The perceived benefits of Automotive Service Excellence (ASE) certifications for graduates of four-year Automotive Technology programs

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The Perceived Benefits of Automotive Service Excellence (ASE) Certifications for Graduates of Four-Year Automotive Technology Programs
The Perceived Benefits of Automotive Service Excellence (ASE) Certifications for Graduates of Four-Year Automotive Technology Programs

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctorate of Education in Adult and Lifelong Learning

by

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ABSTRACT

The roots of certification in America date back to guild-like associations similar to those in Europe, but did not gain industry recognition until after World War II. It is recognized as a way for an industry to elevate itself and be recognized as a stand-alone, autonomous profession, as long as there is validity in the process and impartial oversight by an accredited governing body. It is also a way for individuals to distinguish themselves from their peers by proving a technical aptitude or competence. It allows a prospective job candidate to signal to a potential employer that they have attained of higher body of knowledge held to national standards. Certification can be required or not in a wide array of industries and professions, but is generally not required in the automotive industry except for pockets of technical positions in the automotive manufacturing and service sectors. The certification agency in the automotive industry is the National Institute for Automotive Service Excellence which was established in 1972 as an independent, non-profit organization charged with oversight and the administration of the Automotive Service Excellence (ASE) exams. The costs of the examinations and the registration fees can add up, they can be quite challenging for even the seasoned professional, and recertification is required every five years. The purpose of this study was to identify and analyze the perceived benefits of earning these certifications for 4-year automotive technology graduates working in the automotive or automotive-related industry.
ACKNOWLEDGEMENTS

It is a blessing, not a burden, to earn an advanced degree and I would to thank all who helped me realize this blessing. First, I would like to thank God and my family for their uplifting presence in my life. To my wife and children, thank-you for your unflinching love and support of me, particularly during my times of high stress. You are my rock and my foundation on which everything rests.

I want to give a special thanks to my committee members for being a part of this journey with me. Thanks Dr. Greg Belcher for not only advising me, but for inspiring me to seek this degree. Your counsel and friendship was instrumental in making me realize this goal. I learned a lot more than just coursework and research from you and for that I thank-you. I also want to thank Dr. Kenda Grover. You have been an intricate part of my journey, beginning with the first phone call when I initially sought to enter the program, and you have always been exceptional. Thanks for your professionalism and support with helping me realize exactly what I wanted to research. And last, but certainly not least, my special thanks to Dr. Kit Kacirek. Thanks for being my advisor, teacher, and chair. You are one of the most resilient, approachable, down-to-earth people I know and I cannot imagine anyone having a better chair. Thanks for balancing a laid-back style with keeping me accountable and on the right track through our weekly phone meetings. Thanks for questioning me, pushing me, and always keeping my feet headed in the right direction. I couldn’t have done it without you.

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# TABLE OF CONTENTS

## A. CHAPTER 1: INTRODUCTION

- Credentialing, Licensure, Accreditation, and Certification ........................................ 2
- Types of Certification .................................................................................................................. 5
- Who Certifies the Certification Agency .................................................................................... 6
- Certification in the Automotive Industry .................................................................................... 7
- Certification Used in Educational Programs ........................................................................... 10
- Problem Statement ................................................................................................................... 11
- Statement of the Purpose .......................................................................................................... 12
- Research Questions ................................................................................................................... 12
- Definitions .................................................................................................................................. 13
- Limitations .................................................................................................................................. 13
- Delimitations ............................................................................................................................... 14
- Significance of the Study ........................................................................................................... 14
- Theoretical Framework .............................................................................................................. 15

## B. CHAPTER 2: REVIEW OF LITERATURE

- Research area 1: Employment Opportunities Associated with Certification .................... 18
- Research area 2: Career Advancement Associated with Certification ................................ 26
- Research area 3: Higher Salary Associated with Certification ............................................. 32
- Research area 4: Self-efficacy Associated with Certification .................................................. 37
- Summary ..................................................................................................................................... 41

## C. CHAPTER 3: METHODLOGY

- Introduction .................................................................................................................................. 42
Population ........................................................................................................... 42
Instrumentation .................................................................................................. 44
Validity ................................................................................................................... 45
Reliability .............................................................................................................. 45
Data Collection ..................................................................................................... 46
Data Analysis ........................................................................................................ 46
Description of Variables ...................................................................................... 47

D. CHAPTER 4: FINDINGS ..................................................................................... 49
Introduction .......................................................................................................... 49
Analysis of Perceptions .......................................................................................... 51
  Research Question 1 ............................................................................................ 52
  Research Question 2 ............................................................................................ 53
  Research Question 3 ............................................................................................ 54
  Research Question 4 ............................................................................................ 55
Analysis of Demographics .................................................................................... 56
Analysis of Employment ....................................................................................... 60
Analysis of ASE Certification ............................................................................... 64
Summary ................................................................................................................ 73

E. CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS.......................... 74
Conclusions ........................................................................................................... 75
Recommendations ................................................................................................ 80
Summary ............................................................................................................... 82

REFERENCES ...................................................................................................... 84
APPENDICES ..................................................................................................................93

Appendix A: IRB approval letter ..................................................................................93
Appendix B: IRB approval letter ................................................................................94
Appendix C: Permission to use the PVCT.................................................................95
Appendix D: Initial email to prospective participants .................................................96
Appendix E: Second email to prospective participants ..............................................97
Appendix F: Third email to prospective participants .................................................98
Appendix G: Final email to prospective participants ................................................99
Appendix H: Survey Instrument ................................................................................100

List of Tables

Table 1.1: ASE certified individuals.............................................................................9
Table 1.2: Experience requirement for ASE certification..........................................10
Table 4.1: Employment opportunities .........................................................................52
Table 4.2: Career advancement .................................................................................53
Table 4.3: Higher salary .............................................................................................54
Table 4.4: Self-efficacy ...............................................................................................55
Table 4.5: Demographics .........................................................................................56
Table 4.6: Employment ..............................................................................................60
Table 4.7: ASE certifications ....................................................................................65

List of Figures

Figure 4.1: Range of agreement/disagreement ............................................................50
CHAPTER 1: INTRODUCTION

The history of occupational competency testing in the United States can be traced to guild-like associations, similar to those in Europe, which regulated worker training and apprenticeship. In the early 1900’s, certifications and credentialing were concepts that began to emerge as alternative ways of demonstrating an individual’s competency (Elmore, 2013). Daniels (2011) declared that certifications “are a modern example of the guild process at work” (p. 8). Kaplow (2011) argued that certification ultimately exists to protect the consumer. Consumer protection was a catalyst for certification in the automotive industry to combat increasing complaints of fraudulent practices by mechanics (Suptin, 1994). In 1968 the federal government formed a Senate Judiciary Committee to investigate whether the consumer complaints were due to dishonesty or incompetence.

Professionalism and the competencies associated with professions were initially conceptualized by researchers like Howsam (1976), Kemper (1976), and Schein (1980). This scholarly discussion led many industries including nursing, law, accounting, construction, automotive, and engineering to establish models of professionalism and expectations for their workforce. By the late 1970s, the foundational components that define a profession included an advanced body of knowledge by the practitioner, the ability to demonstrate advanced knowledge by completing a standardized exam, and experience in the industry similar to the guild process. Subsequently, many professions began to govern and regulate themselves by offering certifications by accrediting bodies such as the National Institute for Automotive Service Excellence and the American Association of Critical-Care Nurses. Since then several changes have occurred in the U.S. that have led to the propagation of certification and regulatory agencies that oversee them (Colardyn, 1996). These changes include an expanding vocational education
system, workforce training, and other educational structures that cater to adults. The economic downturn in 2008 resulted in a tighter job market (Daniels, 2011) which made certifications more marketable (Elmore, 2013; Chasse, 2014). Recognizing this, more professionals in the workforce marketed their certifications as a way to differentiate themselves from their peers for both employment opportunities and career advancement (Phillip, 2004). The certification market has become a robust industry. Chasse (2014) cited a study by the International Data Corp. which states that the certification market is estimated to reach $27 billion by 2015.

Research on the benefit or value of certification is still in its infancy (DeSilets, 2007; Lester, Fertig, & Dwyer, 2011) and there is a need to better understand this phenomenon. Lester, et al. (2011) suggested that more research is necessary to validate the fees involved in certification, which can cost an individual or a business thousands of dollars. This study seeks to identify the perceived benefits of certifications in the automotive profession and the internal and external motivators that lead automotive professionals to pursue certification.

**Credentialing, Licensure, Accreditation, and Certification**

The following section defines terms that are closely associated but often used interchangeably and incorrectly. These terms include: credential, licensure, accreditation, and certification and are provided for purposes of clarity.

*Credential*, as described by Smolenski (2005), is a term that applies to a process that “demonstrates an individual, program, institution, or product has met established standards set by an agency” (p. 201), either governmental or non-governmental. It can be a designation, mark, or stamp given to the person, organization, or program that has satisfied a set of standards. Credentials can be college degrees, occupational certifications, licenses, accreditations, and endorsements, which can affect an individual’s opportunity to work or participate in a profession (Hale, 2000). It is
often used as an umbrella term encompassing certification, accreditation, and licensure. Like certification, it is granted upon successful completion of the assessment process and has to be renewed periodically to ensure the grantee stays up-to-date in the profession.

*Licensure* is a process whereby the candidate may not practice in a specific profession unless granted permission by an agency of government. It is a legal standard set to ensure safety for the consumer of the service. It gives the individual the right to use a title offered by the accreditation body and sets the limits of service the individual is qualified to practice. Licensure differs from other forms of credentialing in that it is a gate-keeper and is required in order to practice in the profession, whereas others can be optional or voluntary (Nance, 1999; Williams & Counts, 2013)

*Accreditation* is a process in which certification of a competency, authority, or credibility is presented. It is a voluntary process whereby entities are appraised against known and agreed upon standards (Desillets, 2007). Organizations from which credentials are issued are themselves accredited. The process ensures that the procedures are widely accepted, they are viewed as a valid test by neutral third parties, and that there is an assurance of quality and ethical behavior.

*Certification* is a form of credentialing that verifies competence or a level of aptitude by the individual within a subject or occupational area (Church, 2007). Williams and Counts (2013) argued that, “certification indicates a higher degree of professional competence than the minimal requirement for licensure” (p. 197). Becoming certified is a way for professionals to demonstrate that they are current in their field and have the ability to conduct business within their discipline to a standard that is nationally recognized (Banz, 2004). The American Board of Nursing Specialties defines it as the formal recognition of the specialized knowledge, skills, and
experience demonstrated by the achievement of standards (American Board of Nursing Specialties, 2009).

Certification can be mandatory or voluntary (Smolenski, 2005; Thomas, 2005), but is generally a voluntary process (Williams, 1995). Unlike credentialing, certification is a demonstration of a competency in just one area or aspect of an industry or profession (Smolenski, 2005). Aslet, Turner, Neale, and Lowndes (2012) suggested that specialties should create their own process of certification or accreditation for themselves. These processes should ensure rigor and require successful completion of an examination written to a predetermined occupational or professional standard.

Certification and other forms of credentialing give a level of authority and authenticity for the holder to ensure that the recipient has met pre-established, industry prescribed standards of quality (Foster & Pritz, 2006). An accredited professional certification is viewed by the public as credible evidence of an advanced body of knowledge within a field or procession (Adams, Brauer, Karas, Bresnahan, & Murphy, 2004). Kolo (2006) described certification as a process by which an agency or association grants recognition to an individual who met predetermined qualification, such as graduation from an approved program, acceptable performance on a qualifying examination, or completion of a given amount of work experience.

Aside from certification in an industry or profession which is granted by a national accreditation board, smaller entities increasingly offer training and certification. Hale (2000) defines occupational certification as “a form of credential awarded by an employer, a vendor, or an association or independent agency” (p. 30). These certifications may or may not require prior education and experience. Often companies, especially technology-based companies, offer their
own certifications that are “highly sought after by job-seekers and free-lance workers” (Daniels, 2011, p. 5).

**Types of Certification**

A key component of credibility to any certification is the level of authority and public trust associated with “the integrity and validity of the certification process” itself (Adams et al., 2004, p. 27). Certification without national accreditation agency oversight is limited in scope to the power it has in instilling confidence in the consumer (Barnhart, 1994). According to Barnhart (1994), certifications, which demonstrate the skill or competency at nationally recognized industry standards, can be broken down into three categories: competency-based, curriculum-based, or portfolio-based. Competency-based certifications require the candidate to pass a written exam, have full-time professional experience within the industry, and/or earn a post-secondary degree (either an associates or bachelors). The Automotive Service Excellence certifications fall under the competency-based format. Candidates must pass a written exam, ranging from 40-80 questions, for certification in an area. Competency-based curricula require candidates to demonstrate knowledge and mastery in specific areas, in a much more robust way than what could be demonstrated on written exams (Swider, 2006).

Curriculum-based certifications require the successful completion of specific, subject-based instruction from either accredited or non-accredited learning institutions. A common theme for curriculum based certifications is the combination of self-study or seminars and examinations. Barnhart (1994) warns that it is vital that the curriculum design and course content follow a prescribed format modeled after the critical areas of the field.

Last are portfolio-based certifications, which offer a more holistic viewpoint of one’s education, experience, or work in an industry, and have gained momentum in recent years.
Portfolios and their use as a means of demonstrating a competency have been widely used and well documented (Brown, 2002; Fenwick, 1996; Hayes, 1997; Imel, 1993; Klein-Collins & Hain, 2009). The portfolio can be used as an assessment tool for educational programs by offering a means for determining required outcomes to courses. Students demonstrate competencies in a portfolio by compiling educational and technical artifacts such as works performed in class, special projects, national or industrial certifications, etc.

**Who certifies the certification agency?**

Barnhart (1994) states that because there is such an enormous range of agencies that grant certifications across a variety of industries and professions, there is no single accreditation bureau that oversees all of the certification agencies. However, he does cite four agencies that provide accreditation and they are the Council of Engineering Specialty Boards, The National Commission for Certifying Agencies, The American Council on Education, and the Defense Activity for Non-Technical Education Support.

The Council of Engineering Specialty Boards (CESB) is comprised of eight member boards that evaluate programs for their overall structure, financial resources, public records, and other aspects before offering accredited certifications. The National Commission for Certifying Agencies (NCCA), sponsored by the Institute for Credentialing Excellence (ICE), was created in 1987 and differs from the CESB in that it offers accreditation to all fields except governmental. Certifications are primarily in the health field and must meet several requirements including administrative independence from other associations, require recertification, determine pass/fail using psychometric criteria, and have a public member on the governing board.

The American Council on Education (ACE) is an accreditation organization for colleges and universities. However, ACE does not assess the certification itself. Rather, it assess the
related training materials developed for the certification and recertification. The Defense Activity for Non-Traditional Education Support (DANTES) evaluates certification programs in terms of relevance, quality, and content for service members, education counselors, and Department of Defense leadership.

**Certification in the Automotive Industry**

Growing concerns and complaints about fraudulent or inexperienced mechanics plagued the automotive repair industry in the late 1960s, leading to congressional hearings on the matter (Rogers, 1975; Sutphin, 1994). During the testimony, it became clear that inexperience and incompetence, not fraudulent individuals, caused the bulk of the customer complaints. Those proceedings led to a partnership between the National Auto Dealers Association (NADA) and the Major Vehicle Manufacturers Association (MVMA) to establish a national certification structure. In 1972, the National Institute for Automotive Service Excellence was formed as an independent, non-profit organization designed to provide oversight and conduct testing and certification of the workforce. The institute offers certification exams in the form of written tests, known as the Automotive Service Excellence exams but more commonly referred to as ASE exams, which are designed to differentiate competent technicians from non-competent technicians through various test questions that require in-depth knowledge of job-related skills and competencies.

The certification examination process must be designed to accurately measure a specific level of knowledge (Williams & Counts, 2013). The institute follows a competency-based certification structure requiring completion of educational requirements, passing of the certification exams, and time spent working in the industry to attain certification. The rigor of the certification process is sufficient to be recognized by the American Council on Education (ACE),
and while ACE does not directly endorse the National Institute for Automotive Service Excellence, they recommend college credit for coursework that aligns with a certification area.

The exams require more synthesized knowledge of technical systems and stress knowledge of job-related skills. Candidates are required to not only demonstrate knowledge of a complete system, but also how that system affects other systems and technologies on the vehicle. The tests are designed to be difficult and are often failed the first time. In fact, according to the National Institute for Automotive Service Excellence, roughly one third of test takers fail on their first attempt. After passing at least one exam and providing proof of two years of relevant work experience, the test-taker becomes ASE certified. To remain certified, ASE-certified professionals must be retested every five years. Recertification tests are written to maintain the level of rigor and synthesis required like the initial certification exam, but they typically have fewer questions.

The ASE tests cover a broad spectrum of the transportation industry and are either broken down into mechanical systems such as “Air Conditioning” or “Steering and Suspension”, or into specific areas of expertise such as “Service Consultant” or “Parts Specialist”. They also include specialty areas such as diesel and hybrid electric power. The technical questions are mostly scenarios or experiences in which “Technician A” and “Technician B” have either made a diagnosis or already replaced a part and the condition still exists. Candidates must agree with either technician A, technician B, both technicians, or neither technician. This tests the candidate’s knowledge of the overall systems and forces them to analyze failures in multiple systems in order to correctly answer the questions. The most certifications are held by automotive technicians who hold more certifications than all other groups combined. However,
other areas of high certification include Advanced Engine Performance Specialist, Medium/Heavy Truck Technicians, and Parts Specialist.

The ASE tests cover 13 occupational areas of the automotive industry which include: Automobile Technicians, Service Consultants, Maintenance/Light Repair Technicians, Advanced Engine Performance Specialists, Collision Repair/Refinish Technicians, Collision Damage Estimators, Medium/Heavy Truck Technicians, Truck Equipment Installation & Repair Technicians, Engine Machinist, Compressed Natural Gas Technicians, Transit Bus Technicians, School Bus Technicians, and Parts Specialist. Table 1.1 offers a breakdown of the actual individuals who are certified in each area.

**Table 1.1**

<table>
<thead>
<tr>
<th>Area</th>
<th>Certified individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automobile Technicians</td>
<td>232,059</td>
</tr>
<tr>
<td>Service Consultants</td>
<td>16,243</td>
</tr>
<tr>
<td>Maintenance/Light Repair Technicians</td>
<td>3,672</td>
</tr>
<tr>
<td>Advanced Engine Performance Specialists</td>
<td>38,007</td>
</tr>
<tr>
<td>Collision Repair/Refinish Technicians</td>
<td>21,805</td>
</tr>
<tr>
<td>Collision Damage Estimators</td>
<td>7,716</td>
</tr>
<tr>
<td>Medium/Heavy Truck Technicians</td>
<td>38,852</td>
</tr>
<tr>
<td>Truck Equipment Installation &amp; Repair Technicians</td>
<td>2,753</td>
</tr>
<tr>
<td>Engine Machinist</td>
<td>1,260</td>
</tr>
<tr>
<td>Compressed Natural Gas Technicians</td>
<td>1,983</td>
</tr>
<tr>
<td>Transit Bus Technicians</td>
<td>3,036</td>
</tr>
<tr>
<td>School Bus Technicians</td>
<td>4,825</td>
</tr>
<tr>
<td>Parts Specialist</td>
<td>46,514</td>
</tr>
<tr>
<td><strong>Net total</strong></td>
<td><strong>325,906</strong></td>
</tr>
</tbody>
</table>

*Note: Individuals with multiple certifications are only counted once. (Source: ASE.com)*

The tests range from 60 to 70 questions for certification, and 30 to 40 questions for recertification (ASE, 2014). Most tests require a 68% correct completion rate in order to pass. However, as with competency-based certification formats, certifications are not granted by passing a written test alone. Additional requirements to receiving a passing score include either
the education or work experience, similar to the guild era. Candidates are required to also work in the industry or complete advanced training in an automotive program. ASE recognizes either two years of automotive experience or an advanced automotive degree. The amount of work experience required varies by test as seen in Table 1.2.

**Table 1.2**

<table>
<thead>
<tr>
<th>Automotive Position</th>
<th>Years of experience required for certification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Maintenance and Light Repair</td>
<td>1 year</td>
</tr>
<tr>
<td>Repair Technician</td>
<td>1, 2, or 3 years</td>
</tr>
<tr>
<td>Parts Specialist</td>
<td>2 years</td>
</tr>
<tr>
<td>Collision Damage Estimator</td>
<td>2 years</td>
</tr>
<tr>
<td>Service Consultant</td>
<td>2 years</td>
</tr>
</tbody>
</table>

Candidates may substitute the industry experience requirement with relevant formal training. High school, trade school, or community college automotive training can be substituted for up to one year of the two-year work experience requirement. One month of work experience can be credited for every two months of full-time training.

**Certifications Used in Educational Programs**

As a result of the demand for certification in the automotive industry, some technical and trade schools include passing national certifications as part of their overall training curricula (Banz, 2004; Daniels, 2011). The American Council on Education supports the notion as well and recommends college credit for ASE certifications (Barnhart, 1994). Automotive technology students nationally and globally are increasingly asked to validate their scholastic automotive training by passing the national ASE certification exams (VanDalsem, 2010). Phillips (2004) suggested that many professional careers are laid on a foundation of “specific graduation-education programs and passing state mandated exams” (p. 65). Elmore (2013) agreed and
suggested that industry-based certifications have been the focus of many career and technical programs. In recent years, as state funding for higher education has been scrutinized by state legislatures, so have the dollars spent to support such institutions of higher learning. In reaction, degree program coordinators and department chairs have used student earned certifications to provide evidence that the program is training students to industry standards during budget allocations and other internal, institutional accountability initiatives such as program review.

Church (2007) states,

> Business and industry consider certification as a method of verifying competence of employees as part of their hiring practices. Schools and colleges use them not only to verify student competence, but also to validate quality instructional programs. If students pass certification tests, they can be reasonably assured that their curriculum and teaching methods are sound. (p. 1)

Wierschem, Zhang, & Johnston (2010) studied employer perceptions of IT certifications. They suggest that most of the literature regarding certification in educational programs is based on the assumption that there is a value. However, they suggest that “while much has been written about the integration of certifications in college curricula, justification for such integration has yet to be evaluated” (p. 91).

**Problem Statement**

Research shows that automotive industry professionals in the manufacturing and service sectors prefer hiring technicians who are ASE certified (Banz, 2004; Church, 2007; Kolo, 2006). Additionally, studies have investigated how certification tests differentiate between the competent technician and the incompetent technician (Banz, 2004; Bartlett, 2004; Elmore, 2013; Kolo 2006; Yemaneab, 1997). However, little research has investigated whether graduates with a four-year automotive degree and who are not employed as technicians (i.e. district sales managers, district parts and service directors, product engineers, customer service representatives, etc.) perceive a
benefit from acquiring ASE certifications in terms of employment opportunities, career advancement, salary potential, and self-efficacy over their non-certified counterparts.

Statement of the Purpose

The purpose of this study was to identify the perceived benefits of ASE certifications for graduates of four-year automotive programs. Specifically, the researcher examined the perceived benefit that ASE certifications play in the careers of alumni working in the automotive industry in terms of: employment opportunities, career advancement, higher salary, and self-efficacy.

Research Questions

This study sought to understand the perceived benefits of ASE certifications to automotive industry professionals in careers outside of the service department or repair shop, such as corporate sales consultants, service engineers, product support staff, trainers, and parts distributors, among others. ASE certified technicians and other service department personnel were not included in this study. Therefore, the research questions that guided this study were:

- What are the perceived benefits of Automotive Service Excellence (ASE) certifications for graduates of four-year Automotive Technology programs in terms of employment opportunities?
- What are the perceived benefits of Automotive Service Excellence (ASE) certifications for graduates of four-year Automotive Technology programs in terms of career advancement?
- What are the perceived benefits of Automotive Service Excellence (ASE) certifications for graduates of four-year Automotive Technology programs in terms of salary potential?
What are the perceived benefits of Automotive Service Excellence (ASE) certifications for graduates of four-year Automotive Technology programs in terms of self-efficacy?

Definitions

**ASE** – Automotive Service Excellence exams administered by the National Institute for Automotive Service Excellence.

**Benefit or benefits** - Something that enhances well-being, provides an advantage, or provides payment in accordance with a wage (Church, 2007).

**Employment Opportunities** – Refers to an individual’s ability to gain employment including first time workers entering a profession and seasoned professionals interviewing for a new position with another company.

**Career Advancement** – Pertains to promotion and the ability to improve on one’s career.

**Professionalization** - The process of using education and certification to enhance the quality of performance of those within an occupational field (Mogge, 1994).

**Self-efficacy** – The extent to which one believes in one’s own ability to complete tasks and reach goals.

Limitations

Several limitations impact this study. This study was limited to the ASE certification exams only. This research did not seek perceptions of other certifications such as the Inter-Industry Conference on Autobody Repair (ICAR), industry certifications issued by the manufacturer, or other automotive or non-automotive certifications. It was limited to alumni of four-year automotive programs such as Colorado State University, Ferris State University, Pittsburg State University, Southern Illinois University, and Weber State University. Alumni of other universities that offer a bachelor’s degree in automotive were not sought. Participation in
the study was limited to industry professionals with a minimum of five years in the profession. Last, it was limited to individuals who are or have been previously certified. Automotive professionals who have never earned ASE certification will not be included.

**Delimitations**

There are several delimitations in this study to note. This study did not seek to question graduates of two-year vocational automotive programs nor did it analyze data from individuals who may have attended but did not complete a bachelor’s degree in Automotive Technology. Additionally, the study did not analyze data from individuals have not worked in an automotive or related field for a minimum of five years. This study will not analyze data from respondents who are required to become ASE certified in their career.

**Significance of the Study**

This study has significance to the automotive industry in several ways. First, it can help inform automotive faculty as to the role of ASE certifications for students entering the profession. Informed faculty are able to better shape their educational curriculum based on perceived benefits identified in this study. This could be particularly insightful for the five university automotive technology programs in the U.S. which offer an automotive bachelor’s degree. Those universities include Pittsburg State University, Pittsburg, KS; Colorado State University in Pueblo, Co; Weber State University, Ogden, UT; Ferris State, Big Rapids, MI; and Southern Illinois University, Carbondale, IL.

Next, it can help inform automotive corporate professionals and manufacturers as to the perceived value of certifications in those careers. The study attempted to identify perceptions from a wide variety of automotive professionals who are not technicians, such as corporate district service managers, corporate district sales managers, corporate trainers, field engineers, and others.
Last, it could inform the National Institute for Automotive Service Excellence as to the perceived value of earning ASE certification. It can help guide the design of ASE tests and reveal the role of ASE certifications in a broader sense. It could help shape additional certifications designed around corporate automotive, diesel/heavy, and agricultural manufacturers.

**Theoretical Framework**

Two theories informed the research design for this study, career motivation and motivation at work. The first theory draws upon the work put forth by London (1983). London’s theory of career motivation, which tested the perceptions of professionals in the work environment, described it as a “multidimensional construct” (p. 55) with three domains: career identity, career insight, and career resilience. Career identity is the extent to which professionals define themselves by their work. Career insight is the internal force that energizes the individual to make their own career decisions. Career resilience is described as the ability to adapt and make career decisions. These domains provide foundational constructs for this study in terms of career identity and an individual’s decision to seek a career in the automotive profession, career insight and the decision to advance a career by attaining certification, and career resilience in terms of continuing to stay current in the ever-changing automotive industry.

The second theory that influenced this research was developed by Walker (2002). Walker’s theory regarding motivation at work echoes the foundational principles of London (1983) and its multiple domains. Walker (2002) theorized that an individual’s self-determined work motivation was based on multiple factors on various levels, driven both internally and externally. This theorizes that intrinsic and extrinsic motivators drive career decisions, including the decision to gain certification. Together, these theories provided the framework for the motivation for automotive professionals to achieve ASE certification.
CHAPTER 2: REVIEW OF LITERATURE

This study seeks to identify the perceived benefits of earning ASE certifications for automotive professionals who graduated with a four-year automotive technology degree and work in the automotive or automotive-related industry in careers other than as technicians. Specifically, the study will examine the perceived benefits of earning ASE certifications in terms of employment opportunities, career advancement, higher salary, and self-efficacy.

In order to examine the role that certification plays in the careers of working professionals and to determine the extent to which becoming certified has a perceived benefit to the benefactor of the certification, a literature review was conducted. The literature for this review came from a variety of databases and related search engines from the libraries of the University of Arkansas and Pittsburg State University. The main databases used were Summons, ERIC, EBSCO, ProQuest, Web of Science, and Google Scholar. The review was guided by research librarians from each institution listed above as well as John Brown University. Primary sources from refereed and peer reviewed literature make up nearly all of the literature used. Accordingly, the research questions were based upon the primary source literature. Secondary sources were primarily used for background information and historical or empirical data. Most of the literature reviewed was less than 10 years old, unless it was of historical or empirical relevance. A complete list of over 50 search words was compiled and maintained throughout the review of literature to help keep record of the sources checked as well as to demonstrate the extent to which the review was conducted.

Due to the limited number of scholarly publications and refereed journals regarding the automotive industry and ASE certifications, the literature review was expanded to include other professions that use certification. Other industries and professions with requirements similar to
the automotive industry in terms of training, skills required for entering the workforce, continuing education once in the profession, and career opportunities were examined. Other factors that directed the review of literature included size of the industry, opportunity for upward mobility in the profession, and hierarchy or organizational structure of the industry. Certifications can be voluntary or mandatory depending on the industry, but because most are voluntary, only professions in which certification was voluntary were researched. The review specifically examined how other industries view credentialing and certifications regarding employment opportunities, career advancement, salary potential, and self-efficacy in their industry.

The professions that were examined in the expanded review of literature include areas of transportation (aircraft, rail, and motorcycle), construction (electrical, heat and air, masonry, and plumbing), health science (nursing, dentistry, and cosmetology), teaching (secondary and post-secondary) and others such as information technology. Inclusion of these professions provided a more holistic view of certification across several industries. The literature review identified parallels across a variety of professionals and technical professions. For example, nurses and automotive professionals are similar in that they are both very technical by definition. Both have a close relationship with the client and outcomes are critical and essential for continued success in the industry. Both professions also have voluntary and mandatory aspects of certification.

The review consists of four specific areas that correlate to the individual research questions. The first section includes literature regarding employment opportunities for both seasoned professionals and those just entering the workforce. It examines employment opportunities that may follow certification. The second section will address career advancement and what previous research has reported to be the perceived impact that certification has for
promotion and professional development. Positive, negative, and neutral findings from primary sources and secondary sources were reviewed and reported. The third section of the review addresses salary potential and whether certifications or credentialing have a perceived salary benefit. The fourth section will address intrinsic motivation and self-efficacy issues associated with successfully gaining certification status. This section includes literature pertaining to feelings of empowerment, confidence, recognition, professional challenges, and personal satisfaction. Some of the literature reviewed is relevant to various areas of the study. The literature that is referenced more than once in this review will be described in depth when introduced in the initial research area, but only referenced for pertinent information regarding the subsequent research area(s).

**Research Area One: Employment Opportunities Associated with Certification**

Research area 1 pertains to the perception of certification benefits associated with employment opportunities. Employment opportunities, for the purposes of this study, include either first time workers entering a given profession, or experienced professionals moving to different positions within the same company or a different company. The literature review uncovered a broad and diverse family of certifications across a wide range of occupations and industries that are an essential component of professionalism. It also identified research that explored perceptions of credentialing and certifications in an array of professions. The large variety of research projects and questions guiding the studies speak to the enormity of the subject of certification and why it is perceived differently by so many professionals in so many different careers.

Arguments regarding ASE certifications in the automotive industry, while limited in numbers, have occurred for years and have produced a variety of findings. Karbon (1995)
studied the job placement rates of 387 automotive technicians employed in service departments of Chrysler dealerships. His study sought to determine if a correlation existed between earning certification and the job placement rate. He found that certified technicians were nearly three times more likely to attain immediate employment when completing an ASE certification program than those who did not. Other ASE certification research in the automotive industry has focused on service management. A study of 288 automotive employers in general automotive repair facilities, collision repair shops, and automotive transmission repair industries in the Minneapolis/St. Paul area by Yemaneab (1997) was centered on how employers in the automotive service industry view ASE certifications in regards to hiring, promotion, evaluation, and work assignments. His research found nearly 75% of respondents viewed ASE certifications as a preference when hiring technicians. He reports that managers viewed earning certification as a way of signaling to a prospective employer that the candidate is technically competent, and that they have achieved a national standard of knowledge and experience for that industry.

The literature also examined other factors, such as costs associated with gaining certification and the process of attaining it, and other perceived negative factors relating to attaining certifications (i.e., time spent in preparation, time granted until certification expires, etc.). Some research indicated that certification had little or no impact on helping a candidate enjoy increased employment opportunities, depending on the industry, and was often expensive and time-consuming to earn. For example, a large study of 19,452 specialty nurses from 23 certifying organizations in the United States, Canada, and U.S. territories conducted by Cary (2001) found that 29% of nurses saw no benefit in certification. He argued that this does not diminish support of certification; rather, it underscores the fact “that research in certification is still in its infancy” (p. 12). While understanding the perceived benefits of certification requires
more research, the results of Cary’s study indicate that nearly one-third of the respondents perceived no benefit of certification in their career. The work of Cary (2001) is referenced extensively in the nursing profession and will be referenced again in other research areas in this chapter.

Phillips (2004) addressed the issue of employability and certification for professionals in the records management profession. In an article for *The Information Journal*, he suggested that one way for professionals to separate themselves from other candidates in the records management community is through obtaining certification. He connected certification to an individual’s professional identity and supported the notion that industry laborers distinguish themselves as professionals when they attain the elements of certification and education. In another study in the automotive service industry, Bartlett (2004) found similarities between the automotive service industry and information technology. He noted that the two professions shared a similar need to hire workers with a high level of technical aptitude. His research included 202 managers in the automotive service and information technology industries working in the cities of Atlanta, Georgia; Portland, Oregon; and Minneapolis/St. Paul, Minnesota. Similar to the research of Yemaneab (1997), Bartlett (2004) reported that a correlation existed between certified employees and employment opportunities. He revealed an interesting finding that speaks to the convergence of certification and education. He noted that candidates who possessed both education and certification were highly sought by the employer participants in his study. He concluded that a perceived benefit existed to the certified individual and the employer. He also explained that one of the main purposes of occupational certification was to signal to employers that entry-level workers were ready for employment. The value of education and certification, he speculated, was not equal across all disciplines and varied from one profession to another due to
the numbers of certifications and the many different programs of study that are available. He reported that automotive service employers valued applicants with certification and a two-year degree the most, while employers in information technology preferred a two-year degree with work experience. Both positive and negative attitudes towards certification emerged among employers in the two industries he examined, but he reported that employers preferred hiring candidates with some postsecondary education to certification.

Although the literature review did reveal data regarding the positive perceptions of certifications for employment opportunities, it is not all optimistic. Banz (2004), while studying the perceptions of service managers about the effectiveness of certifications, reported very different findings. His study sought responses from service managers from 90 service facilities including independent shops, franchise shops, and dealership service departments. He not only reported that ASE certifications had little benefit to many automotive service professionals, but went on to state that there is “little or no evidence to substantiate the claim that ASE certified mechanics are more competent than non-ASE certified mechanics” (p. 36) and thus, were no more likely to enjoy employment opportunities than their non-certified counterparts.

Farris and Pohlen (2004) surveyed 102 certified professionals in the transportation and logistics industries and found that certification increased the potential for employment into the industry and led to better retention. However, they also discovered that the average number of years of certification is going down industrywide. Shirey (2005), in a review of a certification drive at Deaconess Hospital in Evansville, Indiana, connected patient outcomes to certification and made the point that a health care provider is only as good as its staff. She connected the success of the hospital to the recruiting of top quality, certified staff members who have
collectively raised the level of patient care. She explained that certifications benefit patients and thus benefit the care facility, which leads to an increased retention of quality staff.

Other literature exposed a relationship between the certified employee and the employer as one of need. Certifications can have a direct effect on the profit of a business and, therefore, can have a significant influence on the employer when it comes to hiring practices. In the construction industry, for example, Garnant (2005) reported that the concrete industry had seen a change in the hiring practices by companies that were no longer able to bid on large construction projects without a certified workforce. She reported that shifts in requirements for certified concrete engineers and jobsite personnel had been driven primarily by large corporations such as Walmart, Lowes, and other national chains experiencing record growth because they began requiring a certain number of American Concrete Institute certified concrete finishers to be present at each pouring. This left concrete bidding companies rushing to certify their employees in order to stay available to bid on these national accounts. This was supported by Antoniewicz (2006), who viewed new certification requirements as a way to market a business in the electrical profession as well as an assessment criterion when evaluating potential candidates for positions in the industry.

In 2007, Church studied a random sample of 130 dealership service managers in Virginia to determine whether there was a perceived benefit to earning ASE certifications and employment opportunities. He found that the ASE certifications offered benefits to automotive professionals within the service sector, as compared to those without certifications. He further stated that both independent and dealership service managers valued certification, but service managers in the dealership were more likely to agree that ASE certification benefited technicians. He noted that the hiring manager is the key player in employment opportunities. He
reported that if the hiring manager values certification, there is a much higher likelihood that the certified candidate will be hired. Regardless of the two industries he studied, he stated that “both groups agree that they would hire someone ASE certified over someone without the certification” (p. 80).

In other research conducted in 2007 pertaining to professionals in health science, DeSilets agreed. She conducted a review of several studies performed in the area of nursing and health care and reported that nurse managers, particularly in perioperative roles, preferred to hire certified nurses over non-certified nurses. She stated that the majority of employers provided incentives to recruit certified individuals including pay increases or paid-time off for gaining the certification. Her conclusions were based primarily on the findings of the largest study that she reviewed which was conducted by the American Board of Nursing Specialties and involved 20 certifying organizations, more than 11,000 certified nurses, and 36 different certification credentials. She further reported that the majority of respondents “thought there was a difference in performance between certified and non-certified nurses” (p. 12), which made certified nurses more highly sought after.

Gingerich (2007), writing for Home Health Care Management and Practice, wrote about certification and licensing in the nursing profession. She advised that health care leaders be aware of the impact that certification has on distinguishing patient care providers from each other. She stated the ability for a health care facility to differentiate itself from other similar facilities also helps attract a more skilled worker. Bekemeier (2009), however, was not convinced that certification is justified across the board. She stated that the data exists to support certification as a way to attract skilled workers, but noted that conclusive research evidence pertaining to perceived benefits of certifications in the nursing profession was lacking. Still,
Bekemeier (2009) supported certification of nurses entering the workforce because of the generally positive perception of certification.

Vandalsem (2010), using a two-phase sequence transformative case study, examined whether curriculum based around automotive certification provided the necessary skills that automotive businesses require of graduates entering the workforce. The study utilized a random sample of selected automotive dealerships in southwest Georgia who were asked to evaluate curricula from certified and non-certified programs. He deduced that certain skills identified by the certifying body are highly valuable to industry and, therefore, increase employability of the certified candidate. He suggested that they aid in employability because, “ASE standards are found to have better provided mechanisms and materials to ensure grade-level articulation and congruence of the skills and knowledge taught” (p. 106). He concluded that ASE certified graduates of vocational programs perceive a benefit to gaining employment in automotive and automotive-related fields, particularly if they lack some of the experience that many hiring managers are seeking. He further stated that the levels of skill developed by graduates are a direct result of the quality of instruction and should be taken into account when hiring an individual. Quality of instruction, he surmised, is a detail that is too often overlooked when assessing the strength of the individual’s resume. The idea that a quality program of study increases the marketability of the graduate is not a new idea, and has been researched on many fronts.

Prier, McCue, and Behara (2010) examined certification and the role of the hiring managers in civic and governmental positions. They surveyed 1746 respondents in the public procurement profession using a quasi-experimental design to try to identify correlations that may exist. Through their research they discovered there was a need for certification and
professionalization of those involved in public procurement and argued for mandatory
certification in the profession. They pointed out that individuals who work for the public have a
higher standard applied to them than individuals in the private sector and called for increased
scrutiny for those in the profession. They supported this assertion by pointing out several other
professions that require certifications including personal trainers, athletic trainers, child welfare
staff, law enforcement officers, and emergency services personnel. They wrote,

Consider that there are nearly twice as many certified respondents versus
uncertified who are involved in hiring at their workplace. This observation
coupled with the fact that there are such stark differences in their attitudes about
the benefits of certification, suggests that those involved in hiring in the
workplace are more likely to think certification matters in promotion and hiring.
(p. 534)

The influence that managers have in the hiring process was examined by Wierschem,
Zhang, and Johnston (2010). They studied the information technology industry and found that
less than half (45%) of employers valued IT certifications. They point out that the hiring
manager’s perceptions as to the value of certification have a particularly high impact on the
employment opportunities of candidates who are certified. Trent (2011) found that employers in
the drafting profession did not value certification of computer-aided drafters in terms of
employment. The findings showed that managers who hire CAD professionals valued education,
CAD proficiency, and people skills rather than certification when hiring computer aided drafters.

Elmore (2013) studied the National Retail Federation Customer Service and Sales
certifications and the effects they had for students entering the workforce. She cited a Virginia
Department of Education (2011) study that suggested industry certifications “increased
opportunities for obtaining an entry-level position” (p. 78). However, her research did not
concur. Her research findings indicated that industry certification was low in importance when
interviewing and hiring potential employee candidates. She surmised that while many believed
certification had a rightful place among many professions, other factors indicated a potential benefit to employers as well, such as prior work experience and education.

The review of literature pertaining to this research area for nursing, automotive, construction, IT, and other professions revealed that the perceived value of certification in terms of employment opportunities had a broad range of opinions that largely depended on the occupation or the viewpoint of the hiring personnel. The extent to which outside factors such as the opinion of hiring managers or the influence of education in the hiring process had a part in justifying certification is still essentially unknown and difficult to define. Though there is much research that exists, there is still a need for further study of the phenomenon.

**Research Area Two: Career Advancement Associated with Certification**

Research area 2 pertains to the perceived benefits that certification may offer in terms of career advancement. The term career advancement, for the purposes of this study, refers to an individual’s ability to positively affect the trajectory of his career once he had established a position within the workforce. It encompassed promotion and the potential for an individual to improve his position in the company. Compared to the literature regarding certification and employment opportunities in the previous research area, the review uncovered fewer studies regarding the perceptions of certification and career advancement as a stand-alone category. Much of the literature reviewed merged employment opportunities and career advancement into one general area, which made it difficult to separate them for reporting. Gaining employment, increasing salary, and attaining feelings of self-worth and professionalism were generally the primary factors of the literature reviewed for this study.

In order to broaden the literature regarding this area of the certification phenomenon, the review was expanded to include perceptions of the employers who hire and manage technicians
in the automotive service industry. Constructing and conducting a review of literature from other various perspectives regarding promotion and career advancement, from both the employee’s standpoint as well as the employer’s, was viewed as relevant and relatable to the research questions presented in this study. Identifying key factors regarding promotion and the furthering of one’s career from the employer’s standpoint helps provide a clearer perspective of the larger picture. Although this area was more limited in size and scope than the others used for the literature reviewed in this study, relevant literature does exist and was obtained pertaining to the perception of certification and its influence or lack of influence in terms of career advancement. The review included perceptions of professionals with careers in automotive, nursing, construction trades, information technology, and other professions which all serve to help paint a picture of how this perceived benefit plays into the spectrum of professional certifications. The review will be presented chronologically.

The subject of career advancement has been researched for decades in many fields. Bratton and Hildebrand (1980) examined the young and emerging phenomenon of certification for educational technologists. They cited career advancement and promotion as some of the benefits highlighted as justification for earning certification in education. Yemaneab’s (1997) study of general repair facility managers in the Twin Cities, Minnesota, and its metropolitan area sought to identify the perceived benefits of ASE certifications strictly from an employer’s standpoint. He reported a 40% response rate of respondents who indicated they currently factor the gaining of certifications into the process of determining promotions. He asserted that an additional 20% indicated they had future plans to infuse them into their promotion process.

Nance (1999) reviewed the statistics of registered nurses in the United States and found that career advancement was the number one reason that nurses sought certification. She reported
that while certification was not required in the nursing profession, most sought it for professional growth and increased opportunities. In the area of finance, Foy (2000) viewed certification as a tool used to advance a career through additional opportunities afforded to the recipient. He saw the addition of professional certifications, such as Certified Fraud Examiner or Certified Compensation Professional, as new doors of opportunity opening up in the financial world.

Similarly, in the 2001 study of nearly 20,000 nurses, Cary found that “nurses may seek certification because their workplaces offer certified nurse’s advancement opportunities” (p. 12). She wrote that 72% of the respondents reported receiving one or more benefits for gaining certification including promotion, financial gain, and job security. She noted that the high percentage was an overall number and pointed out that there are pockets that exist in some nursing professions where certification did not rank as highly. Still, the overall response of participants indicated that a perceived benefit of certification does exist in terms of promotion and career advancement.

Hutchison and Fleischman (2003) viewed gaining certification as a means to get ahead of colleagues in a career in accounting because it provides a market-driven, value-added specialization to an individual’s resume. They identified 36 certification specialties and stated that some certifications have become highly sought and can play a large role in the “hiring and promotion process” (p. 48) because they increase the recipients’ marketability. Marketability is a theme found in much of the literature regarding employment opportunities and career advancement. Certification is regarded as the conduit between marketability and career development. In the emerging profession of safety, Adams, Brauer, Karas, Bresnahan, and Murphy (2004) wrote about the value of specialized certification. Because of the seriousness of the safety industry in terms of workers’ health and well being, there are many rules and
regulations that affect its professionals. Adams et al. connected certification to career advancement by explaining that it improves competence and increases an individual’s responsibility within the company. They argued that it elevates stature and importance in a position, which ultimately adds to career advancement for the benefactor. They stated that certification has become more valuable since so many companies have experienced downsizing and relocation of manufacturing facilities to other countries. And although they recognized the costs associated with gaining certification as well as the effort and commitment required, they argued it is offset by the return on investment over the life of a career as a safety professional. They stated that certification is among the most important credentials for promotion. Farris and Pohlen (2004) agreed. They surveyed certified professionals in the transportation and logistics industries and found that certification was an essential component of professional development and career advancement.

In an article for Nursing Administration Quarterly, Shirey (2005) wrote of career advancement and professional development. While the point of the article was more centered on steps for successful implementation of a certification program for critical care nurses, it stated that attaining certification “positions nurses for recognition and professional growth” (p.252). Chichester (2005) examined the demand for certified professionals in the HVAC and sheet metal industries. He pointed out that individuals who are certified could advance their careers and make themselves more marketable. Naveda and Seidman (2005), writing about certification in the software engineering profession, supported the notion that certification should be a foundational aspect of an individual’s career. They contended that it plays an increasingly larger role in the requirements needed for promotion and advancement. They also maintained that certification adds marketability to the individual and they address the recent calls for certification
as a necessary means to elevating the profession. Roberts (2006) reported different results when he studied individuals with careers in research administration. He reported that less than one-third (29%) of respondents in his study agreed or strongly agreed that certification would earn them a promotion, as opposed to 66% who indicated no difference in receiving promotion for certification or non-certification. It runs counter-intuitive to the 74% of respondents who felt they were more knowledgeable and had more to offer their employer.

Ferndon (2009) studied a convenience sample of 30 oncology nurses in 2009 using the PVCT survey instrument. Respondents strongly agreed (93%) that certification improves patient outcomes, but only 31% indicated it aids in promotion. In the 2010 study of certification and professionalization of individuals in public procurement by Prier, McCue, and Behara, the authors found that over 78% of the 1,746 respondents, including both certified and non-certified individuals, agreed with the statement that certification was helpful in career advancement, while only 16% disagreed. They went on to differentiate employment opportunities from career advancement by stating “that there are stark differences in the perceived advantages of a certification in getting promoted or getting hired initially in the first place” (p.533). They identified an apparent dichotomy in the data and reported that the perception of benefits in terms of career advancement varied from the certified individual and the non-certified individual. While nearly 84% of certified respondents perceived a promotion or career advancement benefit with certifications, only 49% of non-certified individuals believed there to be a benefit. Nearly one-half of non-certified respondents perceived a benefit in terms of promotion and career advancement.

Lester, Fertig, and Dwyer (2011), while addressing the need for more empirical data in the field of human resource certification, studied 2,183 human resources professionals and found
that 90% of managers responded positively that certification is beneficial to human resource personnel. However, they also concluded that the certification had little effect on the manager in terms of career advancement or promotion. It is important to point out that 61% of the respondents in this study were individuals who “did not hold any professional certifications” (p. 410), and thus, similar to Prier et al. (2010) cited previously, they undervalued the perceived benefits of certifications because they had never had the experience of attaining certification.

In a study conducted in 2012, Gaudreault and Woods found that nationally certified teachers were more involved in the decision making process at their school, which could lead to more career opportunities and advancement opportunities. Teachers in that study reported being given additional leadership roles and were given authority in some situations that their non-certified colleagues were not given. Rauen and Katz Brock (2014) wrote about how certification leads to career development for nurses because it puts them in an environment of continuous learning. They stated certification demonstrates a desire to continue learning which promotes career opportunities.

The literature regarding career advancement and promotion did not vary as much as the research area regarding employment opportunities. Generally, the review showed that there was a perception of benefits for promotion by individuals who have attained certification. Most professions looked favorably at certification as a means to improving employment opportunities through career advancement, including the management personnel who hire potential candidates. Some of the literature did not relate a promotion benefit to certification, such as in the human resource profession. This was also evident in individuals who have never been certified, but overall the literature reviewed indicated agreement that certification aided in career advancement and promotion.
Research Area Three: Higher Salary Associated with Certification

Unlike employment opportunities and career advancement, salary benefits associated with certification were more tangible and easier to quantify for working professionals. It was a theme found throughout much of the literature reviewed across many disciplines. Among the four primary research questions, literature regarding salary was most predominant, garnishing much of the attention presumably due to the buying power, stature, and prestige that money has. It is universal across gender, race, background, education, and other aspects of life.

Just as higher salary is in a broad range of literature reviewed for this chapter, it is also equally diverse in its findings. Although it is an area of pointed interest in various studies, not all studies have concluded that a correlation between certification and monetary rewards exists. Similar to the literature regarding employment opportunities, the research data did not always align across the spectrum of studies, and while some of the literature reviewed indicated that respondents did perceive a higher pay benefit, many others did not. In fact, comments regarding the lack of a perceived salary increase were much more subtle than respondents citing a perceived pay benefit associated with gaining certification. The review of literature regarding the perception of a benefit in terms of salary, as with the other areas identified in the research questions, followed a chronological order. It reported the perceptions and findings revealed in the literature, both positive and negative as both exist.

The literature for this area of the review began with Williams, McMahon, Hasenauer, Pennoyer, and Wilson (1995) and their study of certification for pediatric oncology nurses. They asserted that earning certification can lead to monetary rewards, but their findings showed that only 14% of respondents indicated an expectation of increased compensation. Yemaneab (1997) made the point that most automotive technicians are paid at a pre-determined amount, which
means that specific repair procedures, such as replacing a water pump or transmission, pays a pre-determined amount regardless of the time it takes the technician to perform the work. With this pay structure, he surmised that higher proficiency and technical aptitude lead to higher efficiency and higher pay. Yemaneab (1997) found 42% of respondents reported that ASE certified technicians earned a higher salary. Cary (2001) reported that 72% of specialized nurses indicated financial gain for achieving certification. In a 2005 survey of 11,427 nurses, the American Board of Nursing Specialties (ABNS) published a Value of Certification Survey in which 18.6% of the nurses responded that their employer offered an increase in salary for certification, compared to 21.4% who indicated that their employer did not offer incentives for certification in an area.

In a study in 2000, Messmer, Hill-Rodriquez, Williams, Ernst, and Tahmooressi found that pediatric nurses did not have the perception of an increased salary benefit for maintaining certification. The study of 134 pediatric nurses reported there was not an hourly pay increase nor other compensation offered even though 42% of the nurses surveyed were certified in one or more areas. They concluded “salary increases likely do not determine nurses’ willingness to pursue certification” (p. 430). Woods (2002) concluded similarly and said very few respondents mentioned financial gain as a reason for certification. Woods reported that most nurses reported no financial gain or incentive for certification where they worked. The few respondents who did indicate a higher salary from being certified said they either received a small one-time bonus or an hour increase of one dollar.

Hutchinson and Fleischman (2003) addressed higher salary in terms of sales revenue within the accounting profession since most are paid by the billable hour. They stated that a specialty certification enables a firm to increase their billing potential by allowing them to charge
higher fees because of the services they can offer. Increasing revenue and generating new accounting specialties are profit generators for accounting firms. In the article for *CPA Journal*, they identified 36 certification specialties available to accountants and asserted they “permit accountants to charge higher consulting fees or to introduce new revenue sources” (p. 48). They appealed to members of the profession to perform a cost/benefit analysis before pursuing additional certifications but claimed there is potential for increased revenue outside the traditional accounting practices. Byrne, Valentine, and Carter (2004) used the Perceived Value of Certification Tool (PVCT©) to survey a population of 3,569 certified perioperative nurses, non-certified perioperative nurses, and administrators and found that only 22% of non-certified respondents and 31% of certified respondents agreed that certification increases salary or offers some type of salary benefit.

Adams, Brauer, Karas, Bresnahan, and Murphy (2004) reported a salary gap that has widened between certified and non-certified safety professionals between 1981 and 2003. They noted that as the profession has grown, so has the salary potential. They attributed the higher salary potential to the increase in calls for certification nationally, which has cast light on the industry and the benefit that certification offers to both the individual and the industry. Kolo (2006) reported that pay raises were significantly correlated with the job performance of non-certified technicians, but had no effect on the job performance of the certified technicians. He reasoned this could be due to the fact that certified technicians achieve a higher competence and therefore perform well regardless of pay increases. Mee (2006) found that among the nurses in her study, certified nurses reported significantly higher earnings than nurses who were not certified. Mee stated that among specialty nurses, many reported an annual increase of $9200 for
certified nurses over non-certified nurses. This is a substantial increase and seems to blunt the arguments that the costs of obtaining and maintaining certification are unjustifiable.

Roberts (2006) studied individuals in the research administration profession and reported a statistically significant difference between perceptions of Certified Research Administered (CRA) and non-certified colleagues. Over one-third of certified respondents (39%) agreed or strongly agreed that their salary increased as a result of obtaining certification. However, the greater number (55%) indicated no difference in annual salary as a result of obtaining certification. In a 2007 study of neurology nurses, Prowant, Neibur, and Biel found fewer than 20% of certified neurology nurses reported that certification increased salary. Wade (2009) performed a review of 12 separate studies regarding certification of nurses and found that hospitals that do not require nursing staff to successfully complete specialty certification reported lower salaries. Ferndon (2009) found that 40% of oncology nurses surveyed indicated that higher salary was not offered for obtaining certification, but nearly 90% indicated they would seek certification for an increase in salary. Wierschem, Zhang, and Johnston (2010), studying employer’s perspectives regarding certification in the IT industry, found that only 10% offered increased salary or other financial benefits to earning an IT certification, although 69% of respondents indicated they would pay for all or some of the costs involved in the certification process. Institutions that did offer increased salary to certified employees paid anywhere from 3% to 10% less in annual salaries.

This is in stark contrast to the conclusions made by Haskins, Hnatiuk, and Yoder (2011). They reviewed a study conducted in 2008 by the Medical-Surgical Nursing Certification Board (MSNCB), which sampled 1,748 nurses from a population of 6,775 medical-surgical nurses regarding the perceived value of certification. The 2008 study utilized the Perceived Value of
Certification Tool (PVCT©) in their replication of a 2005 study by the American Board of Nursing Specialties (ABNS). They found 51.8% of respondents agreed that certification increased salary.

Research in 2011 by Trent reported very little perceived correlation between certification of computer aided drafters and a financial benefit. He challenged the idea of certification, pointing out that the cost of the certification exams, the time commitment required to properly prepare for the exam and the lack of benefit to the individual were three reasons for any professional to question the logic of earning certification. Lester, Fertig, and Dwyer (2011) found that business leaders prefer to have HR-certified employees, but this did not translate to a higher salary. However, in a 2011 review of literature regarding certification of critical-care nurses, Kaplow concluded that the “salaries of nurses certified in occupational and environmental health were significantly higher than salaries of those who were not certified” (p. 28). Brown (2013) found that nurses were less willing to embark on a path to certification if they did not perceive a sense of financial benefit from it. The findings of Williams, Lopez, and Lewis (2013) were analogous. They reported that nationally salaries are higher for certified nurses than non-certified nurses. They also reported that certified nurses are more competent and achieve better patient outcomes, thus increasing the care facility profitability and patient retention. Like Williams et al., Woods (2002) argued that increased charges are justifiable with certified staff and that has an effect on higher salary for the individuals and increased profitability for the health care provider.

Overall, the literature reviewed is mixed in terms of higher salary. It is clear that there is a lack of unanimous support by employers which has caused a failure to implement certification policy and protocol in many institutions. It is not viewed as a perceivable benefit across the board. Respondents seem to be split in their perceptions as to a benefit of certification in terms of
increased salary. The literature review showed that respondents generally tended to agree that professional certification can positively affect salary but also indicated that their employers do not offer incentives for gaining certification.

**Research Area Four: Self-Efficacy Associated with Certification**

Self-efficacy was not originally going to be part of this research, but the theme emerged from the literature as a valid research area. It became an unanticipated and unexpected identifier of another motivator that compels professionals to earn certification. Intrinsic and internal motivators driving human behavior were noted in a large portion of the literature reviewed for this study, particularly in the health science and nursing professions, and was therefore deemed relevant to the study. Self-efficacy provided another viewpoint which offered a new dynamic to the topic of the study.

The notion of self-efficacy was discovered in the literature through the work of Bandura in the 1960s and 70s. It is rooted in the Social Learning Theory that he introduced and is based on the idea of *Intrinsic Reinforcement* which speaks to the internal motivators behind a person’s behavior and actions. He connected intrinsic reinforcement with internal rewards such as pride, accomplishment, and self-esteem. Bandura (1977) strayed from traditional learning theory by demonstrating that people can learn from more than just direct reinforcement. Through his research he identified three core pillars to social learning theory, which are: (a) people learn from watching other people; (b) internal mental issues are essential; and (c) learned items do not always lead to a change in behavior. In his extensive work into the realm of internal motivators, he wrote that external and environmental influencers were not the only factors that stimulate a behavior. His look at self-efficacy revolved around the factors that play into an individual’s decisions to challenge themselves, prove themselves, and feel an internal satisfaction. However,
he also wrote that while self-efficacy has a direct influence on our choice of activities, he warned the reader that internal motivation is not the sole determination of a behavior.

The literature bore this out as both internal and external motivators play a role in certification. Most literature from outside of the nursing profession tended to view the issue of certification more pragmatically, identifying external motivators like employment, career advancement, and salary as the key factors in determining the need for certification. However, some of the literature spoke to the intrinsic value that many professionals seek through certification. Some of the literature bore out that some professionals worked to attain certification simply for the sake of self-efficacy. As long ago as 1970, Gorbell explained the impact that certification would have on the safety profession and its workforce. As a founding member of the Board of Certified Safety Professionals, Gorbell (1970) highlighted several reasons for an individual to earn a safety certification including that it acts as a morale builder and it gives “justifiable pride” to the recipient (p. 60).

Internal motivators of pride and increased self-worth were found scattered throughout the literature reviewed in this chapter. Williams, McMahon, Hasenauer, Pennoyer, and Wilson (1995) concluded that pediatric oncology nurses sought certifications for more intrinsic reasons. They cited a large majority (87%) of respondents reported feeling self-satisfaction, and more than one-half (56%) receive increased recognition from their employer and colleagues. Even in the male dominated industry of automotive manufacturing and service, professionals reported feeling higher self-worth and professional commitment as a result of earning certification. In Yemaneab’s 1997 study of automotive service managers, his research indicated that gaining certification could increase self-esteem. His findings revealed that respondents felt it “enhances sense of accomplishment, self-worth, confidence, level of competence, and self-esteem” (p. 48).
Nance (1999) found certified nurses reported higher self-esteem and higher number of years in the profession. She cited personal satisfaction and a sense of pride as one of the main reasons that nurses achieve certification. She also highlighted a secondary benefit to a supportive certification protocol which is retention of quality staff.

Miles (2001) conceded that most of the arguments made for certification in Family and Consumer Sciences had not been proven at the time of her study. She openly reflected that as a charter member of the Council for Certification for over 10 years, the council found it extremely difficult to validate that professional certification made a significant difference or played a significant role in the careers of those surveyed. Rather, she reminded the reader that the real goal of certification was improved professional standards and pride in the profession and argued that those are enough justification for workers to attain and maintain certification. Cary (2001) noted that respondents in the nursing profession indicated that they experienced personal growth and a feeling of competency and satisfaction when they earned a certification. She stated that respondents felt it gained them credibility with colleagues and management, and they indicated "more confidence in my practice" (p. 6). Byrne, Valentine, and Carter (2004), surveying certified perioperative nurses, non-certified perioperative nurses, and administrators, reported that 90% of participants indicated agreement with the statement that certification related to “a sense of personal accomplishment and satisfaction” (p. 831). Professional challenge and clinical competence were also indicated by respondents as justification for certification.

In a 2006 study, Roberts reported low agreement in the research administrator profession with statements regarding perceived benefits of earning certification for promotion and salary, but reported high levels of agreement with statements concerning more confidence, empowerment in the profession, and higher self-esteem. Nearly three-fourths (74%) of
respondents indicated more confidence in their ability to perform their work after earning certification. This seemed to support other literature in the review that indicated that while most areas of research in this study have mixed findings, self-efficacy does not. Intrinsic values of satisfaction are often enough motivation for many in the workforce to trudge toward earning certification.

Piazza, Donahue, Dykes, Griffin, & Fitzpatrick (2006) also reported an association of empowerment with certification. They found that certified nurses perceived a higher feeling of empowerment than non-certified nurses and therefore benefitted from a variety of career influencing opportunities. Wade (2009), reviewing certification for nursing, noted that respondents indicated an “enhanced feeling of personal accomplishment” (p. 186). He also reported that certified nurse’s acknowledged a greater sense of empowerment and personal growth. In a study of oncology nurses, Ferndon (2009) reported little incentive for certification in terms of promotion or higher salary, but 94% indicated it provides evidence of professional commitment and empowerment.

This theme was supported by the work of Haskins, Hnatiuk, and Yoder (2011). In their review of a 2008 study by the Medical-Surgical Nursing Certification Board, they reported 98.5% of respondents indicated that earning certification enhanced personal feelings of accomplishment. Kaplow (2011) examined self-efficacy by looking at how confidence plays a role in the decisions of critical-care nurses who have achieved certification. In her review of previous research, she reported that 97% of nurses agreed “certification resulted in enhanced personal confidence in clinical abilities” (p. 26). Jeffries (2013) focused on the public’s perception of certification and used it as the argument for certification. She asserted that 78% of respondents in her research did not understand certification, but when defined, 91% favored it.
She also reported finding that empowerment was a critical element driving nurses to obtain and maintain certification.

**Summary**

Regardless of the industry, it is likely that a certification exists to help distinguish and differentiate the professionals in the workforce from their non-certified colleagues. However, the review of literature exposed that positive perceived benefits of obtaining certification are not conclusive. Results are mixed as to whether or not they have a perceived value to them in terms of finding a job and beginning a career. Nuisances such as education and the perceptions of the hiring personnel serve to further hinder a clear understanding as to the role that certification can play in an individual’s career.

The literature acquired for this review indicated that automotive service management valued certifications and preferred to hire employees who attained them. Literature regarding promotion and career advancement was typically linked to employment opportunities and the skills needed to be a successful job candidate. Nurses overall indicated that while certification does offer opportunities in terms of career advancement, promotion, and modest salary incentives, the main reason nurses certify is to demonstrate competency in a world where patient outcomes are paramount. In other industries, such as automotive, employment and advancement opportunities were the driving factors that influenced the decision to certify or not. Perceptions regarding salary were mixed, but overall the literature reviewed in this chapter indicated that a variety of factors play into the decision to obtain and maintain certification.
CHAPTER 3: METHODOLOGY

Introduction

This chapter describes the methodology used for the collection and analysis of the data in this study. Development of the survey instrument will be described as well as the process for testing the validity and reliability of the survey instrument. It will also identify the population, instrumentation, data collection methods, data analysis, and description of the variables.

This descriptive study used a quantitative research design to investigate automotive professional’s perceptions of ASE certifications. The population consisted primarily of graduates from five university Automotive Technology programs located in Kansas, Illinois, Utah, Colorado, and Michigan. These schools were chosen because they make up the majority of universities that offer a four-year bachelor’s degree in Automotive Technology in the U.S. and have an ASE component to some extent in their degree programs. They were also chosen because they are members of the University Automotive Technology Association (UATA) which meets annually. These annual meetings have fostered good working relationships between the department chairs, faculty and staff which increased support for contacting the alumni from the UATA institutions as well as the amount of data collected.

Population

The population for this survey mainly consisted of graduates with a bachelor’s degree in Automotive Technology from universities in the University Automotive Technology Association (UATA). The five primary universities participating in the study include: Pittsburg State University (PSU) in Pittsburg, KS; Southern Illinois University (SIU) in Carbondale, IL.; Weber State University (WSU) in Ogden, UT.; Ferris State University, Big Rapids, MI.; and Colorado State University, Pueblo, CO. Graduates who have earned a four-year bachelor’s degree in
Automotive Technology from these universities were asked to participate, however, only alumni who are currently employed or have been employed in the automotive industry in occupations other than technicians, have maintained automotive careers for a minimum of 5 years, and were not required to become certified for their position were included in the target population.

The Automotive Technology Department at PSU has long maintained close contact with many graduates through an annual newsletter and other outlets. The department has an extensive database of contact information for over 750 alumni dating back to the early 1990’s so the opportunity to access the population was very good. Additionally, the Alumni and Constituents Relations unit at PSU had contact information for many of the graduates, could separate them based on the degree earned, and offered to send the emails out to prospective participants. This resulted in contact information for an additional 1,112 graduates of PSU. Quantifying the population for the other UATA schools is more difficult. The researcher recommended that the other universities work with their respective alumni units as well. The Chairs of the Automotive Technology Departments at the participating schools all agreed to send an initial email to their alumni as well as follow-up emails every two weeks for a month. However, those emails were dispersed through listserves so actual numbers of alumni contacted by those institutions was not available.

Approval by the University of Arkansas Institutional Review Board (IRB) was requested on June 2, 2014 and granted on June 9, 2014. The initial authorization was for up to 500 respondents. A copy of the approval letter can be found in Appendix A. After the survey was launched, activity was monitored daily. An additional request for up to 750 respondents was submitted when participation reached 450 respondents and was granted on September 3, 2014. A copy of the approval letter can be found in Appendix B. Respondents were informed that
participation in this study was completely voluntary and no risks were associated with it. All information collected will remain anonymous and confidential. Respondents also received a description of the research and why it was conducted. Completion of the survey by the respondents acted as consent for participating in the study. A copy of the implied consent emails can be found in Appendix D – G.

Instrumentation

The survey instrument was disseminated through the online provider Survey Monkey. The survey instrument consisted of 20 questions and the data was analyzed using the Statistical Package for Service Solution software known as SPSS. The survey instrument used in this study was adapted from the 18-item Perceived Value of Certification Tool (PVCT©) developed by the Competency and Credentialing Institute (CCI). The PVCT was developed to determine the perceived value of certification among perioperative nurses; however, since its inception in 2003, the instrument has been administered to over 25,000 subjects including nursing staff, safety professionals, and administrative assistants. Permission to use the modified PVCT for this research was granted on May 6, 2014. A copy of the permission is located in Appendix C.

The questions and statements from the PVCT were modified to fit the automotive profession and to align with the research questions addressed in this study. The survey began with a series of value statements that were developed from themes that emerged in the literature. Demographic information remained very similar to the PVCT with little modifications. Changes were made only when needed to adapt the question or statement to the automotive profession. For example; the PVCT question that reads “What specialty nursing/technical certification credential do you hold?” has been modified to read, “What ASE certification(s) do you currently hold?”
Validity

Historical data regarding validity and reliability of the PVCT cannot be assumed with this instrument because of the modifications made to it, and the fact that it surveyed a different profession. A panel of experts was formed consisting of the Vice President for Test Development at the National Institute for Automotive Service Excellence, two professors in the Technical Education program at Pittsburg State University, and five graduates of the Automotive Technology Department at PSU. Panel members were asked to read through the survey instrument, make sure the wording and the meaning of the questions were easily understood, and to make recommendations to add, delete, or modify items. They were also asked to offer suggestions to improve the instrument and return their survey within 2 weeks of receipt. Suggestions were made by five panel members and changes were made.

Reliability

Although the survey instrument used in this research was adapted from the PVCT which has reported exceptional internal consistency reliability (Cronbach’s alpha) ratings greater than .90 in the past, (Gaberson, Schroeter, Killen, Valentine, 2003; Sechrist & Berlin, 2006), the survey instrument was still tested for reliability since the instrument was modified. After the Panel of Experts tested the survey instrument for validity, a group of twenty PSU automotive technology graduates were asked to pilot the survey. These data were collected and used to calculate a Cronbachs’ Alpha for internal consistency. A reliability of .94 for the 17 statements included in the four research questions was ascertained by the pilot group. This is in agreement with the literature regarding previous reliability findings with the PVCT and is very acceptable for this study.
Data Collection

The method for collecting data for this study was through the use of an online administrator called Survey Monkey. Prospective participants were contacted via a series of emails following the procedure developed by Salant & Dillman (1994) which calls for an initial email sent out one week before the data collection begins. The email was brief but descriptive and explained why they were sought for the study and why their input was so important. It confirmed that respondents would remain anonymous, advised how long it would take to complete the survey, and when the study would conclude. Last, it thanked the respondents in advance for their participation in the survey. A copy of this email can be viewed in Appendix D. A second email that echoed the statements in the initial email was sent one week later and included the link to Survey Monkey. A copy of this email can be viewed in Appendix E. A follow-up email was again sent after one week and it requested a response from those who have not yet participated. A copy of this email can be viewed in Appendix F. The last email requested participation from those who had not yet completed the survey and stated that the close date for the survey was September 1, 2014. A copy of the email can be viewed in Appendix G.

Data Analysis

Data collected during the study was analyzed using the Statistical Package for Service Solution software known as SPSS. The first four questions of the survey were designed to address each specific research area. Respondents were asked to indicate their level of agreement or disagreement using a 5-point Likert scale. These data were treated as interval data and described using means and standard deviation. Demographic information including age, years in the automotive industry, years certified, and gross salary were treated as ratio data and described by the means and standard deviation. Other demographics regarding gender, ethnicity, current
employment questions, education level, ASE certifications, barriers to certification, incentives for certification, and future plans were treated as nominal data and described using frequencies and percentages.

**Description of Variables**

There are several variables that have been identified in this study. They include the degrees earned, certifications earned, career path, area of residence, time in the industry, salary earned, and current position. In terms of the degrees earned, it was anticipated that respondents would hold a bachelor’s degree; however, there are a number of master’s degrees that can complement an automotive degree such as a Master’s in Science or a Master’s in Business Administration (MBA). Graduate degrees often offer higher starting salaries in the automotive industry and improved career advancement. Specific certifications earned or not earned is another variable due to the range of occupations for which certifications are offered. Respondents who have never attained any ASE certification will not be included in the analysis, but will be reported as a percentage of respondents. Career path will also be a variable due to the vast array of automotive careers that exist for graduates of a bachelor’s degree program in Automotive Technology. Alumni fill many positions and occupations in the automotive, diesel and heavy equipment, and agricultural profession such as corporate manufacturing, corporate sales, corporate parts and service representatives, independent service and sales dealers, product support, product engineers, and others. They also work in a number of external automotive related fields such as insurance, manufacturer and aftermarket parts, electric and locomotive industries, construction fleet managers, and other transportation related industries. Area of residence, time in the industry, and current position, are all variables that speak to employment
opportunities and career advancement. Salary is the last identified variable and is expected to have a wide range due to the diverse range of opportunities.
CHAPTER 4: FINDINGS

Introduction

This chapter describes the process of analyzing and reporting the data collected from the survey instrument described in chapter 3. The purpose for conducting this research was to study the perceived benefits of ASE certifications for 4-year automotive technology alumni with careers in the automotive industry in positions other than a service technician. Alumni from automotive technology programs at five universities were surveyed between July 28th and September 4th, 2014 via the online survey administrator Survey Monkey. Other automotive industry professionals, whose contact information was provided by the Department of Automotive Technology at Pittsburg State University, were invited to complete a survey as well.

The survey instrument consisted of 25 questions, with the first four addressing perceptions specific to the four research questions that are associated with employment opportunities, career advancement, higher salary, and self-efficacy. Respondents were asked to indicate their level of agreement or disagreement for each question using a 5-point Likert scale where 5 represented a strong agreement, 4 was an agreement, 3 was no opinion, 2 was a disagreement, and 1 represented a strong disagreement. The responses were treated as interval data and described using means and standard deviation. Interpretation of the data collected for questions 1-4 was based on a range of agreement/disagreement where Strongly Disagree is represented from 1 to 1.49, Disagree is represented from 1.50 to 2.49, No opinion is represented from 2.50 to 3.49, Agree is represented from 3.50 to 4.49 and Strongly Agree is represented from 4.50 to 5. The range of agreement is illustrated in Figure 4.1.
Of the remaining questions, demographic information such as age, years in the automotive industry, years certified, and gross salary were treated as ratio data and described by the means and standard deviation. Other demographics including gender, ethnicity, current employment questions, education level, ASE certifications, barriers to certification, incentives for certification, and future plans were treated as nominal data and described using frequencies and percentages.

A total number of 516 surveys were collected; however, 13 incomplete surveys were removed prior to the analysis. Surveys were considered incomplete if respondents began the survey but failed to complete the majority of it. The remaining surveys were checked by the researcher for duplication by cross-checking the IP address with other personal information to ensure the same respondent was not counted more than once. All matching IP addresses were checked to verify that the respondent was not counted more than once. This was done by cross-matching other demographic information such as age, current position, years certified, etc. No matches were found to indicate that the database contained data from individuals who took the survey more than once. Surveys that were only missing a few variables were left in the databank and filtered with the other surveys. Filters were used to separate individual surveys that did not match the following criteria:
• Limited to alumni of four-year automotive degrees such as Colorado State, Ferris State, Pittsburg State, Southern Illinois, and Weber State universities. (UATA)
• Limited to individuals with a minimum of five years in the automotive industry and currently employed in the automotive or automotive related profession.
• Limited to individuals who are currently or have been ASE certified.
• Limited to individuals who are not required to become certified.

In order to address the limitations and delimitations of the study, questions 8, 10, 11, 12, 15, and 23 were used as filters to include only those respondents who: (1) qualified by graduating from a university automotive technology program, (2) were currently or at one time ASE certified, (3) certification was not mandatory for their position or promotion, (4) they were not service technicians, and (5) they have been working in the automotive industry or automotive related industry for a minimum of five years. Out of the 503 surveys deemed “complete”, 359 were filtered out due to a response rendering them unqualified, or their survey included a missing value for that question indicating no response. The remaining 157 respondents fit the criteria and were included in the Target Population. Their data were analyzed separately from the overall group. As a matter of comparison and to allow a broader perspective, the Target Population analysis was reported along with All Respondents as two separate groups.

Analysis of perceptions

Each of the first four perception questions were reported separately and written verbatim as on the survey instrument followed by the analysis in a table. Each of the four research questions are discussed using this format. The remaining survey information will be reported as a group including education, employment, and ASE certification status.
Research Question One.

In terms of EMPLOYMENT OPPORTUNITIES, one or more ASE certifications…

Question 1 asked respondents about perceptions regarding ASE certifications and “Employment Opportunities”. A note at the beginning of the question clarified that the term “employment opportunities” pertained to an individual getting a job with a new company in the automotive industry. This could include either first time workers entering the automotive profession or seasoned professionals taking a different automotive position with another company. The question contained five statements and respondents were asked to choose the extent to which they agree or disagree with each statement using a 5-point Likert scale. The responses for question one are summarized in Table 4.1.

Table 4.1

<table>
<thead>
<tr>
<th>Statement</th>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n$</td>
<td>$M$</td>
</tr>
<tr>
<td>Indicates attainment of a national standard of knowledge</td>
<td>156</td>
<td>4.19</td>
</tr>
<tr>
<td>Indicates a level of technical competence</td>
<td>156</td>
<td>4.10</td>
</tr>
<tr>
<td>Increases marketability of the individual</td>
<td>157</td>
<td>4.10</td>
</tr>
<tr>
<td>Aids in gaining employment</td>
<td>157</td>
<td>3.90</td>
</tr>
<tr>
<td>Increases marketability of the company</td>
<td>157</td>
<td>3.76</td>
</tr>
</tbody>
</table>

Note: 1 = Strongly Disagree, 2 = Disagree, 3 = No opinion, 4 = Agree, 5 = Strongly Agree

Of the responses collected, both the Target Population and All Respondents indicated a higher range of agreement with the statement, “Indicates attainment of national standard of knowledge” ($M = 4.19, SD = 0.81$ and $M = 4.21, SD = 0.85$, respectively). The statement, “Increased marketability of the company” reported the lowest range of agreement ($M = 3.76, SD = 0.96$ and $M = 3.93, SD = 1.00$, respectively). However, respondents generally agreed with each of the five statements listed in question one. Variability, reported as standard deviation, was low.
indicating the group of respondents was clustered close together in their perceptions regarding employment opportunities.

**Research Question Two.**

*In terms of CAREER ADVANCEMENT, one or more ASE certifications...*

Question 2 asked respondents their perceptions of ASE certifications in terms of “Career Advancement”. This question was directed at perceptions regarding the opportunities that ASE certifications offer to professionals who are trying to better their automotive careers. The question was predicated with a note explaining that the term “Career Advancement” pertained to promotion and the ability to improve one’s career. The question contained four statements and respondents were asked to choose the extent to which they agree or disagree using a 5-point Likert scale. Responses are summarized in Table 4.2.

**Table 4.2**

*Career Advancement*

<table>
<thead>
<tr>
<th>Statement</th>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n$</td>
<td>$M$</td>
</tr>
<tr>
<td>Aids in career advancement</td>
<td>156</td>
<td>4.10</td>
</tr>
<tr>
<td>Indicates professional growth</td>
<td>157</td>
<td>3.87</td>
</tr>
<tr>
<td>Provides evidence of professional commitment</td>
<td>130</td>
<td>3.60</td>
</tr>
<tr>
<td>Promotes recognition from employers</td>
<td>157</td>
<td>3.57</td>
</tr>
</tbody>
</table>

Note: 1 = Strongly Disagree, 2 = Disagree, 3 = No opinion, 4 = Agree, 5 = Strongly Agree

Respondents in the Target Population reported more agreement with the statement, “Aids in career advancement” ($M = 4.10$, $SD = 0.83$) than the others. The overall group of respondents indicated that, “Provides evidence of professional commitment” had the highest range of agreement ($M = 4.11$, $SD = 0.96$). The statement, “Promotes recognition from employers” reported the lowest range of agreement for both the Target Population and All Respondents ($M =$
3.57, $SD = 1.00$ and $M = 3.77, SD = 1.05$, respectively. Respondents generally agreed on the four statements listed in question two. Unlike the other questions, however, this question had a lower response rate by both groups for one of the statements, though they differ in which statement it was. The Target Population had only 130 responses for the statement, “Provides evidence of professional commitment” (down approximately 18%) while All Respondents had only 433 responses for the statement, “Aids in career advancement” (down approximately 15%).

**Research Question Three.**

*In terms of HIGHER SALARY, one or more ASE certifications...*

Question 3 is perhaps the most tangible perceived benefit examined in this study because it deals with salary and income. It asked participants about their perceptions regarding “Higher Salary” and ASE certifications. Salary and income are universally known and understood by human subjects from all walks of life so the researcher did not include an explanatory note to clarify the subject of this question in the survey. The question contained two statements and respondents were asked to choose the extent to which they agree or disagree using a 5-point Likert scale. Responses are summarized in Table 4.3.

**Table 4.3**

<table>
<thead>
<tr>
<th>Higher Salary</th>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statement</td>
<td>$n$</td>
<td>$M$</td>
</tr>
<tr>
<td>Offers one time pay enhancement once earned</td>
<td>156</td>
<td>2.95</td>
</tr>
<tr>
<td>Increases annual salary</td>
<td>149</td>
<td>2.93</td>
</tr>
</tbody>
</table>

Note: 1 = Strongly Disagree, 2 = Disagree, 3 = No opinion, 4 = Agree, 5 = Strongly Agree

The Target Population rated “Increases annual Salary” slightly lower than All Respondents ($M = 2.93, SD = 1.03$ and $M = 3.16, SD = 1.09$, respectively). The statement, “Offers one time pay enhancement once earned” drew similar responses for both the Target
Population and All Respondents ($M = 2.95$, $SD = 1.12$ and $M = 3.14$, $SD = 1.06$, respectively).

Both groups indicated no opinion regarding the matter of ASE certifications and their perceived salary benefits.

**Research Question Four.**

*In terms of SELF-EFFICACY, one or more ASE certifications...*

Unlike the first three research questions that dealt with extrinsic and external motivators such as promotion or salary, question 4 was a series of statements that were intrinsic and internal by nature. This question probed perceptions that certifications were not sought for monetary gain or increased career opportunities. A note at the beginning of the question defined self-efficacy as the extent to which one believes in one’s own ability to complete tasks and reach goals. This question contained six statements and respondents were asked to choose the extent to which they agree or disagree. This question used the same 5-point Likert scale as the first three questions.

Responses are summarized in Table 4.4.

**Table 4.4**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n$</td>
<td>$M$</td>
</tr>
<tr>
<td>Provides personal satisfaction</td>
<td>157</td>
<td>4.08</td>
</tr>
<tr>
<td>Enhances professional credibility</td>
<td>157</td>
<td>4.05</td>
</tr>
<tr>
<td>Provides professional challenge</td>
<td>157</td>
<td>3.96</td>
</tr>
<tr>
<td>Validates specialized knowledge</td>
<td>157</td>
<td>3.90</td>
</tr>
<tr>
<td>Enhances personal confidence in technical abilities</td>
<td>157</td>
<td>3.85</td>
</tr>
<tr>
<td>Promotes recognition from peers</td>
<td>157</td>
<td>3.64</td>
</tr>
</tbody>
</table>

Note: 1 = Strongly Disagree, 2 = Disagree, 3 = No opinion, 4 = Agree, 5 = Strongly Agree

In terms of self-efficacy, both the Target Population and All Respondents indicated the highest agreement with the statements, “Provides personal satisfaction” ($M = 4.08$, $SD = 1.00$
and $M = 4.14$, $SD = 0.90$, respectively) and “Enhances professional credibility” ($M = 4.05$, $SD = 0.87$ and $M = 4.09$, $SD = 0.89$, respectively). The statement, “Promotes recognition from peers” scored lowest with the Target Population ($M = 3.64$, $SD = 1.07$) and the statement, “Enhances personal confidence in technical abilities” scored lowest with All Respondents ($M = 3.90$, $SD = 1.00$). However, respondents generally agreed with the six statements listed under research question four.

Analysis of Demographics

Survey Questions 5-10.

The next 5 questions on the survey instrument asked respondents about demographic items including gender, age, ethnicity, university attended, and highest education level. The responses are summarized in Table 4.5. Note, the asterisks used in Tables 4.5, 4.6 and 4.7 denote that those particular groups were filtered out of the target population due to the limitations or delimitations described in chapter one. Also note, some of the survey questions allowed multiple answers from the same respondent so the percentage will be reported but they will not add up to one hundred percent.

Table 4.5

<table>
<thead>
<tr>
<th>Demographics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>What is your gender?</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Missing</td>
</tr>
</tbody>
</table>

Total 157 100.0 503 100.0
### Table 4.5

**Demographics (continued)**

<table>
<thead>
<tr>
<th>How old were you on your last birthday?</th>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>Less than 30 years old</td>
<td>15</td>
<td>9.7</td>
</tr>
<tr>
<td>30-39 years old</td>
<td>65</td>
<td>41.4</td>
</tr>
<tr>
<td>40-49 years old</td>
<td>38</td>
<td>24.2</td>
</tr>
<tr>
<td>50-59 years old</td>
<td>19</td>
<td>12.1</td>
</tr>
<tr>
<td>60-69 years old</td>
<td>14</td>
<td>8.9</td>
</tr>
<tr>
<td>70-79 years old</td>
<td>4</td>
<td>2.5</td>
</tr>
<tr>
<td>80 years or older</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Please describe your race/ethnicity</th>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>Caucasian/White</td>
<td>150</td>
<td>95.6</td>
</tr>
<tr>
<td>Hawaiian</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Multi-racial</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>African American</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Native American</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Asian</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 4.5

Demographics (continued)

<table>
<thead>
<tr>
<th>From which Automotive Technology program did you graduate?</th>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>Pittsburg State University</td>
<td>141</td>
<td>89.8</td>
</tr>
<tr>
<td>Southern Illinois University</td>
<td>8</td>
<td>5.1</td>
</tr>
<tr>
<td>Weber State University</td>
<td>6</td>
<td>3.8</td>
</tr>
<tr>
<td>Colorado State University</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Ferris State University</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>None of the above</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Missing</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What is the highest level of education you have completed?</th>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>Certificate</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Associate’s Degree</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>114</td>
<td>72.6</td>
</tr>
<tr>
<td>Master’s Degree</td>
<td>31</td>
<td>19.7</td>
</tr>
<tr>
<td>Doctorate</td>
<td>5</td>
<td>3.2</td>
</tr>
<tr>
<td>Missing</td>
<td>7</td>
<td>4.5</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>100.0</td>
</tr>
</tbody>
</table>

(* - Denotes this group was filtered out of the target population.)

Question 5 asked respondents to indicate their gender and both groups were over 90% male. The Target Population reported 153 males (97.5%) and only 3 females (1.9%) while All Respondents reported 472 males (97.32%) and only 13 (2.68%) females.

Question 6 pertained to the respondent’s age. Of all responses collected, 24 were missing values for the question or the answer was not numerical. One respondent input their birthdate so the researcher converted it to a current age and re-entered it. Other respondents answered the question with a description such as “old” or “senior citizen”. The numerical equivalent to those
answers is undeterminable so those data were not analyzed. The remaining 479 responses were analyzed. The largest group of participants for both the Target Population and All Respondents reported to be between the ages of 30-39 ($n = 65, 41.4\%$ and $n = 139, 26.9\%$, respectively). The second largest group for the Target Population was 40-49 years old ($n = 38, 24.2\%$) and for All Respondents it was 50-59 years old ($n = 95, 18.4\%$).

Question 7 asked respondents about their ethnicity. The largest group of participants indicated they were Caucasian/White for both the Target Population as well as All Respondents ($n = 150, 95.5\%$ and $n = 445, 86.2\%$, respectively), followed by Hawaiian for the Target Population ($n = 3, 1.9\%$) and Hispanic/Latino for All Respondents ($n = 10, 1.9\%$). Participants were given the choice of “Other” and 5 gave comments but 4 of them were unusable data including “human” and “no comment”. Only one response concerned ethnicity and that respondent wrote, “Native American, German, Scottish but American by birth.”

Question 8 addressed the participant’s alma mater. The largest group of participants indicated they were alumni of Pittsburg State University for both the Target Population ($n = 141, 89.9\%$) and All Respondents ($n = 321, 62.2\%$). The second highest number of participants were alumni of Southern Illinois University for both the Target Population ($n = 8, 5.1\%$) and All Respondents ($n = 49, 9.5\%$). Of the remaining 119 participants, 100 (19.4\%) indicated they were not graduates of any of the schools listed and were, therefore, filtered out of the Target Population.

Question 9 focused on educational attainment. The Bachelor’s degree was earned more than any other education level for both the Target Population ($n = 114, 72.6\%$) and All Respondents ($n = 330, 64.0\%$) followed by a Master’s degree ($n = 31, 19.7\%$ and $n = 93, 18.0\%$,
respectively). Only 8 respondents (1.6%) indicated they had earned a doctorate and 5 of them (19.7%) are included with the Target Population.

**Analysis of Employment**

**Survey Questions 10-14.**

Questions 10-14 pertain to employment. Respondents were asked about their past and current automotive employment experience, years spent in the automotive industry, whether or not they are a technician, and future career plans. Responses are summarized in Table 4.6.

**Table 4.6**

*Employment*

<table>
<thead>
<tr>
<th></th>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency Percentage</td>
<td>Frequency Percentage</td>
</tr>
<tr>
<td>Are you currently employed (or previously employed) in an automotive or automotive-related position?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>157</td>
<td>421</td>
</tr>
<tr>
<td>No</td>
<td>*</td>
<td>67</td>
</tr>
<tr>
<td>Missing</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>503</td>
</tr>
<tr>
<td>Are you a technician in the automotive, diesel/heavy, or agricultural industry?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>*</td>
<td>92</td>
</tr>
<tr>
<td>No</td>
<td>157</td>
<td>398</td>
</tr>
<tr>
<td>Missing</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>503</td>
</tr>
</tbody>
</table>

(* - Denotes this group was filtered out of the target population.)
Table 4.6

Employment (continued)

<table>
<thead>
<tr>
<th>How many years have you worked in the automotive industry (including diesel/heavy equipment and agricultural machinery)?</th>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4 years</td>
<td>*</td>
<td>33</td>
</tr>
<tr>
<td>5-9 years</td>
<td>24</td>
<td>58</td>
</tr>
<tr>
<td>10-19 years</td>
<td>62</td>
<td>117</td>
</tr>
<tr>
<td>20-29 years</td>
<td>41</td>
<td>83</td>
</tr>
<tr>
<td>30-39 years</td>
<td>18</td>
<td>78</td>
</tr>
<tr>
<td>Over 40 years</td>
<td>12</td>
<td>42</td>
</tr>
<tr>
<td>Missing</td>
<td>0</td>
<td>92</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>503</td>
</tr>
</tbody>
</table>

What best defines your current job? (Note: Respondents were asked to select all that apply for this question so percentages reported will not total 100% because they are a percentage of responses, not a percentage of respondents.)

<table>
<thead>
<tr>
<th>What best defines your current job?</th>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>11</td>
<td>36</td>
</tr>
<tr>
<td>Automotive sales</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Automotive Service</td>
<td>12</td>
<td>65</td>
</tr>
<tr>
<td>Collision Repair</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Corporate Sales</td>
<td>23</td>
<td>39</td>
</tr>
<tr>
<td>Corporate Service</td>
<td>63</td>
<td>108</td>
</tr>
<tr>
<td>Diesel/Heavy Equipment</td>
<td>5</td>
<td>36</td>
</tr>
<tr>
<td>Insurance Industry</td>
<td>8</td>
<td>21</td>
</tr>
<tr>
<td>Other</td>
<td>51</td>
<td>283</td>
</tr>
<tr>
<td>Total responses</td>
<td>176</td>
<td>603</td>
</tr>
</tbody>
</table>

61
Table 4.6

Employment (continued)

<table>
<thead>
<tr>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Which of the following best describes your future career plans?</strong></td>
<td><strong>Frequency</strong></td>
</tr>
<tr>
<td>I have no plans for a career change</td>
<td>78</td>
</tr>
<tr>
<td>I am looking for a different position in the same industry</td>
<td>50</td>
</tr>
<tr>
<td>I am looking for a position in a different industry</td>
<td>5</td>
</tr>
<tr>
<td>I plan to retire</td>
<td>13</td>
</tr>
<tr>
<td>Missing</td>
<td>11</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>157</strong></td>
</tr>
</tbody>
</table>

Question 10 asked respondents if they are currently employed or were previously employed in an automotive or automotive related position. This question was used as a filter to obtain the Target Population. The Target Population consisted of 157 respondents with no missing values while All Respondents consisted of 388 respondents and 15 (3.0%) missing values. Over three-fourths of All Respondents \( n = 421, 83.7\% \) reported being currently employed or previously employed in an automotive or related position, and a much smaller number \( n = 67, 13.3\% \) indicated they were never employed in an automotive or related industry. Respondents who lacked automotive employment experience were not included in the Target Population.

Question 11 asked respondents if they were a technician in the automotive, diesel/heavy, or agricultural industry. This question was used as a filter to obtain the Target Population. The Target Population had 157 responses with no missing values. All Respondents gave 490 responses \( 97.4\% \) with 13 (2.6%) missing a value. Over three-fourths of All Respondents
(n = 398, 79.1%) indicated they were not technicians. Respondents indicating they were technicians were filtered out of the target population.

Question 12 asked respondents to indicate the number of years they have worked in the automotive industry (including diesel/heavy equipment and agricultural machinery). Only respondents with a minimum of 5 years in an automotive or related industry were qualified for the Target Population. This question sought a whole number but some respondents indicated a range (e.g. 10-15 years) or they answered with a number and a “+” sign. These answers were converted to a whole number where possible. The largest group of participants for both the Target Population and All Respondents reported to having worked in the automotive or related industry for 10-19 years (n = 62, 39.5% and n = 117, 23.3%, respectively). The second largest group of the Target Population reported to have 20-29 years of experience (n = 41, 26.1%) and the second largest group for All Respondents was a missing value (n = 92, 18.3%). The Target Population had no missing values for this question, but All Respondents had 92 missing values (18.3%). There is a great deal of variability in the amount of work experience, which ranged from 1-63 years.

Question 13 asked respondents to identify their current employment position. Multiple answers were allowed for this question so percentages reported are a percentage of responses, not a percentage of respondents. The Target Population reported more responses for “Corporate Service” (n = 63, 35.8%) followed by “Other” (n = 51, 29.0%). Combined, nearly one-half of the Target Population responses were “Corporate Service” and “Corporate Sales” (n = 86, 48.0%). For All Respondents the “Other” category made up nearly one-half of all the responses (n = 283, 46.9%) followed by “Corporate Service” (n = 108, 17.9%) and “Automotive Service” (n = 65, 10.8%). The largest group that identified themselves in the “Other” category reported being in
education for both the Target Population \((n = 12, 23.5\%)\), and for All Respondents \((n = 76, 32.5\%)\).

Question 14 inquired about future career plans for the respondents. Just under one-half of the respondents in the Target Population \((n = 78, 49.7\%)\) indicated they have no plans for a career change, followed by respondents looking for a different position within the same industry \((n = 50, 31.8\%)\). The smallest group \((n = 5, 3.2\%)\) indicated they were looking for a position in a different industry. Similarly, All Respondents reported no plans to change careers \((n = 218, 42.2\%)\) or are looking for a different position within the same industry \((116, 22.5\%)\) and the smallest group \((n = 29, 5.7\%)\) indicated they were looking for a position in a different industry. Respondents were allowed to enter their own plans in the “Other” category. The Target Population had 11 comments in “Other” with nearly one-half \((n = 5, 45.4\%)\) reporting they were retired. All Respondents offered 57 comments in “Other” with two-thirds of them \((66.7\%)\) indicating they were retired.

**Analysis of ASE Certification**

**Survey Questions 15-23.**

Questions 15 through 23 pertain to ASE certifications. Respondents were asked to indicate if they have ever been certified, areas in which respondents are currently certified, past certifications, barriers to certification, incentives offered by current employer, and whether ASE certifications are mandatory or voluntary for the current position or for promotion. Responses are summarized in Table 4.7.
Table 4.7

**ASE certifications**

<table>
<thead>
<tr>
<th>Have you ever been ASE certified?</th>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>Yes</td>
<td>157</td>
<td>100.0</td>
</tr>
<tr>
<td>No</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Missing</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>100.0</td>
</tr>
</tbody>
</table>

If you have never been certified, what barriers prevented you from becoming certified?

(Note: Due to a programming error, this question was not accessible to respondents.)

<table>
<thead>
<tr>
<th>How many years ASE certified?</th>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>1-5 years</td>
<td>69</td>
<td>43.9</td>
</tr>
<tr>
<td>6-10 years</td>
<td>38</td>
<td>24.2</td>
</tr>
<tr>
<td>11-15 years</td>
<td>19</td>
<td>12.1</td>
</tr>
<tr>
<td>16-20 years</td>
<td>13</td>
<td>8.3</td>
</tr>
<tr>
<td>21+ years</td>
<td>16</td>
<td>10.2</td>
</tr>
<tr>
<td>Missing</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Are you currently certified?</th>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>Yes</td>
<td>42</td>
<td>26.7</td>
</tr>
<tr>
<td>No</td>
<td>113</td>
<td>72.0</td>
</tr>
<tr>
<td>Missing</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>100.0</td>
</tr>
</tbody>
</table>

(* - Denotes this group was filtered out of the target population.)

Question 15 asked respondents if they have ever been ASE certified. This question was used as a filter to determine the Target Population so there are not any “No” answers nor any missing values for the Target Population. Nearly three-fourths of All Respondents indicated that
they have been certified at some time in their career \( (n = 352, 70.0\%) \), with just over one-quarter reporting they have never been ASE certified \( (n = 136, 27.0\%) \).

Question 16 asked respondents to identify barriers in their lives that have precluded them from attaining ASE certification. However, this question was inadvertently omitted from the survey through a programming error in which the respondents were never given the opportunity to answer the question.

Question 17 asked respondents about the number of years they have been ASE certified. The largest group for the Target Population was “1-5 years” \( (n = 69, 43.9\%) \) followed by “6-10 years” \( (n =38, 24.2\%) \). Over one-quarter of All Respondents had a missing value for this question \( (n = 151, 30.0\%) \), but of the answers given, “1-5 years” received one-quarter \( (n =129, 25.7\%) \) followed by “21+ years” \( (n = 76, 15.1\%) \).

Question 18 asked respondents if they were currently certified. Nearly three-fourths of respondents in the Target Population were not currently certified \( (n =113, 72.0\%) \) with only just over one-quarter indicating they were certified \( (n = 42, 26.7\%) \). All Respondents were split nearly in half \( (n = 171\text{-yes}, 34.0\% \) and \( n = 175\text{-no, 34.8\%}) \) between the yes and no categories.
### Table 4.7

**ASE certifications (continued)**

<table>
<thead>
<tr>
<th></th>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>Engine Repair</td>
<td>31</td>
<td>19.7</td>
</tr>
<tr>
<td>Automatic Transmission/Transaxle</td>
<td>27</td>
<td>17.2</td>
</tr>
<tr>
<td>Manual Drive Train and Axles</td>
<td>27</td>
<td>17.2</td>
</tr>
<tr>
<td>Suspension and Steering</td>
<td>31</td>
<td>19.7</td>
</tr>
<tr>
<td>Brakes</td>
<td>29</td>
<td>18.5</td>
</tr>
<tr>
<td>Electrical/Electronic Systems</td>
<td>29</td>
<td>18.5</td>
</tr>
<tr>
<td>Heating and Air Conditioning</td>
<td>31</td>
<td>19.7</td>
</tr>
<tr>
<td>Engine Performance</td>
<td>30</td>
<td>19.1</td>
</tr>
<tr>
<td>Light Vehicle Diesel Engine</td>
<td>6</td>
<td>3.8</td>
</tr>
<tr>
<td>Painting and Refinishing</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Non-structural Analysis and Damage Repair</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Structural Analysis and Damage Repair</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Mechanical and Electrical Repair</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>Damage Analysis and Estimating</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Automobile Service Consultant</td>
<td>9</td>
<td>5.7</td>
</tr>
<tr>
<td>Advanced Engine</td>
<td>14</td>
<td>8.9</td>
</tr>
<tr>
<td>Truck Electrical Diesel Engine</td>
<td>4</td>
<td>2.5</td>
</tr>
<tr>
<td>Medium-Heavy Truck Dealership Parts Specialist</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Automobile Parts Specialist</td>
<td>9</td>
<td>5.7</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>38</td>
</tr>
</tbody>
</table>

What certifications do you currently hold? (Note: Respondents were asked to select all that apply for this question so percentages reported will not total 100% because percentages reported are a percentage of responses, not a percentage of respondents.)
### Table 4.7

**ASE certifications (continued)**

<table>
<thead>
<tr>
<th>Area</th>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>In what areas have you previously been certified? (Note: Respondents were asked to select all that apply for this question so percentages reported will not total 100% because percentages reported are a percentage of responses, not a percentage of respondents.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine Repair</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>Automatic Transmission/Transaxle</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>Manual Drive Train and Axles</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>Suspension and Steering</td>
<td>7</td>
<td>4.5</td>
</tr>
<tr>
<td>Brakes</td>
<td>7</td>
<td>4.5</td>
</tr>
<tr>
<td>Electrical/Electronic Systems</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Heating and Air Conditioning</td>
<td>4</td>
<td>2.5</td>
</tr>
<tr>
<td>Engine Performance</td>
<td>4</td>
<td>2.5</td>
</tr>
<tr>
<td>Light Vehicle Diesel Engine</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Painting and Refinishing</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>Non-structural Analysis and Damage Repair</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>Structural Analysis and Damage Repair</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>Mechanical and Electrical Components</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Damage Analysis and Estimating</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Automobile Service Consultant</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Advanced Engine</td>
<td>4</td>
<td>2.5</td>
</tr>
<tr>
<td>Truck Electrical Diesel Engine</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Medium-Heavy Truck Dealership Parts Specialist</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Automobile Parts Specialist</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>18</td>
</tr>
</tbody>
</table>
Question 19 asked respondents about the certifications they currently hold. Respondents were asked to select all that apply. Percentages for this question were reported; however, since multiple answers were allowed the percentages will not total 100% and will only indicate the percentage of responses, not the percentage of respondents. For both the Target Population as well as All Respondents, the largest category of responses indicated that they had earned certifications in the 8 automotive areas which are Engine Repair, Automatic Transmissions, Manual Transmissions, Suspension and Steering, Brakes, Electrical, Heat and A/C, and Engine Performance. The list included in the survey did not include every ASE test available so respondents were given the chance to answer under the heading, “Other”. The Target Population reported 4 entries in “Other” including “None at this time since I’m in upper management”, T2 – Diesel Engine, X1 Undercar, and X1 Exhaust system. All Respondents entered 38 comments in “Other” with almost one third of respondents indicating they were “Truck” certified ($n = 12, 31.2\%$) followed by “X1-Undercar Specialist” ($n = 7, 18.4\%$).

Question 20 asked about previous certifications. Respondents were asked to select all that apply. Percentages for this question were reported; however, since multiple answers were allowed the percentages will not total 100% and will only indicate the percentage of responses, not the percentage of respondents. Of the choices given, “Brakes” and “Suspension and Steering” were the top two choices for both the Target Population and All Respondents ($n = 14$ combined and $n = 45$ combined). The least reported certifications for both the Target Population and All Respondents were “Medium-Heavy Truck Dealership Parts Specialist” and “Light Vehicle Diesel Engine” with 0-2 respondents indicating previous certification in these areas.


Table 4.7

**ASE certifications (continued)**

<table>
<thead>
<tr>
<th></th>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>If you were once certified but certification has lapsed, identify why. (Note: Respondents were asked to select all that apply for this question so percentages reported will not total 100% because percentages reported are a percentage of responses, not a percentage of respondents.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My certification(s) have not lapsed</td>
<td>11</td>
<td>7.0</td>
</tr>
<tr>
<td>Lack of employer support</td>
<td>37</td>
<td>23.6</td>
</tr>
<tr>
<td>Lack of reward from employer</td>
<td>47</td>
<td>29.9</td>
</tr>
<tr>
<td>Lack of access to exam site</td>
<td>4</td>
<td>2.5</td>
</tr>
<tr>
<td>Discomfort taking tests</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Not relevant to my career</td>
<td>86</td>
<td>54.8</td>
</tr>
<tr>
<td>Costs</td>
<td>21</td>
<td>13.4</td>
</tr>
<tr>
<td>I did not pass the exam when I took it</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Currently preparing to take the exam</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Not applicable</td>
<td>23</td>
<td>14.6</td>
</tr>
<tr>
<td>No desire or interest in certification</td>
<td>35</td>
<td>22.3</td>
</tr>
<tr>
<td>Total</td>
<td>269</td>
<td>522</td>
</tr>
</tbody>
</table>

What incentives does your employer/institution give to promote/recognize certification? (Note: Respondents were asked to select all that apply for this question so percentages reported will not total 100% because they are a percentage of responses, not a percentage of respondents.)

<table>
<thead>
<tr>
<th></th>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>An increase in salary (or annual bonus)</td>
<td>9</td>
<td>5.7</td>
</tr>
<tr>
<td>A one-time bonus, other than salary</td>
<td>7</td>
<td>4.5</td>
</tr>
<tr>
<td>Retention in the position held at the time</td>
<td>5</td>
<td>3.2</td>
</tr>
<tr>
<td>Promotion to a higher position</td>
<td>4</td>
<td>2.5</td>
</tr>
<tr>
<td>Payment/Reimbursement of exam fees</td>
<td>38</td>
<td>24.2</td>
</tr>
<tr>
<td>Paid time off for passing exam(s)</td>
<td>4</td>
<td>2.5</td>
</tr>
<tr>
<td>Recognition as an expert</td>
<td>20</td>
<td>12.7</td>
</tr>
<tr>
<td>Other public recognition</td>
<td>7</td>
<td>4.5</td>
</tr>
<tr>
<td>No incentives</td>
<td>105</td>
<td>66.9</td>
</tr>
</tbody>
</table>
Table 4.7

ASE certifications (continued)

<table>
<thead>
<tr>
<th>Description</th>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>Certification is mandatory for my position</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Certification is voluntary for my position</td>
<td>68</td>
<td>43.3</td>
</tr>
<tr>
<td>Certification is mandatory for promotion</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Certification is voluntary for promotion</td>
<td>13</td>
<td>8.3</td>
</tr>
<tr>
<td>None of the above</td>
<td>85</td>
<td>54.1</td>
</tr>
</tbody>
</table>

Current income per year?

<table>
<thead>
<tr>
<th>Income Range</th>
<th>Target Population</th>
<th>All Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>Less than $29,999</td>
<td>5</td>
<td>3.2</td>
</tr>
<tr>
<td>$30,000 – 39,999</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>$40,000 – 49,999</td>
<td>8</td>
<td>5.1</td>
</tr>
<tr>
<td>$50,000 – 59,999</td>
<td>6</td>
<td>3.8</td>
</tr>
<tr>
<td>$60,000 – 69,999</td>
<td>19</td>
<td>12.1</td>
</tr>
<tr>
<td>$70,000 – 79,999</td>
<td>10</td>
<td>6.4</td>
</tr>
<tr>
<td>$80,000 – 89,999</td>
<td>23</td>
<td>14.6</td>
</tr>
<tr>
<td>$90,000 – 99,999</td>
<td>17</td>
<td>10.8</td>
</tr>
<tr>
<td>$100,000 – 109,999</td>
<td>18</td>
<td>11.5</td>
</tr>
<tr>
<td>$110,000 – 119,999</td>
<td>8</td>
<td>5.1</td>
</tr>
<tr>
<td>$120,000 or more</td>
<td>35</td>
<td>22.3</td>
</tr>
<tr>
<td>Missing value</td>
<td>5</td>
<td>3.2</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>100.0</td>
</tr>
<tr>
<td>Additional comments</td>
<td>49</td>
<td>131</td>
</tr>
</tbody>
</table>

(* - Denotes this group was filtered out of the target population.)

Question 21 asked respondents to indicate why they have allowed their certifications to expire. Respondents were asked to select all that apply. Percentages for this question were
reported; however, since multiple answers were allowed the percentages will not total 100% and will only indicate the percentage of responses, not the percentage of respondents. Respondents in both the Target Population and All Respondents indicated that the certifications were “Not relevant to my career” \( (n = 86, 54.8\% \text{ and } n = 136, 42.2\%, \text{ respectively}) \) or they perceived a “Lack of reward from their employer” \( (n = 47, 29.9\% \text{ and } n = 80, 24.8\%, \text{ respectively}) \).

Question 22 inquired as to the incentives employers offered to become certified and/or maintain certification. Respondents were asked to select all that apply. Percentages for this question were reported; however, since multiple answers were allowed the percentages will not total 100% and will only indicate the percentage of responses, not the percentage of respondents. Both the Target Population and All Respondents responded similarly that no incentives were offered \( (n = 105, 66.9\% \text{ and } n = 282, 56.1\%, \text{ respectively}) \). Payment/reimbursement of fees was the second most indicated response for both groups \( (n = 38, 24.2\% \text{ and } n = 118, 23.5\%, \text{ respectively}) \). Recognition as an expert was the third highest response indicated \( (n = 20, 12.7\% \text{ and } n = 94, 18.7\%, \text{ respectively}) \).

Question 23 asked respondents to describe the relationship of certification to their employer. This question was used as a filter to remove respondents who were required to become certified in order to either attain their current position, or for promotion in their current position. Respondents were asked to select all that apply. Percentages for this question were reported, however, since multiple answers were allowed the percentages will not total 100% and only indicate the percentage of responses, not the percentage of respondents. The highest number of respondents answered “None of the above” for both the Target Population and All Respondents \( (n = 85, 54.1\% \text{ and } n = 235, 46.7\%, \text{ respectively}) \) followed by “Certification is voluntary for my position” \( (n = 68, 43.3\% \text{ and } n = 138, 27.4\%, \text{ respectively}) \).
Question 24 asked respondents to indicate their annual salary range. The reporting of income for the Target Population reported an income per year of $120,000 or more ($n = 35, 22.3\%) followed by $80-89,000 ($n = 23, 14.6\%) and $60-69,000 ($n = 19, 12.1\%). This was very different for All Respondents who reported the largest group was earning between $50-59,000 ($n = 71, 14.1\%) followed by $60-69,000 ($n = 66, 13.1\%) and $120,000 or more ($n = 62, 12.3\%).

Summary

This chapter described the data collected regarding perceived benefits of ASE certifications and the analysis used to report the findings. A Target Population was determined using several of the questions as filters and was reported alongside analysis and findings for All Respondents. The chapter summarized the first four perception questions separately and reported them with the means ($M$) and standard deviation ($SD$). Analysis of the questions regarding Demographics (questions 5-9) were grouped together and reported, as were Employment (questions 10-14), and Certifications (questions 15-23). Each was reported using frequency and percentages. Trends, commonalities, and differences were highlighted in the narrative and further described using tables.
CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

The impetus for this research was to assess the perceived benefits of earning ASE certifications for graduates of four-year Automotive Technology programs. This quantitative, descriptive study identified and analyzed perceptions of alumni working in an automotive or related occupation. The goal was to identify enhancements that ASE certifications offer throughout their professional careers in terms of getting a job, advancing in a career, earning a higher salary, and fulfilling an intrinsic need. Survey questions filtered the respondents into a Target Population that met the criteria described above. This chapter will report the perceptions of the Target Population and All Respondents for the first four perception questions and the demographic, work experience, and ASE certification status questions.

An electronic survey instrument was administered through the online provider Survey Monkey to collect the data. Statistical analyses were performed using the statistical SPSS software. In addition to the research questions listed below, respondents were asked questions regarding demographics, education, and their ASE history in terms of current and previous certifications and barriers to certification that exist. Respondents were asked to identify the extent to which they agreed, disagreed with, or had no opinion regarding statements relating to the following research questions.

Research question 1: What are the perceived benefits of ASE certifications for graduates of four-year Automotive Technology programs in terms of Employment Opportunities?

Research question 2: What are the perceived benefits of ASE certifications for graduates of four-year Automotive Technology programs in terms of Career Advancement?

Research question 3: What are the perceived benefits of ASE certifications for graduates of four-year Automotive Technology programs in terms of Salary Potential?
Research question 4: What are the perceived benefits of ASE certifications for graduates of four-year Automotive Technology programs in terms of Self-Efficacy?

Respondents for the survey were identified and contacted by the Office of Alumni and Constituent Relations at Pittsburg State University, and from the Automotive Technology Departments at Colorado State University, Southern Illinois University, and Weber State University. Due to privacy laws and other factors beyond the control of the researcher, a total number of individuals contacted for this study are unknown. A total of 516 surveys were collected, however; 13 surveys were incomplete and removed leaving 503 surveys that were analyzed and reported. The survey instrument was designed following the Perceived Value of Certification (PVCT©) developed by the Competency and Credentialing Institute (CCI). Permission to modify and use the PVCT for this research was petitioned for and granted on May 6, 2014 (Appendix C). It consisted of 24 questions, with the first four addressing the four research areas. The remaining questions sought data about education levels, prior work history, and current and previous certifications earned.

Conclusions

Research question 1: In terms of the perceived benefits of ASE certifications and employment opportunities, the Target Population and All Respondents agreed with the statements given. The standard deviations for all statements in this research area were less than 1.00, indicating that the variability of the group was very close so most respondents felt similarly. The Target Population and All Respondents agreed that certification indicates a technical competence and attainment of a national standard of knowledge. This confirms prior research regarding attainment of technical knowledge (Banz, 2004; Cary, 2001; Church, 2007; Kaplow, 2007; Williams and Counts, 2013; Yemaneab, 1997).
The majority of the Target Population and All Respondents agreed that certification aids in gaining employment. This agreement supports many studies that suggest certification helps candidates obtain employment, particularly in the automotive profession (Bartlett, 2004; Church, 2007; Karbon, 1995; Yemaneab, 1997). However, other studies from the automotive, drafting, Information Technology (IT), and nursing professions found little or no evidence that certification increases the chances of employment opportunities (Banz, 2004; Bekemeier, 2009; Cary, 2001; Elmore, 2013; Trent, 2011). The Target Population and All Respondents indicated agreement that certification increases the marketability of the recipient and the employer. Increased marketability of the certified professional and their employer was a common theme that ran throughout much of the literature (Antoniewicz, 2006; Chasse, 2014; Chichester, 2005; Elmore, 2013; Hutchison and Fleischman, 2003; Naveda and Seidman, 2005; Phillips, 2004; Vandalsem, 2010).

Research question 2: In terms of the perceived benefits of ASE certifications and career advancement, the Target Population generally indicated agreement with the statements that ASE certifications aid in career advancement and professional growth, indicate professional commitment, and they promote recognition from colleagues and employers. The majority of respondents also agreed with these statements. Standard deviation ranged from .81 to 1.00 which indicated little variance in respondents’ perceptions. The findings from this research confirm prior studies which suggest that generally industry professionals view certification as a way to increase the chances of career advancement and promotion (Chichester, 2005; Foy, 2000; Hutchison and Fleischman, 2003; Lester, Fertig, and Dwyer, 2011; Nance, 1999; Prier, McCue, and Behara, 2010; Shirey, 2005). Literature regarding career advancement within the automotive industry in terms of career advancement was limited. Research from other fields did not always
find certification to be a means for improving career advancement. For example, Roberts (2006), who studied professionals with careers in research administration, found low agreement that certification enhances career opportunities. Ferndon (2009) reported similar results in a study of oncology nurses where just 31% felt it aided in promotion.

Research question 3: In terms of the perceived benefits of ASE certifications and higher salary, the Target Population and All Respondents confirmed literature that suggests that an increase in salary does not result from gaining certification. Standard deviation again stayed very close to 1.00 so variability in the respondents was low. The Target Population indicated less agreement to the question, exemplified by the lower mean scores compared to the other three questions. The analysis revealed that the majority of respondents indicated no opinion with statements provided in this area. Since salary drew the lowest mean of the four research areas then it can be interpreted that respondents tended to not have experienced a higher salary in their careers as a result of being ASE certified.

Over two-thirds of the Target Population (66.9%) and over one-half of All Respondents (56.1%) reported no incentives for certification by their employer including no one-time bonus. This aligns with the research of Cary (2001) and Byrne, Valentine, and Carter (2004), who used the Perceived Value of Certification Tool (PVCT©) to survey nurses and administrators. They also found that less than one-third of respondents agreed that certification increases salary or offers some type of salary benefit. Similar findings were reported by Ferndon (2009), Roberts (2006), Wierschem, Zhang, and Johnston (2010), and Woods (2002). However, this contradicts the findings of Kolo (2006) who studied professionals in the automotive service industry, and Mee (2006) who studied nursing. They reported significant increases in salary for certified
individuals. It could be interpreted that respondents felt no direct link to pay increases once certified.

Research question 4: In terms of the perceived benefits of ASE certifications and self-efficacy, respondents indicated agreement with statements that certification provides personal satisfaction and confidence in technical abilities, professional challenge and credibility, and validates specialized knowledge. Standard deviation for all statements remained tight around 1.00 indicating little variance in responses. The review of literature suggests there is a strong perception of benefits in terms of self-efficacy (Byrne, Valentine, and Carter, 2004; Cary, 2001; Gorbell, 1970; Kaplow, 2011; Nance, 1999; Roberts, 2006; Wade, 2009; Williams, McMahon, Hasenauer, Pennoyer, and Wilson, 1995; Haskins, Hnatiuk, and Yoder, 2011; Yemaneab, 1997).

Conclusions from the first four questions indicate that, at the very least, there is significant evidence that certification can make the individual feel more personally confident and professionally competent which speaks to the theoretical framework that informed this research. London’s (1983) theory of career motivation recognized and identified “multidimensional constructs” including career identity and career insight. Certification relates to the career automotive professional’s experience once a career identity occurs. Career insight is the realization that certification can provide perceived benefits that can further a professionals’ occupation. The findings in this study also support the research of Walker (2002). Walker theorized that motivation at work is driven both internally and externally and the findings of this research aligns with that. Separately, extrinsic and intrinsic values are often insufficient for manifesting professional growth and career resilience within an individual. This research indicates that a combination of the two is what motivates an individual to seek certification.
Demographic and employment questions 5-14: Generally, respondents identified themselves as a Caucasian (89%) male (94%) between the ages of 30-49 (combined 43%) who graduated from Pittsburg State University (64%) with a bachelor’s degree in Automotive Technology (66%). Most respondents identified themselves as currently working in the automotive industry or having worked in the automotive industry (84%) for 10-19 years (23%) but not as a technician (79%). When asked to describe their current job, the largest group identified themselves as “Other” in which most wrote, “Retired”, followed by some association to “diesel/heavy equipment”. Corporate Service and Automotive Service made up nearly 30% of all respondents. The largest group of respondents indicated they had no plans to change jobs (42%) followed by respondents looking for a different job in the same industry (23%).

ASE certification questions 15-23: Nearly three-fourths (70%) of All Respondents indicated they have been ASE certified, with the greatest number having been certified from 1-10 years (38%). Respondents in the Target Population were only selected from ASE certified or previously certified respondents so 100% were certified. Interestingly, 72% of the Target Population reported not being currently certified. However, All Respondents reported were split between currently certified and not currently certified (34% vs. 35%) leading the researcher to conclude that the Target Population did not perceive a benefit of remaining certified as their careers progressed as much as the overall group of respondents. Both the Target Population as well as All Respondents reported higher numbers of certifications in the 8 automotive service certification areas (engine repair, automatic transmission, manual drive trains, suspension and steering, brakes, electrical/electronics, heating and air conditioning, and engine performance).

When asked to identify why certifications had been allowed to lapse, the highest number of responses for the Target Population and All Respondents indicated that it was not relevant to
their career (55% and 42%, respectively), followed by a lack of reward from their employer (30% and 25%, respectively). Similar results were reported by Cary (2001) and Trent (2011) where a lack of employer support was found regarding incentives offered by their employer for certification. Both the Target Population and All Respondents indicated that their employer offered no incentives (67% and 56%, respectively). This was also revealed in the literature of Cary (2001) and Trent (2011). The researcher feels that employers are missing an opportunity for growth of their company in this area. The Target Population contained only respondents who were not required to become certified as that was one of the filters. However, certification was reported as required by 22% of All Respondents for their current position. The final survey question asked respondents to report their current annual income. The Target Population reported the highest number of responses for $120,000 or more (22%) followed by $80-90,000 (15%). The highest number of responses for All Respondents reported earning between $50-59,000 (14%) followed by $60-69,000 (13%). This supports the notion that there are good, high-paying careers in the automotive manufacturing sector.

**Recommendations**

This research revealed that the perception of benefits for earning certification in terms of employment opportunities, career advancement, and self-efficacy exist. Generally, the findings of this study confirmed the literature reviewed. And while there was less evidence that a perceived salary benefit exists, both in terms of the findings of this research and within the literature, professionals from a variety of industries are recommended to attain certification, particularly in the automotive industry. However, there is a need for future research in the area of certification (DeSilets, 2007; Lester, Fertig, Dwyer, 2011), particularly in the automotive
industry, to better understand the phenomenon. Although there are many variables that could be researched, some suggestions for further research include:

- Research into motivators associated with self-efficacy. The literature reviewed in the automotive industry mostly viewed certification in terms of employment, promotion, and higher salary. Conversely, literature in the nursing profession, which focuses on patient outcomes, centered on self-efficacy by exploring technical competence, confidence, and personal satisfaction. Intrinsic motivators can be a powerful justification for certification in nursing, a female-dominated profession. However, little research on intrinsic motivation and certification exists for the male-dominated automotive industry.

- Identifying and understanding barriers to certification is another possible avenue for future research. Clearly, there are identified benefits to earning certification across a wide spectrum of industries, including the automotive industry. However, barriers still exist that prevent individuals from certifying. To the extent that non-certified individuals want to become certified but cannot due to conditions outside of their control should be examined.

- Research into sub-groups of the vast automotive industry could shed light on perceptions of each occupation. The automotive manufacturing and service sector is a mammoth industry and difficult to study as one group, and difficult to interpret and apply the results. Research into the sub-groups such as collision and diesel/heavy equipment should be conducted as stand-alone professions under the umbrella of transportation.
• Research regarding the perceived benefits of certification from the employers’ perspective may help shed light on additional career opportunities for professionals as well as other benefits to the employer.

Summary

This quantitative, descriptive study was designed to identify perceptions regarding the benefits of earning ASE certification for automotive professionals outside of the occupation of technician. The problem statement delineated the lack of research in the area of ASE certification, the purpose statement generalized the areas for study, and the research questions focused the research into specifics. A literature review was conducted and revealed common themes and issues across a myriad of professions which informed the constructs of the survey instrument focusing on employment opportunities, career advancement, higher salary, and self-efficacy. The survey instrument was administered from July 18, 2014 through September 1, 2014 primarily to graduates of automotive technology programs at Colorado State University, Ferris State University, Pittsburg State University, Southern Illinois University, and Weber State University.

Generally, ASE certifications are perceived to be beneficial to automotive professionals, particularly technicians in the automotive service sector. They are also perceived to be beneficial to automotive technicians and non-technicians. They are perceived to benefit the recipient in terms of getting a job, getting promoted, and feeling confident about their knowledge and good about themselves professionally and personally. However, they are generally not perceived as a way to improve salary unless the recipient is a technician. Many comments supported ASE certifications for corporate automotive professionals in specific roles such as training and technical support. Yet, while the perception of a benefit does exist, nearly three-fourths of the
Target Population studied were not currently certified. Categories of employment opportunities, career advancement, and higher salary had mostly mixed reviews in the literature, but self-efficacy had little detractors. Intrinsic values placed on certification seem to be one of the driving forces to certification. Self-efficacy and self-actualization are often predictors of life-long learning because they can provide a foundation from which an individual can continually learn and grow throughout their career.
References


doi: 10.1097/01.NURSE.0000408200.23958.f6


Appendix A

IRB approval letter

June 9, 2014

MEMORANDUM

TO: John Thompson
    Kit Kacirek

FROM: Ro Windwalker
    IRB Coordinator

RE: New Protocol Approval

IRB Protocol #: 14-05-764
Protocol Title: The Perceived Benefits of Automotive Service Excellence (ASE) Certifications for Graduates of Four-Year Automotive Technology Programs

Review Type: ☒ EXEMPT ☐ EXPEDITED ☐ FULL IRB

Approved Project Period: Start Date: 06/09/2014 Expiration Date: 06/08/2015

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 (http://vpred.uark.edu/210.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 500 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 210 Administration Building, 5-2208, orirb@uark.edu.
Appendix B

IRB approval letter

September 3, 2014

MEMORANDUM

TO: John Thompson
    Kit Kacirek

FROM: Ro Windwalker
    IRB Coordinator

RE: PROJECT MODIFICATION

IRB Protocol #: 14-05-764

Protocol Title: The Perceived Benefits of Automotive Service Excellence (ASE) Certifications for Graduates of Four-Year Automotive Technology Programs

Review Type: ☑ EXEMPT ☐ EXPEDITED ☐ FULL IRB

Approved Project Period: Start Date: 09/03/2014 Expiration Date: 06/08/2015

Your request to modify the referenced protocol has been approved by the IRB. This protocol is currently approved for 750 total participants. If you wish to make any further 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.

Please note that this approval does not extend the Approved Project Period. Should you wish to extend your project beyond the current expiration date, you must submit a request for continuation using the UAF IRB form “Continuing Review for IRB Approved Projects.” The request should be sent to the IRB Coordinator, 210 Administration.

For protocols requiring FULL IRB review, please submit your request at least one month prior to the current expiration date. (High-risk protocols may require even more time for approval.) For protocols requiring an EXPEDITED or EXEMPT review, submit your request at least two weeks prior to the current expiration date. Failure to obtain approval for a continuation on or prior to the currently approved expiration date will result in termination of the protocol and you will be required to submit a new protocol to the IRB before continuing the project. Data collected past the protocol expiration date may need to be eliminated from the dataset should you wish to publish. Only data collected under a currently approved protocol can be certified by the IRB for any purpose.

If you have questions or need any assistance from the IRB, please contact me at 210 Administration Building, 5-2208, or irb@uark.edu.
Appendix C

Permission to use the PVCT

May 6, 2014

John,

Thank you for submitting the materials required to receive permission to use the CCI Perceived Value of Certification Tool (PVCT©). We reviewed the information and are pleased to grant you permission to use the instrument.

As a reminder, this permission is granted with following conditions:

- If you modify the PVCT instrument in any way you will not use validity and reliability results from previous publications or studies which have used the PVCT.
- You will include the necessary copyright statement at the bottom of all photocopies.
- You will use the instrument only for the purposes of the research project you originally submitted.
- You will provide CCI with any validity and reliability data you derive from the PVCT© based on your sample.
- If the work is published you will provide a copy of the article to CCI.

Thank you for your interest in the PVCT©, and best of luck with your work. We look forward to hearing from you.

Sincerely,

James X Stobinski
PhD RN CNOR
Director of Credentialing and Education
Appendix D

Initial email sent to prospective participants

Hi,

My name is John Thompson and I teach in the Automotive Technology Department at Pittsburg State University in Pittsburg, Kansas. I am conducting research regarding the perceived benefits of Automotive Service Excellence (ASE) certifications and have sought your opinion because you graduated with a degree in automotive technology. Your input is very valuable to us.

In about a week you will be emailed a link to the survey via Survey Monkey. The survey consists of 22 questions that should take you less than 3 minutes to complete. The results will be reported in a dissertation as part of the requirements for a Doctorate of Education at the University of Arkansas and shared with your Alma Mater.

You are not required to participate in this study. Your participation is voluntary and refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. All information will be kept confidential to the extent allowed by applicable State and Federal law. Completion of the survey will act as consent for participating in the study.

If you have any questions please contact me or the Compliance Officer at the information listed below. Thank-you.

John Thompson

Compliance Officer:
Iroshi (Ro) Windwalker
irb@uark.edu
Fayetteville, AR. 72701
210 Administration Building
479-575-2208
Hi,

My name is John Thompson from the Automotive Technology Department at Pittsburg State University in Pittsburg, Kansas. I sent you an email about a week ago regarding the research I am conducting pertaining to the perceived benefits of ASE certifications. We value your opinion and would like for you to participate in the survey.

Please click on the link below to complete a survey.

https://www.surveymonkey.com/s/PC7DG7M

The survey consists of 22 questions that should take you less than 3 minutes to complete. Please complete the survey as soon as you can. The survey will end on August 17, 2014.

You are not required to participate in this study. Your participation is voluntary and refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. All information will be kept confidential to the extent allowed by applicable State and Federal law. Completion of the survey will act as consent for participating in the study.

If you have any questions please contact me at the information listed below. Thank-you!

John Thompson
Appendix F

Third email sent to prospective participants

Hi,

Your opinion is very important to us. If you have already completed the survey regarding the perceived benefits of ASE certifications, thank-you! If not, please do so as soon as you can.

Please click on the link below to complete a survey.

https://www.surveymonkey.com/s/PC7DG7M

This is a short survey that should take you less than 3 minutes to complete. The deadline to complete the survey is August 17, 2014.

If you have any questions please contact me at the information listed below. Thank-you.

John Thompson
Appendix G

Final email sent to prospective participants

Hi,

If you have already completed the survey regarding the perceived benefits of ASE certifications, THANK-YOU! Your participation is greatly appreciated. If you have not completed the survey, please do so this week. The **deadline to complete the survey is this Sunday, August 31, 2014**.

Please click on the link below to complete a survey.

https://www.surveymonkey.com/s/PC7DG7M

This is a very short survey that should take you less than 3 minutes to complete.

Thanks again to all of you who have already participated in the survey. This data will benefit the Automotive Technology Department, our students, and our industry.

John Thompson
Appendix H

Survey instrument

The Perceived Value of Automotive Service Excellence (ASE) Certifications

Please indicate the extent to which you agree, disagree, or have no opinion regarding the following statements.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>No Opinion</th>
<th>Agree</th>
<th>No Opinion</th>
<th>Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. “In terms of Employment opportunities, one or more ASE certifications...”</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicates level of technical competence</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Indicates attainment of a national standard of knowledge</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Aids in gaining employment</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Increases marketability of the individual</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Increases marketability of the company</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2. “In terms of Career Advancement, one or more ASE certifications...”</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aids in career advancement</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Provides evidence of professional commitment</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Promotes recognition from employers</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Indicates professional growth</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3. “In terms of Higher Salary, one or more ASE certifications...”</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increases salary</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Offers one time pay enhancement once earned</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4. “In terms of Self-efficacy, one or more ASE certifications...”</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Validates specialized knowledge</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Enhances professional credibility</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Promotes recognition from peers</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Enhances personal confidence in technical abilities</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Provides personal satisfaction</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Provides professional challenge</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
5. What is your gender?
   a. Female
   b. Male

6. How old were you on your last birthday? ____________________

7. Please describe your race/ethnicity.
   a. Asian
   b. African American/Black
   c. Caucasian/White
   d. Hispanic/Latino
   e. Multi-racial
   f. Native American
   g. Hawaiian
   h. Other. Please specify: ____________________

8. From which automotive technology program did you graduate?
   a. Colorado State University
   b. Ferris State University
   c. Pittsburg State University
   d. Southern Illinois University
   e. Weber State University
   f. None of the above

9. What is the highest level of education you have completed?
   a. Certificate
   b. Associates Degree
   c. Bachelor’s Degree
   d. Master’s Degree
   e. Doctorate Degree

10. Are you currently employed (or previously employed) in an automotive or automotive related field (including diesel/heavy equipment and agricultural machinery)?
    a. Yes
    b. No

11. Are you a technician in the automotive, diesel/heavy, or agricultural industry?
    a. Yes
    b. No

12. How many years have you worked in the automotive industry (including diesel/heavy equipment and agricultural machinery)? ____________________
13. What best defines your current job?
   a. Agriculture
   b. Automotive Sales (dealership or independent dealer)
   c. Automotive Service (dealership or independent repair facility)
   d. Collision Repair
   e. Corporate Sales (including automotive, diesel/heavy, or other corporate job)
   f. Corporate Service (including automotive, diesel/heavy, or other corporate job)
   g. Diesel/Heavy (dealership or independent sales and service)
   h. Insurance Industry (including agent, sales, claims, or other insurance positions)
   i. Other. Please specify: ______________________________

14. Which of the following best describes your future career plans?
   a. I have no plans to make a career or position change
   b. I am looking for a different position within the same industry I currently work in
   c. I am looking for a position outside of the industry I currently work in
   d. I plan to retire
   e. Other. Please specify: ______________________________

15. Have you ever been ASE certified?
   a. Yes
   b. No.

16. If you have never been certified, what barriers prevented you from becoming certified? (Select all that apply).
   a. Lack of employer support
   b. Lack of reward from employer
   c. Lack of access to preparation material
   d. Lack of access to exam site
   e. Discomfort with test-taking process
   f. Not relevant to my career
   g. Costs
   h. I did not pass the exam when I took it
   i. Currently preparing to take an exam
   j. Not applicable
   k. No desire or interest in certification

17. How many years have you been ASE certified?
   a. 1-5
   b. 6-10
   c. 11-15
   d. 16-20
   e. 21+

18. Are you currently ASE certified?
   a. Yes
   b. No
19. What ASE certification(s) do you currently hold? (Select all that apply.)
   a. A1 – Engine Repair
   b. A2 – Automatic Transmission/Transaxle
   c. A3 – Manual Drive Train & Axles
   d. A4 – Suspension & Steering
   e. A5 – Brakes
   f. A6 – Electrical/Electronic Systems
   g. A7 – Heating & Air Conditioning
   h. A8 – Engine Performance
   i. A9 – Light Vehicle Diesel Engines
   j. B2 – Painting & Refinishing
   k. B3 – Non-Structural Analysis & Damage Repair
   l. B4 – Structural Analysis & Damage Repair
   m. B5 – Mechanical & Electrical Components (50)
   n. B6 – Damage Analysis and Estimating
   o. C1 – Automobile Service Consultant
   p. L1 – Advanced Engine
   q. L2 – Truck Electrical Diesel Engine
   r. P1 – Medium-Heavy Truck Dealership Parts Specialist
   s. P2 – Automobile Parts Specialist
   t. Other. Please specify: ______________________________

20. What areas have you been previously been certified, but are no longer? (Select all that apply.)
   a. A1 – Engine Repair
   b. A2 – Automatic Transmission/Transaxle
   c. A3 – Manual Drive Train & Axles
   d. A4 – Suspension & Steering
   e. A5 – Brakes
   f. A6 – Electrical/Electronic Systems
   g. A7 – Heating & Air Conditioning
   h. A8 – Engine Performance
   i. A9 – Light Vehicle Diesel Engines
   j. B2 – Painting & Refinishing
   k. B3 – Non-Structural Analysis & Damage Repair
   l. B4 – Structural Analysis & Damage Repair
   m. B5 – Mechanical & Electrical Components (50)
   n. B6 – Damage Analysis and Estimating
   o. C1 – Automobile Service Consultant
   p. L1 – Advanced Engine
   q. L2 – Truck Electrical Diesel Engine
   r. P1 – Medium-Heavy Truck Dealership Parts Specialist
   s. P2 – Automobile Parts Specialist
   t. Other. Please specify: ______________________________
21. If you were once certified in an area but your certification has lapsed, please identify why. (Select all that apply.)
   a. Lack of employer support
   b. Lack of employer reward
   c. Lack of access to preparation materials
   d. Lack of access to exam site
   e. Discomfort with test-taking process
   f. Not relevant to my career
   g. Costs
   h. I did not pass the exam when I took it
   i. Currently preparing to take an exam
   j. Not applicable
   k. No desire/interest in certification

22. What incentives does your employer/institution give to promote/recognize certification? Please select all that apply.
   a. An increase in salary (or annual bonus)
   b. A one-time bonus, other than salary
   c. Retention in the position I held at the time
   d. Promotion to a higher level position
   e. Payment/Reimbursement of exam fees
   f. Paid time off for passing exam
   g. Recognition as an expert
   h. Other public recognition
   i. No incentives

23. Which of the following statements describe the relationship of certification to your employment? (Please select one.)
   j. Certification is mandatory for my position
   k. Certification is voluntary for my position
   l. Certification is mandatory for promotion
   m. Certification is voluntary for promotion
   n. None of the above
24. What is your approximate gross salary?
   o. Less than 29,999
   p. 30,000 – 39,000
   q. 40,000 - 49,999
   r. 50,000 – 59,999
   s. 60,000 – 69,999
   t. 70,000 – 79,999
   u. 80,000 – 89,999
   v. 90,000 – 99,999
   w. 100,000 – 109,999
   x. 110,000 – 119,999
   y. 120,000+

25. Additional comment: ________________________________________________________________