

Kelley Todd [redacted]

Report Request for CompTIA, Employer Perceptions of IT Training and Certification, January 2011

5 messages

Kelley Todd [redacted] Wed, Jul 17, 2013 at 11:25 AM
To: [redacted]

I am writing to request the complete report related to the following:

CompTIA, *Employer Perceptions of IT Training and Certification*, January 2011

Although I am not a CompTIA member, is it possible that I might be able to obtain a copy of this report?

I'm a doctoral student at the University of Arkansas, Fayetteville, and have selected the topic of industry certifications (with an emphasis on IC3, MOS, and ACA certifications). Specifically, I am interested in determining the attitude toward or the value placed on industry certifications by potential employers in my geographic area. My immediate geographic area is the Arkansas River Valley (western area of the state) and Northwest Arkansas.

Additionally, I am very interested in contacting the author(s) of the study so that I might seek permission to replicate this study within my immediate geographic area.

Thank you for your consideration.

Kelley Todd, NBCT, MBA & Doctoral Candidate

CompTIA Research [redacted] Wed, Jul 17, 2013 at 11:53 AM
To: Kelley Todd [redacted]

Hi Kelley,

Thanks for your inquiry and interest in our study. The full report is attached. You can cite data from the report, just source it to CompTIA (along with the title & date of the report).

Regards,

Amy [redacted]

From: Kelley Todd <[redacted]
Date: Wednesday, July 17, 2013 11:25 AM
To: CompTIA Research [redacted]>

Subject: Report Request for CompTIA, Employer Perceptions of IT Training and Certification, January 2011
[Quoted text hidden]

Report - CompTIA Employer Perceptions Study.pdf
2806K

Kelley Todd [redacted] Mon, Jul 22, 2013 at 10:18 AM
To: CompTIA Research [redacted]

Amy,
Thank you so much for sharing this report with me and I will certainly cite CompTIA in my work! The study mentions two quantitative online surveys which were conducted. One survey was given to IT and business executives responsible for making hiring decisions and the other survey was given to HR personnel. Is it possible to have access to copies of these surveys as well?
Thank you again for your help.

Kelley Todd, NBCT, MBA, & Doctoral Candidate

[Quoted text hidden]

CompTIA Research [redacted] Mon, Jul 22, 2013 at 11:16 AM
To: Kelley Todd [redacted]

Hi Kelley,

Sure, they are both attached. Will be interested to see some highlights from your study when completed.

Best wishes with your studies,
Amy

From: Kelley Todd <[redacted]
Date: Monday, July 22, 2013 10:18 AM
To: CompTIA Research [redacted]
Subject: Re: Report Request for CompTIA, Employer Perceptions of IT Training and Certification, January 2011
[Quoted text hidden]

2 attachments

Questionnaire - Employer Perceptions of Certifications - IT version vfinal.docx
50K

Questionnaire - Employer Perceptions of Certifications - HR version vfinal.docx
49K

Kelley Todd <[redacted] Thu, Jul 25, 2013 at 9:28 AM
To: CompTIA Research [redacted]>

Thank you so much!

Kelley

Appendix B: Survey of Employer Perceptions of Certifications — HR Version

Survey of Employer Perceptions of Certifications — HR Version
Instrument (modified from CompTIA, 2011)

Demographics

1. Name of employing business or company.

2. In relation to HR and IT, which best describes your business or company?
    1. HR department only
    2. IT department only
    3. HR and IT departments
    4. Other, please specify _____

3. Which best reflects your job title?
    1. HR Vice President or equivalent
    2. HR Director or equivalent
    3. HR Manager or equivalent
    4. HR Specialist or equivalent
    5. HR Consultant
    6. Other HR related job title, please specify _____
    7. Other business job title, please specify _____

4. Which best reflects the highest level of education you have completed?
    1. High school or equivalent
    2. Vocational/technical school
    3. Associate degree
    4. Bachelor degree
    5. Master degree
    6. Doctoral degree
    7. Professional degree

5. How many years have you worked in HR?
    1. Less than 1 year
    2. 1 to 5 years
    3. 5 to 10 years
    4. 10 to 15 years
    5. 15 or more years

6. Are you a member of a professional organization associated with HR? If yes, list all that apply.

7. In what geographic region of the state of Arkansas are you employed?
    1. Central
    2. North Central
    3. Northeast
    4. Northwest
    5. Southeast
    6. Southwest
    7. Western/River Valley

8. Which of the following best describes the area in which you work?
    1. Urban
    2. Suburban
    3. Rural

9. Which industry vertical does your organization belong to?
    1. Information Technology (IT), e.g. manufacturing, software, services, consulting, reseller, telecom, distributor, etc.
    2. Manufacturing (other than IT related)
    3. Professional services (other than IT related)
    4. Retail/Wholesale (other than IT related)
    5. Healthcare/Medical
    6. Financial/Banking/Insurance
    7. Media/Publishing/Entertainment
    8. Government (federal, state, local)
    9. AMTUC (Agriculture, Mining, Transportation, Utilities, Construction)
    10. Education
    11. Hospitality
    12. Other Industry

10. How many employees does your entire organization have?
    1. 1-9
    2. 10-49
    3. 50-99
    4. 100-499
    5. 500-999
    6. 1,000 or more

Research

11. Thinking about the past 12 months, approximately how many total employee interviews did you conduct to fill openings at your organization?
    1. 1-9
    2. 10-24
    3. 25-49
    4. 50 or more

12. Please think about the typical hiring process at your organization. Starting at the beginning, how do you weight the following types of information when evaluating a candidate's resume?
    5-point scale (1=Not a priority, 2=Low priority, 3=Medium priority, 4=High priority, 5=Essential)
    1. Total years of experience
    2. Quality of experience
    3. Experience in very specific areas
    4. Track record of steady growth/accomplishments/responsibilities
    5. Prestige of previous employers
    6. Prestige of college/university
    7. College degree subject matter (e.g. computer science, business, etc.)
    8. Master or other advanced degree
    9. Certifications held
    10. Programming languages/technical skills listed
    11. Look and feel of resume

13. Overall, how do you rate the ease or difficulty of filling openings with the right candidate at your organization? Would you say it is . . .?
    1. Very challenging
    2. Somewhat challenging
    3. Manageable

14. What are the main challenges your organization faces in filling openings with the right candidate? Choose all that apply.
    1. Finding candidates with the right "hard" skills
    2. Finding candidates with the right "soft" skills
    3. Finding candidates with the right level of experience
    4. Finding candidates in the right price range
    5. The pool of quality candidates in the local region
    6. Filling openings in a timely manner
    7. Costs associated with recruiting (e.g. job board costs, headhunters, etc.)
    8. Other, please specify _____

15. Getting to the topic of IT industry certifications, prior to this survey, rate your level of familiarity with each of the following industry certifications.
    5-point scale (1=No knowledge, 2=Slightly knowledgeable, 3=Somewhat knowledgeable, 4=Fairly knowledgeable, 5=Very knowledgeable)
    1. Internet and Computing Core Certification (IC^3)
    2. Microsoft Office Specialist (MOS)
    3. Adobe Certified Associate (ACA)
    4. Other, please specify _____

16. In which of the following way(s), if any, do certifications factor into the hiring process at your organization?
    5-point scale (1=Never, 2=Rarely, 3=Sometimes, 4=Often, 5=Always)
    1. Used as a screening mechanism
    2. Required for certain job roles
    3. Facilitate matching applicant skills with departmental needs
    4. Used to differentiate between otherwise equally qualified applicants
    5. Helps to confirm subject matter knowledge and expertise
    6. Measure of a candidate's willingness to work hard and meet a goal

17. In regard to industry certifications, such as information technology (IT) certifications; do you think they will grow in importance or diminish in importance?
    1. Grow significantly in importance
    2. Grow somewhat in importance
    3. Diminish in importance
    4. No change
    5. Don't know

18. What is your overall perception of the value of IT certifications for a potential candidate seeking an IT position at your organization?
    1. Very valuable
    2. Valuable
    3. Somewhat valuable, somewhat not valuable
    4. Not valuable
    5. Not at all valuable

19. If you answered that your overall perception of the value of IT certifications was either not valuable or not at all valuable, what are the reasons you say certification is at least somewhat NOT valuable for candidates seeking IT positions at your organization? Choose all that apply.
    1. IT certifications are a poor return on investment
    2. IT certification material is not relevant
    3. Don't think certifications are necessary for career advancement
    4. See IT industry changing, making certifications less relevant
    5. IT managers at my organization do not value IT certifications
    6. IT experience is valued over IT certifications
    7. Other, please specify _____
    8. Not applicable as answered question 18 as either very valuable, valuable, or somewhat valuable, somewhat not valuable

20. If you answered that your overall perception of the value of IT certifications was either very valuable, valuable, or somewhat valuable, somewhat not valuable, please consider the factors that may or may not affect your perception of the value of IT certifications. How do you rate each of the following?
    3-point scale (1=Not a factor, 2=Minor factor, 3=Major factor)
    1. Reputation of certification vendor/body
    2. Knowledge-based certification exam
    3. Performance-based certification exam
    4. Continuing education requirements
    5. Date of certification
    6. Not applicable as answered question 18 as either not valuable or not at all valuable

21. Approximately what percentage of IT staff within your organization holds at least one certification?
    1. Less than 10%
    2. 10-24%
    3. 25-49%
    4. 50-74%
    5. 75% or more
    6. Don't know

22. Who mandates or recommends IT certifications for candidates seeking IT job roles within your organization? Choose all that apply.
    1. Chief Information Officer (CIO)
    2. IT Directors
    3. IT Hiring Managers
    4. Human Resources
    5. Other, please specify _____
    6. IT certifications not mandated or recommended

23. Next, please consider the following statements about potential IT job candidates and IT certifications at your organization. How much do you agree or disagree with each of the following statements about them?
    5-point scale (1=Strongly Disagree to 5=Strongly Agree)
    1. IT certifications provide a baseline set of knowledge for certain IT positions
    2. IT certified individuals tend to perform better than non-IT certified individuals in similar IT job roles
    3. IT certified individuals are more likely to be promoted than those without IT certifications
    4. IT certified individuals receive higher starting salaries than those without IT certifications
    5. IT certifications save me time and resources in evaluating potential IT job candidates
    6. IT certifications enable IT employees to learn faster once starting a job
    7. IT certifications ensure credibility of IT employees

24. In which of the following ways, if any, does your organization provide support for IT certifications? Choose all that apply.
    1. Pay for all certification expenses, e.g. exam cost
    2. Pay for all training expenses, e.g. books, classes
    3. Offer paid time-off for taking the exam
    4. Provide training at work
    5. Offer paid time-off for studying/training
    6. Other, please specify _____
    7. No support is provided

25. As a result of passing the certification exams, do employees within your organization receive any of the following? Choose all that apply.
    1. Salary or pay increase
    2. Bonus
    3. Promotion
    4. Public recognition, such as highlighting the employee's achievement in a newsletter, during a meeting, etc.
    5. Some other type of recognition, please specify _____
    6. None of the above

26. If monetary benefit for passing certification exams is provided, which of the following characterizes how your organization handles monetary rewards for employees that pass IT certification exams?
    1. Formal company policy to reward employees that pass IT certification exams with a pay increase or bonus
    2. Non formal policy—handled on a case by case basis
    3. Not applicable as no monetary benefit is provided

27. If you have any additional comments regarding certifications, please share.

Appendix C: Survey of Employer Perceptions of Certifications — IT Version

Survey of Employer Perceptions of Certifications — IT Version
Instrument (modified from CompTIA, 2011)

Demographics

1. Name of employing business or company.

2. In relation to HR and IT, which best describes your business or company?
    1. HR department only
    2. IT department only
    3. HR and IT departments
    4. Other, please specify _____

3. What is your primary job function?
    1. Executive Management
    2. Senior Management—IT function
    3. Senior Management—Business function
    4. Middle Management—IT function
    5. Middle Management—Business function
    6. Staff level—IT function
    7. Staff level—business function
    8. IT Consultant
    9. Business Consultant
    10. Other, please specify _____

4. Which best reflects the highest level of education you have completed?
    1. High school or equivalent
    2. Vocational/technical school
    3. Associate degree
    4. Bachelor degree
    5. Master degree
    6. Master degree
    7. Doctoral degree
    8. Professional degree

5. How many years have you worked in IT?
    1. Less than 1 year
    2. 1 to 5 years
    3. 5 to 10 years
    4. 10 to 15 years
    5. 15 or more years

6. Are you a member of a professional organization associated with HR? If yes, list all that apply.

7. In what geographic region of the state of Arkansas are you employed?
    1. Central
    2. North Central
    3. Northeast
    4. Northwest
    5. Southeast
    6. Southwest
    7. Western/River Valley

8. Which of the following best describes the area in which you work?
    1. Urban
    2. Suburban
    3. Rural

9. Which industry vertical does your organization belong to?
    1. Information Technology (IT), e.g. manufacturing, software, services, consulting, reseller, telecom, distributor, etc.
    2. Manufacturing (other than IT related)
    3. Professional services (other than IT related)
    4. Retail/Wholesale (other than IT related)
    5. Healthcare/Medical
    6. Financial/Banking/Insurance
    7. Media/Publishing/Entertainment
    8. Government (federal, state, local)
    9. AMTUC (Agriculture, Mining, Transportation, Utilities, Construction)
    10. Education
    11. Hospitality
    12. Other Industry

10. How many employees does your entire organization have?
    1. 1-9
    2. 10-49
    3. 50-99
    4. 100-499
    5. 500-999
    6. 1,000 or more

11. Specifically, how many IT staff does your company have?
    1. 1-4
    2. 5-9
    3. 10-24
    4. 25-49
    5. 50-99
    6. 100-499
    7. 500-999
    8. 1,000 or more

12. What IT certifications, if any, do you hold?
    1. IC^3
    2. MOS
    3. ACA
    4. Other, please specify _____
    5. None

Research

13. How would you characterize your typical involvement in the hiring of staff in your department or organization?
    1. Interview candidates and make final decision
    2. Interview candidates and provide feedback to final decision maker
    3. Review résumés during initial screener, but typically do not conduct interviews
    4. No involvement in the hiring process

14. Thinking about the past 12 months, approximately how many total employee interviews did you conduct to fill openings at your organization?
    1. 1-9
    2. 10-24
    3. 25-49
    4. 50 or more

15. Getting to the topic of IT industry certifications, prior to this survey, rate your level of familiarity with each of the following industry certifications.
    5-point scale (1=No knowledge, 2=Slightly knowledgeable, 3=Somewhat knowledgeable, 4=Fairly knowledgeable, 5=Very knowledgeable)
    1. Internet and Computing Core Certification (IC^3)
    2. Microsoft Office Specialist (MOS)
    3. Adobe Certified Associate (ACA)
    4. Other, please specify _____

16. Please think about the typical hiring process at your organization. Starting at the beginning, how do you weight the following types of information when evaluating a candidate's résumé?
    5-point scale (1=Not a priority, 2=Low priority, 3=Medium priority, 4=High priority, 5=Essential)
    1. Total years of experience
    2. Quality of experience
    3. Experience in very specific areas
    4. Track record of steady growth/accomplishments/responsibilities
    5. Prestige of previous employers
    6. Prestige of college/university
    7. College degree subject matter (e.g. computer science, business, etc.)
    8. Master or other advanced degree
    9. Certifications held
    10. Programming languages/technical skills listed
    11. Look and feel of résumé

17. Are there any specific qualities that distinguish good résumés from average résumés for you? If so, please describe.

18. In which of the following way(s), if any, do IT certifications factor into the hiring process at your organization?
    5-point scale (1=Never, 2=Rarely, 3=Sometimes, 4=Often, 5=Always)
    1. Used as a screening mechanism
    2. IT certifications are required for certain job roles
    3. IT certifications facilitate matching applicant skills with departmental needs
    4. IT certifications are used to differentiate between otherwise equally qualified applicants
    5. IT certifications help to confirm subject matter knowledge and expertise
    6. IT certifications are used as a measure of a candidate's willingness to work hard and meet a goal

19. If you indicated IT certifications factor into the hiring process at least sometimes for certain IT positions, how would you characterize the policy of factoring certifications into the hiring process?
    1. Formal corporate-wide policy directed by the HR department
    2. Formal policy specific to the IT department directed by CIO or IT department head
    3. Informal or ad hoc policy for factoring certifications into the hiring process

20. Again, thinking about IT certifications, what goes through your mind when you see an IT certification listed on someone's résumé? Choose all that apply.
    1. Shows initiative
    2. Subject matter expertise
    3. Hard worker
    4. Committed to a career in IT
    5. Deep knowledge of a subject
    6. Up to date knowledge of a subject
    7. Other, please specify _____
    8. None of the above

21. What is your overall opinion of IT industry certifications to validate skills or expertise in a particular area? Do you consider them . . . ?
    1. Extremely valuable
    2. Very valuable
    3. Moderately valuable
    4. Slightly valuable
    5. Not at all valuable

22. Next, please think about your interaction with your HR staff. How do you think your HR colleagues at your organization perceive IT certifications?
    1. HR staff have a solid understanding of what IT certifications are all about
    2. HR staff have a basic understanding of IT certifications
    3. HR staff have little or no understanding of IT certification

23. How do you verify IT certifications listed on a job candidate's résumé?
    1. You or someone on your staff verifies by checking with certifying company or body
    2. HR department verifies by checking with certifying company or body
    3. During the interview, you ask questions about the IT certification in an attempt to verify
    4. We typically do not verify

24. What challenges, if any, have you had in trying to verify a candidate's IT certification?
    1. Remembering to verify
    2. Making time to verify
    3. Hassle of verifying
    4. Unsure how to verify certain types of certifications
    5. Lack of a central repository to verify all types of IT certifications
    6. No efficient process for verifying
    7. Volume of candidates makes it too difficult to verify everyone
    8. Other, please specify _____

25. If you indicated you typically do not verify certifications held by job candidates, what are the reasons why? Choose all that apply.
    1. Too time consuming to verify
    2. Too much hassle to verify
    3. Unsure how to verify certain types of certifications
    4. Lack of a central repository to verify all types of IT certifications
    5. Volume of candidates makes it too difficult to verify everyone
    6. Not critical to verify since other parts of the interview process establish a candidate's expertise or experience
    7. Other, please specify _____

26. If your organization does not typically encourage the pursuit of IT certifications, what are the reasons why?
    3-point scale (1=Not a reason, 2=Minor reason, 3=Major reason)
    1. IT certifications have a poor return on investment
    2. The organization does not provide financial support for certification prep or testing
    3. IT certification material is not relevant to real world jobs
    4. IT certification material is not timely
    5. Don't think certifications are necessary for career advancement
    6. See IT industry changing, making certifications less relevant
    7. IT experience is valued over IT certifications
    8. Not applicable as my organization encourages pursuit of IT certifications

27. Next, please consider the factors that may or may not affect your perception of the value of IT certifications. How do you rate each of the following?
    3-point scale (1=Not a factor, 2=Minor reason, 3=Major reason)
    1. Reputation of certification vendor/body
    2. Knowledge-based certification exam
    3. Performance-based certification exam
    4. Continuing education requirements
    5. Date of certification

28. Do you have any other thoughts or comments on why you think IT certifications are valuable or not? Please share.

29. Which of the following IT certifications, if any, do IT employees within your organization hold?
    1. IC^3
    2. MOS
    3. ACA
    4. Other, please specify _____
    5. Don't know
    6. None of the above

30. Approximately what percentage of IT staff within your organization holds at least one IT certification?
    1. Less than 10%
    2. 10-24%
    3. 25-49%
    4. 50-74%
    5. 75% or more

31. In which of the following ways, if any, does your organization provide support for IT certifications? Choose all that apply.
    1. Pay for all certification expenses, e.g. exam cost
    2. Pay for all training expenses, e.g. books, classes
    3. Offer paid time-off for taking the exam
    4. Provide training at work
    5. Offer paid time-off for studying/training
    6. Other, please specify _____
    7. No support is provided

32. As a result of passing the certification exams, do employees within your organization receive any of the following? Choose all that apply.
    1. Salary or pay increase
    2. Bonus
    3. Promotion
    4. Public recognition, such as highlighting the employee's achievement in a newsletter, during a meeting, etc.
    5. Some other type of recognition
    6. None of the above

33. If monetary benefit for passing certification exams is provided, which of the following characterizes how your organization handles monetary rewards for employees that pass IT certification exams?
    1. Formal company policy to reward employees that pass IT certification exams with a pay increase or bonus
    2. Non formal policy—handled on a case by case basis
    3. Not applicable as no monetary benefit is provided

34. Next, please consider the following statements about potential IT job candidates and IT certifications at your organization. How much do you agree or disagree with each of the following statements about them?
    5-point scale (1=Strongly Disagree to 5=Strongly Agree)
    1. IT certifications provide a baseline set of knowledge for certain IT positions
    2. IT certified individuals tend to perform better than non-IT certified individuals in similar IT job roles
    3. IT certified individuals are more likely to be promoted than those without IT certifications
    4. IT certified individuals receive higher starting salaries than those without IT certifications
    5. IT certifications save me time and resources in evaluating potential IT job candidates
    6. IT certifications enable IT employees to learn faster once starting a job
    7. IT certifications ensure credibility of IT employees

35. What benefit(s) has your organization realized as a result of employees being IT certified? Choose all that apply.
    1. More productive IT workforce
    2. More insightful problem solving
    3. Better communication skills
    4. Better project management skills
    5. Better able to finish projects within budget
    6. Better able to finish projects on or ahead of time
    7. Better able to understand new or complex technologies
    8. Higher customer satisfaction
    9. Higher performance reviews
    10. Ability to promote IT certified staff to current or potential customers
    11. Ability to charge a higher billable rate to customers for certified staff
    12. Facilitates pride among staff to have accomplished the goal of passing a certification exam
    13. Other, please specify _____
    14. Not applicable as no employees are IT certified

36. Are there any specific areas within your organization's IT department where you feel IT certification does not adequately prepare IT employees? If so, please describe.

Appendix D: Informed Consent Letter

Researcher(s):
Name: Kelley Todd
Faculty Advisor: Dr. Claretha Hughes
Institutional Affiliation: University of Arkansas
College of Education and Health Prof.
Department of RHRC
Mailing Address: [redacted]
Email Address: [redacted]
Phone: [redacted]

Compliance Contact Person:
Ro Windwalker, CIP
IRB Coordinator
Office of Research Compliance
109 MLKG Building
Fayetteville, AR 72701
479.575.2208
irb@uark.edu

May 2, 2015

Dear HR/IT Professional:

As a doctoral student at the University of Arkansas, I am in the process of working on my dissertation entitled: "*Employability as associated with IC^3, MOS, and ACA certifications*". The purpose of this quantitative study is to investigate how achieving Internet and Computing Core Certification (IC^3), Microsoft Office Specialist (MOS), and Adobe Certified Associate (ACA) industry certification relates to employability opportunities in Arkansas as perceived by human resource (HR) professionals and information technology (IT) professionals. No specific data relevant to employability opportunities in Arkansas for certified individuals has been found throughout the research process. As a result, there is a gap in knowledge regarding how IC^3, MOS, and ACA certifications impact employability or even how these certifications are viewed by HR and IT professionals in Arkansas. Respectfully, I request your participation as an active HR or IT professional associated with the state of Arkansas.

Your input regarding industry certification and employability in Arkansas is sought and greatly valued. Your participation could help fill in the gap of knowledge related to these certifications and employability within the state of Arkansas. Participation in this survey should take no more than 15-20 minutes.

Your consent is implied by the completion of the survey. Please remember, participation in this survey is voluntary and may be stopped at any time during the survey without any consequence. There are no known risks for participating in this study. All responses will be recorded anonymously. Information will be kept confidential to the extent allowed by law and University policy. Neither you nor your organization will be identified in resulting work. A copy of the findings will also be shared upon request.

Your assistance in completing the survey at the enclosed link by August 31, 2015, is greatly appreciated.

Sincerely,

Kelley Todd
[redacted]

Appendix E: Institutional Review Board Approval Letter

UNIVERSITY OF
ARKANSAS

Office of Research Compliance
Institutional Review Board

June 16, 2015

MEMORANDUM

TO:	Kelley Todd Claretha Hughes
FROM:	Ro Windwalker IRB Coordinator
RE:	New Protocol Approval
IRB Protocol #:	15-06-763
Protocol Title:	*Employability as Associated with IC3, MOS, and ACA Certifications*
Review Type:	☒ EXEMPT ☐ EXPEDITED ☐ FULL IRB
Approved Project Period:	Start Date: 06/16/2015 Expiration Date: 06/15/2016

Your protocol has been approved by the IRB. Protocols are approved for a maximum period of one year. If you wish to continue the project past the approved project period (see above), you must submit a request, using the form *Continuing Review for IRB Approved Projects*, prior to the expiration date. This form is available from the IRB Coordinator or on the Research Compliance website (https://vpred.uark.edu/units/rscp/index.php). As a courtesy, you will be sent a reminder two months in advance of that date. However, failure to receive a reminder does not negate your obligation to make the request in sufficient time for review and approval. Federal regulations prohibit retroactive approval of continuation. Failure to receive approval to continue the project prior to the expiration date will result in Termination of the protocol approval. The IRB Coordinator can give you guidance on submission times.

This protocol has been approved for 1,000 participants. If you wish to make *any* modifications in the approved protocol, including enrolling more than this number, you must seek approval *prior to* implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 109 MLKG Building, 5-2208, or irb@uark.edu.