

JOB SATISFACTION OF AUTOMOTIVE TECHNICIANS: A COMPARISON OF
GRADUATES FROM GENERAL PROGRAMS TO MANUFACTURER-SPONSORED
PROGRAMS

by

Bobby Gene Rowe

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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ABSTRACT

The purpose of this casual-comparative study was to compare the job satisfaction levels of graduates from postsecondary two-year automotive programs that included specialized manufacturer-sponsored training to those graduates of postsecondary two-year general automotive programs. The study used the results of surveys answered by graduates working in dealerships within a 50-mile radius of postsecondary schools that have four or more Mopar CAP, Honda PACT, GM ASEP, Ford Asset, or Toyota T-TEN programs. Job satisfaction was measured using Spector's Job Satisfaction Survey and consisted of pay, fringe benefits, assigned job tasks, and total job satisfaction. An independent *t*-test measured the differences in the means of the individual facets of the job satisfaction survey. This study did not identify any statistical differences in the means between the two groups of graduates based on pay, fringe benefits, assigned job tasks, and total job satisfaction. The results of this study add to the sparse literature regarding the job satisfaction of automotive technicians and provide information to automotive schools and human resource departments that collaborate with automobile manufacturers and automotive training programs.

Keywords: job satisfaction, automotive technicians, Mopar CAP, Honda PACT, GM ASEP, Ford ASSET, Toyota T-TEN

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List of Abbreviations

Automotive Service Excellence (ASE)

Automotive Student Service Educational Training Program (ASSET)

Career and Technical (CTE)

Clean Air Act of 1970 (CAA)

Corporate Average Fuel Economy (CAFE)

Environmental Protection Agency (EPA)

Fiat Chrysler Automobiles US (FCA)

Ford Accelerated Credential Training Program (FACT)

General Motors Automotive Service Educational Program (GM ASEP)

Honda Professional Automotive Career Training Program (PACT)

Institutional Review Board (IRB)

Job Descriptive Index (JDI)

Job Satisfaction (JS)

Job Satisfaction Survey (JSS)

Maintenance and Light Repair Program (MLR)

Maximum Achievable Control Technology (MACT)

Miles per Gallon (MPG)

Minnesota Satisfaction Questionnaire (MSQ)

Minnesota Satisfactoriness Scales (MSS)

Mopar Career Automotive Program (Mopar CAP)

National Ambient Air Quality Standards (NAAQS)

National Automotive Technician's Education Foundation (NATEF)

National Highway Traffic Safety Administration (NHTSA)

Original Equipment Manufacturers (OEM)

Society for Human Resource Management (SHRM)

Toyota Technician & Education Network (T-TEN)

Youth and Adult Automotive Training Center Program (YAATC)

CHAPTER ONE: INTRODUCTION

Overview

The need for qualified automotive technicians is increasing at a rate of 5% per year and is expected to continue through 2024. The automotive industry has a history of needing to fill its technician or mechanic ranks. In 1959, the industry had a shortage of 150,000 mechanics (Einfeldt, 1959). This shortage occurred up until 1988 when Chrysler, Ford, and General Motors had a decline in automobile sales. From 1988 until 2013 employment numbers of technicians fell nearly 50% with a corresponding closing of hundreds of new car franchises. In 2014, the sales of new cars increased with a need to increase the number of technicians available to repair the greater numbers of new cars on the road (Goolsbee & Krueger, 2015). To help increase the technician inventory, new car manufacturers collaborated with postsecondary technical schools to provide specialized training (Fiat Chrysler Automobiles [FCA], n.d.; Ford, n.d.; General Motors [GM], n.d.; Honda, n.d.; Toyota, n.d.). This chapter discusses the history of this problem and some of the steps taken to alleviate the shortage of technicians and attempts to identify processes that will increase the number of technicians graduating from manufacturer-sponsored programs. Job satisfaction levels were studied to help identify motivational factors that may increase enrollment in these programs.

Background

In 2005, John A. Challenger, CEO of Challenger, Gray & Christmas, Inc., declared the era of the formulaic car mechanic officially over. The days when the shade-tree mechanic or a high school dropout could walk into a repair shop and immediately become a productive employee are history. Modern vehicles controlled by computerized systems are far more complex than the systems used on the Apollo 13 space capsule; the mechanic must transform

into an automotive repair technician or become obsolete (Challenger, 2005). These cars of the future that Challenger discussed have arrived. These cars contain advanced navigation systems and provide computer-controlled braking that will automatically slow down or stop a car without any physical input from the driver as the car gets too close to another vehicle or barrier (Halderman, 2012; Thompson & Erjavec, 2014). These technicians will have to add computer literacy to their basic repair skills, learn how to follow intricate computer diagnostic programs, and locate repair procedures from deep in a computerized repair manual's database located in the "cloud" (Thompson & Erjavec, 2014). These future technicians may even have to hold workshops to teach new owners how to navigate the newest electronic technology so future consumers will be able to operate their radios and turn on their air-conditioning systems (Challenger, 2005).

In today's present repair facilities technicians specialize in automotive services to continue repairing and maintaining 21st century vehicles. In the past, these positions primarily had the ability to diagnose and repair mechanical systems (VanGelder, 2017). Even though today's technicians still require abundant mechanical skills, they must also be proficient in diagnosing and repairing electronic, hydraulic, and pneumatic systems on today's new vehicles (Erjavec & Thompson, 2015; VanGelder, 2017). As predicted by John Challenger in 2005, modern vehicles now contain advanced navigation systems with satellite communication technology capable of notifying the driver of traffic issues and broadcast verbal directions to the driver (Erjavec & Thompson, 2015; VanGelder, 2017). According to VanGelder (2017), this same navigation center can provide access to a Global Positioning System (GPS) allowing the vehicle's position on the earth to be located with pinpoint accuracy and enabling stolen vehicle recovery, internet access, and communication. The vehicle's computerized network can notify

the driver and the dealership of any vehicle's electronic system needing maintenance or repair. Modern vehicles also use a collision avoidance system that can automatically apply the brakes, eliminating a collision or minimizing vehicle damage or personal injury (Thompson & Erjavec, 2014; VanGelder, 2017). Automotive repair technicians repairing modern vehicles must have an understanding of basic physics, chemistry, mathematics, fluid dynamics, electrical theory, computer operation and networking, and heat transfer in addition to being proficient in performing basic automotive repair practices (Halderman, 2012; Thompson & Erjavec, 2014; VanGelder, 2017).

In 1959, one in seven occupations had ties to the automotive industry, making it one of the largest industries in the world. There existed one mechanic for every 87 vehicles on the road; the desired ratio at that time was one mechanic for every 60 vehicles, a shortage of nearly 150,000 technicians (Einfeldt, 1959). According to Einfeldt (1959), approximately 22,314 individuals entered the automotive repair trades each year, but schools were not producing enough mechanics to service the vehicles of just the schools' teaching personnel.

In order to maintain a source of qualified technicians, many new car manufacturers have developed training programs and collaborated with postsecondary schools to provide dealer-certified technicians. These schools teach a dealer-certified curriculum as part of their automotive training program (FCA, n.d.; Ford, n.d.; GM, n.d.; Honda, n.d.; Toyota, n.d.). The majority of these schools also offer a general program of study in addition to the specialized training.

In 2014, of the 739,900 people employed in the automotive service technicians and mechanics industry, 231,300 worked in the automotive mechanical and electrical repair and maintenance category (Bureau of Labor Statistics, n.d.). The U.S. Bureau of Labor Statistics

estimate the total number of automotive technician and mechanic jobs will increase by 5% from 2014 through 2024, while the service and repair center technicians will increase by 6.8% during the same period. The number of automotive technicians and mechanics working in a repair facility will increase at a faster rate than the overall industry (Bureau of Labor Statistics, n.d.). Since the rate at which dealerships need new technicians will increase at a faster rate than the entire automotive industry overall, it will be necessary for postsecondary institutions to recruit students and fill the classes for manufacturer-sponsored programs in order to meet the growing employment needs of their local dealerships.

From 1988 until 2013 when General Motors exited bankruptcy proceedings, the “Big Three” automakers (Chrysler, Ford, and General Motors) had a negative trend in total United States vehicle sales. During this period, their employment numbers fell steadily to 253,000 employees, nearly 50% of the original numbers (Goolsbee & Krueger, 2015). According to Goolsbee & Krueger (2015), the bankruptcy contributed to selling fewer vehicles, thus reducing the need for automotive technicians since fewer vehicles require fewer technicians to repair and maintain. Due to poor vehicle sales and bankruptcy proceedings, General Motors and Chrysler closed hundreds of franchise dealerships, further reducing the need for technicians (Goolsbee & Krueger, 2015; PBS NewsHour, 2009). In 2013 when the bankruptcy proceedings were complete, the Big Three increased sales nearly every month. Increased sales meant more vehicles to repair and maintain which increased the need for qualified technicians (CBS News, 2012; Goolsbee & Krueger, 2015). Schools offering a manufacturer’s two-year technician training programs required students to complete the entire program prior to providing the manufacturer’s certification. This process resulted in a delay getting technicians certified. The participating schools were also fielding less than full classes, exacerbating the problem.

As vehicles become more technologically advanced, automotive technicians will need more training to keep pace with new technology. In 2015, Fiat Chrysler Automobile US (FCA) provided 2,970,070 hours of worldwide training, an increase of 9% over 2014, at 52 training centers located throughout the North America Free Trade Agreement region (Fiat Chrysler Automobiles, 2015). While manufacturers have training centers to provide this training, sending technicians from the work place to the training center reduces the number of days a technician is at work, which in turn reduces the number of repairs the dealership can provide its customers. Technicians receiving the manufacturer's training at a manufacturer's sponsored school prior to commencing fulltime employment will reduce the time they are away from their jobs to complete training, increasing the number of repairs the dealership can complete (FCA, n.d.; Ford, n.d.; GM, n.d.; Honda, n.d.; Toyota, n.d.).

Hertzberg's two-factor theory of motivation provides that satisfaction and dissatisfaction are not at opposite ends of the spectrum, but are two distinct units affected by different features of work. He labeled these differences hygiene factors and motivators (Furnham, Eracleous, & Chamorro-Premuzic, 2009). Hygiene factors are the parts of the job that, if not met, contribute to employee dissatisfaction. Examples of these dissatisfiers include supervision, working conditions, company policies, salary, and relationships with co-workers. Motivators are the aspects of the job that contribute to job satisfaction and include achievement, development, responsibility, and recognition (Furnham et al., 2009). Motivators affect job satisfaction while the debate continues on the contribution of hygiene factors to job satisfaction. Motivators or satisfiers are those facets of the job that are directly related to the employees' work performance and the rewards received that promote their needs for self-actualization. Achievement on the job and the job itself are more important than recognition in promoting job satisfaction.

Dissatisfiers are linked to the environment in which the work is performed (House & Wigdor, 1967).

In summary, there is a shortage of qualified automotive technicians capable of repairing today's modern vehicles. Increasing enrollment in automotive postsecondary schools by improving job satisfaction levels of current technicians is principal to alleviating this issue. Satisfying current technicians will help open the door to new technicians wanting to work on the increasingly modern marvels of transportation of today and the future.

Problem Statement

An insufficient number of students are graduating from manufacturer-sponsored automotive training programs that provide manufacturers' credentials for automotive technicians working in a dealership. This is evident by the development of new recruiting and hiring plans, plus adding additional schools to alleviate the growing need of service technicians required by dealerships (Clark College, n.d.; T-TEN, n.d.; Vellequette, 2015). FCA predicts it will need an additional 5,000 certified technicians by 2018. To alleviate this problem, FCA is expanding a pilot program to grow the number of schools that train entry-level technicians from 31 to 100 new training facilities (Vellequette, 2015).

Students completing a manufacturer-sponsored program and those who complete a non-manufacturer's general automotive program typically graduate with a two-year associate degree. However, graduates from a manufacturer-sponsored program meet the manufacturer's specified standards and are therefore credentialed to work in their sponsor's dealership, while graduates from general automotive programs that go to work at a dealership must complete their credentialing at remote training centers. Students completing the manufacturer's program at a sponsored technical school receive the equivalent training a dealership technician receives

without having to take time off from work and traveling to a remote training center (FCA, n.d.; Ford, n.d.; GM, n.d.; Honda, n.d.; Toyota, n.d.). Since the National Automotive Technician's Education Foundation (NATEF) accredits all postsecondary schools teaching manufacturer-sponsored programs, they all teach a common curriculum established by NATEF (FCA, n.d.; Ford, n.d.; GM, n.d.; Honda PACT, n.d.; Toyota, n.d.). Therefore, graduates of a manufacturer's program receive the same base level of instruction as a general program graduate and are qualified to obtain employment in independent or franchise repair facilities in addition to their sponsored dealership (NATEF, n.d.).

While there is little evidence supported in the literature regarding the effects training and education have on an automotive technician's job satisfaction, one survey of over 9,000 dealership technicians discovered that technical training was the highest contributor to current job satisfaction. Work quality, work environment, dealer supervisor/management, Original Equipment Manufacturers (OEM) concern, career, pay, and warranty labor rates followed technical training ("Carlisle & Company," 2014). Technicians that graduated from manufacturers' sponsored automotive repair training programs using all of the skills they learned were more content in their jobs than those that graduated from a general program (Yadetic, 1987). Scarce evidence exists on the effect training and/or education has on job satisfaction for automotive technicians. If training and education have an effect on job satisfaction, then specialized manufacturer-sponsored programs may add value to the training process. The problem is there is a chronic shortage of qualified automotive technicians, which is clearly supported by current literature.

Purpose Statement

The purpose of this casual-comparative study was to compare the job satisfaction of automotive technicians who graduated from a two-year manufacturer's sponsored training program to those who graduated from a general automotive training program. This study measures job satisfaction in terms of overall satisfaction, pay, fringe benefits, and assigned job tasks. This study surveyed graduates working in dealerships located within a 50-mile radius of a school that has a Mopar CAP, Honda PACT, GM ASEP, Ford ASSET, or a Toyota T-TEN program.

Significance of the Study

Automobile manufacturers are investing heavily in training new technicians to support the service departments of their franchised dealerships (Cadwallader, 2017). This study provides information for dealership human resources departments, schools collaborating with the manufacturers, and manufacturers' training programs so the individual entities can make decisions regarding their programs and spend rare training funds wisely.

The results of this study provide information to high school counselors to help them guide students interested in pursuing a career as an automotive technician. Students graduating from high school rate the career advising given by their counselors helping them to get into college as poor (Stipanovic & Stringfield, 2013). Knowledgeable counselors can better prepare their students for careers in a career and technical field (CTE). The Carl D. Perkins Career and Technical Education Act of 2006 implemented content alignment between secondary and postsecondary schools. In order to continue receiving CTE funding, schools implemented *programs of study* (Alfeld & Bhattacharya, 2012). If high schools and local community colleges

coordinate their efforts, students could be better prepared to choose their appropriate career path, complete their education in a timely manner, and become productive in their chosen occupation.

Sypniewska (2014) conducted a study across several organizations “to identify and assess the significance of individual factors influencing satisfaction and dissatisfaction with work and demonstrate their impact on the overall assessment of job satisfaction” (p. 57). During this study, Sypniewska discovered that the subjects fell into four clusters:

1. Cluster one participants evaluated the individual factors of the study as having little impact on their job satisfaction.
2. Cluster two participants evaluated that most of the factors except communication between employees, good working relationship with colleagues, and working atmosphere had little effect on their job satisfaction,
3. Cluster three identified all analyzed factors had an influence on their job satisfaction,
4. Cluster four identified job stability, opportunity for promotion, development opportunities, and work content as the most important influence on their job satisfaction.

A study conducted in Assam, India, found 37% of the participants declared salary to be the most important factor affecting job satisfaction. Following this, 29% valued work-family balance, and 19% rated supervisor support as an important factor affecting job satisfaction. Only 15% of the respondents said career opportunities influenced their job satisfaction (Neog & Barua, 2014 as cited by Saha, 2016). While not discussed in the study, it is possible for India’s culture to influence the outcome of this study.

The Mopar Career Automotive Program (Mopar CAP) has partnered with 29 schools, the Toyota Technician & Education Network (T-TEN) has partnered with 40 community colleges and vocational schools, the Honda Professional Automotive Career Training program (PACT)

has partnered with 24 postsecondary schools, the General Motors Automotive Service Educational Program (GM ASEP) has partnered with 54 postsecondary schools, and the Ford Motor Company has the largest dealership training program with the Automotive Student Service Educational Training Program (ASSET), Ford Accelerated Credential Training Program (FACT), Maintenance and Light Repair Program (MLR), and the Youth and Adult Automotive Training Center Program (YAATC) at over 88 locations (FCA, n.d.; Ford, n.d.; GM, n.d.; Honda, n.d.; Toyota, n.d.). These manufacturers have invested heavily in programs designed to provide certified technicians to their dealerships to repair and maintain vehicles sold by their franchises. For example, Toyota donated 37 new vehicles to Tarrant Community College to provide training vehicles for a new Toyota T-TEN program that commenced in the fall of 2018 (Cadwallader, 2017).

Research Questions

RQ1: Is there a difference in overall job satisfaction levels between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs?

RQ2: Is there a difference in job satisfaction levels due to differences in pay between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs?

RQ3: Is there a difference in job satisfaction levels due to differences in fringe benefits between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs?

RQ4: Is there a difference in job satisfaction levels due to differences in assigned job tasks between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs?

Definitions

1. *Job satisfaction* – This “is defined as an affective reaction to a job that results from the comparison of perceived outcomes with those that are desired. It is a psychological attachment of an employee with his job” (Kardam & Rangnekar, 2012, p. 1).
2. *Value added* - The contribution of a school to student learning after removing other factors such as socioeconomic status and student’s prior attainment (Brown, McNamara, & O’Hara, 2016).

CHAPTER TWO: LITERATURE REVIEW

Overview

Job satisfaction serves as an indicator of the probability that an employee is likely to seek employment elsewhere. While job satisfaction is subjective, culture, work environment, the employee's perception of fairness, and pay affect employee beliefs. This chapter evaluates various factors affecting employee job satisfaction, thus providing fodder for reasons employees leave their current employer. New car dealership service centers currently hire technicians with previous experience, technicians with little actual experience, and those with little formal automotive education. Another source of automotive technicians is graduates from NATEF-accredited postsecondary schools. Training of these technicians can take place in a general or a manufacturer-sponsored training program. The goal of this study was to identify if either group has a potential higher turnover rate based on difference in job satisfaction levels.

Conceptual Framework

Introduction

As predicted by John Challenger (2005), the days of the traditional car mechanic are indeed over. With modern cars containing complex computerized systems, today's automotive repair technicians must repair these complex systems (Challenger, 2005). Modern cars now contain sophisticated navigation and multi-media systems capable of notifying the driver of traffic issues and announcing verbal driving directions to the driver, allowing hands free navigation by the driver (Halderman, 2012; Thompson & Erjavec, 2014). This same navigation center can supply the vehicle's occupants with a Wi-Fi hot spot, providing the vehicle's occupants with Internet access as well as allowing the vehicle's communication network to

communicate with the vehicle's owner and the manufacturer on any impending needed repairs or maintenance (Halderman, 2012; Thompson & Erjavec, 2014).

The federal government's laws and regulations requiring less pollution from vehicle-emissions and greater fuel-economy necessitate that car manufacturers constantly upgrade and improve their vehicles' operational characteristics. The Clean Air Act of 1970 (CAA) was established to regulate emissions from stationary and mobile sources (US Environmental Protection Agency, 2019). The CAA allowed the Environmental Protection Agency (EPA) to develop standards regarding hazardous air pollution emissions, resulting in the EPA developing the National Ambient Air Quality Standards (NAAQS) for the purpose of protecting the health of the public by minimizing risks associated with air pollutants. The CAA, amended in 1977 and 1990, required the EPA to establish standards to reduce emissions to maximum achievable control technology (MACT). Manufacturers of automobiles must design vehicles that minimize the discharge of pollutants to the atmosphere using standards based on current technology. The EPA reviews the MACT standards every eight years, potentially forcing a further reduction in pollution levels by the automobile manufacturers as technology improves.

In 1975, Congress enacted the Corporate Average Fuel Economy (CAFE) to reduce energy consumption. The National Highway Traffic Safety Administration (NHTSA) set the standards for increasing CAFE levels at an aggressive pace over the next few years. Each manufacturer's average fuel economy for all vehicles sold must meet certain criteria which is scheduled to increase from an average of 38.2–38.7 miles per gallon (MPG) in 2016 to 55.3–56.2 MPG in 2025 for all passenger cars manufactured and sold by each manufacturer (NHTSA, n.d.). Each manufacturer must design its fleet to meet these requirements. This change in fuel mileage

requirements will require engineers to develop new technology, requiring even more training for automotive repair technicians.

As the federal government passes more laws and adds new regulations, technology must advance to keep pace. This constantly changing technology forces the manufacturers to provide ongoing just-in-time training for their dealership service technicians. Having dealer-qualified technicians ready to work upon completion of their education is a win-win situation for both the dealerships and the graduates. Dealerships must utilize properly trained technicians to perform warranty work on new vehicles. For vehicles repaired under the umbrella of a manufacturer's warranty by a non-certified technician, the manufacturer may not reimburse dealerships for the work performed. Graduates from schools with agreements with the manufacturers are qualified to perform some level of warranty work. This same process makes it more difficult for independent repair facilities to maintain their technicians' training status. Independent shops service vehicles from nearly all the manufacturers, making continuing training very expensive to train across all manufacturers' platforms. Automotive repair technicians must have an understanding of basic physics, chemistry, mathematics, fluid dynamics, electrical theory, computer operation and networking, and heat transfer in addition to basic automotive repair techniques, which typically will require training at a postsecondary institution (NATEF, n.d.).

In 1959, one of seven occupations had ties to the automotive industry, making it one of the largest industries in the world. There existed one mechanic for each 87 vehicles on the road; the desired ratio at that time was one mechanic for each 60 vehicles, resulting in a shortage of nearly 150,000 technicians (Einfeldt, 1959). According to Einfeldt (1959), although approximately 22,314 individuals entered the automotive repair trades each year, schools were

not educating sufficient numbers of mechanics to service the vehicles of the schools' teaching personnel. The need for trained automotive repairpersons has not changed in decades.

In order to maintain a supply of qualified technicians, many new car manufacturers have developed training programs in collaboration with postsecondary schools to provide dealer-certified technicians upon a student's graduation. These schools teach dealer-provided curriculum as part of their automotive curriculum (FCA, n.d.; Ford, n.d.; GM, n.d.; Honda, n.d.; Toyota, n.d.).

Job Satisfaction

Understanding of knowledge acquired through formal education and on-the-job experience combined with capabilities, aptitudes, and outlooks determines the professional skill level of workers. When these skills differ from those required by their current position, there is a mismatch where employees may be over-skilled, under-skilled, or working outside of their domain. Whenever workers' professional skills do not match required job skills, there is an economic consequence since productivity, which affects wages, is dependent on workers' professional skills matching the requirements of the jobs they perform (Badillo-Amador & Vila, 2013).

Job satisfaction is a subjective term. It depends on the cultural values and norms of individual employees as well as the employment environment. Not only does job satisfaction include variables such as individuals' norms and values, it also involves benefits offered, the amount of vacation or sick leave that can be acquired, or just the perception of treatment by management. What would make a person satisfied enough with the work environment, benefits, and salary to stay with a job until retirement? (Vales, 2014, p. 41)

The presumed purpose of organizational training is to increase the productivity of the workforce; therefore, the organization must develop and monitor training to minimize the risk of over-training unless there are provisions to allow employees to implement and transfer their training to develop new skills. Failure to provide opportunity to utilize the training may result in the employees' feeling under-employed and possibly react negatively to the knowledge mismatch. The failure of organizations to provide sufficient and proper training, or if employees perceive they are not receiving adequate training, could result in behaviors detrimental to the organization.

Those employees that have received formal education or have gained employment skills via experience may consider themselves overqualified or underemployed. According to Thompson Shea, Sikora, Perrewé, & Ferris (2013), "Education or experience underemployment occurs when individuals possess more education or experience than is required for their jobs" (p. 114). This underemployment could result in wage underemployment if employees are earning less at their current job than they earned at their previous jobs or are earning 20% less than their coworkers. Coming out of the recession of 2007–2009, it is important to note that there was little difference in underemployment based on gender; there were 6.5% men and 6.4% women underemployed (Thompson et al., 2013). This same survey demonstrated that underemployment rates declined steadily as age increased. Young adults (20–24 years old) were underemployed at an 11% rate, 25–29 year olds were at 7.7%, 35–54 year olds came in at less than 6%, while those employees 70 years and older fell to 3.6% (Thompson et al., 2013). Therefore, age is an important indicator of potential underemployment.

Job satisfaction and salary. The way employees view their salaries will have an effect on their job satisfaction. In a study conducted by Card, Mas, Moretti, & Saez (2012), when

employees have the ability to compare wages with their peers, the workers below median wage suffered a negative impact on their job satisfaction levels, while there was no effect on the job satisfaction of workers earning above the median wage. In addition to lower job satisfaction, there was evidence that lower paid employees had an increase in turnover rate occurring between the two to three year timeframe (Card, Mas, Moretti, & Saez, 2012). It is important for employers to maintain a sense of fairness in determining salary between employees to minimize employee perceptions of injustice and to improve job satisfaction (Ghani, Dzulkpli, Yassin, Mahamad, & Ramli, 2014; Smith, 2015). A transparent pay program can be effective in keeping employees satisfied if the program promotes a sense of fairness among the workers. Employees' job performance would improve if they were informed how their salaries will be determined and how their performance will be evaluated (Ghani et al., 2014). Using existing British data drawn from the British Household Panel Survey, Smith (2015) concluded pay has a positive relationship to job satisfaction; real-pay raises increase employees' happiness and the larger the increase, relative to past income levels, the greater the advancement in happiness. While real-pay increases improve employees' job satisfaction, the opposite occurs when pay levels decrease. The British data indicated a reduction in job satisfaction if pay fell to a level below the previous pay period. Based on Akerlof's (1982) gift exchange theory, an employee's job satisfaction is a superb measurement of employee morale, which in turn affects worker attitude and motivation.

While researching the association between wage satisfaction and other employees' pay using a French database containing a matched employer-employee dataset, Godechot and Senik (2015) discovered all employees were happier the higher the median wage was at their organization. The younger workers had an overall higher level of satisfaction regardless of position held at their place of employment. Workers become less satisfied the further they were

behind the median wage of their coworkers, below the wages of similar workers in the area, or the top 1% wage level within their place of employment. The perception or the reality of a lack of fairness concerning pay results in workers being less satisfied (Card et al., 2012; Godechot & Senik, 2015).

Pay is a very significant inspiration for most workers; not only is it necessary for economic reasons, but workers' salaries provide a measurement of social standing by acting as an assessment of self-worth and status. Salary provides for material achievements that meet the minimum needs and may provide for acquiring material wealth, thus improving social standing (Pandita & Domnic, 2016; Schreurs, Guenter, Schumacher, Van Emmerik, & Notelaers, 2013). Salary, in effect, is the reward workers receive for getting their work done. The higher the reward, the higher their job satisfaction and the happier they become (Pandita & Domnic, 2016).

Research shows that a fair and equitable wage growth has a positive influence on job satisfaction. Lowering wages has a greater negative effect on job satisfaction than the positive effect of receiving a wage increase (Smith, 2015). This negative effect also follows a situation where workers' pay falls lower than the median. This suggests "that employers need to keep earnings growth at or above average in order to avoid damaging workforce morale" (Smith, 2015, p. 853).

A worker's pay is an important variable in any job satisfaction study (Pandita & Domnic, 2016). The greater the difference between salaries of employees, the greater the difference will be in their job satisfaction ratings. Any increase in salary will result in a positive relationship with job satisfaction while a decrease in pay will result in a negative relationship with job satisfaction. What is not predictable is the amount of change that will take place with each pay adjustment (Pandita & Domnic, 2016). While providing workers with a pay-increase raises their

job satisfaction ratings, if the pay raise is still below the median for their workplace, their overall job satisfaction scores will remain low (Smith, 2015). Workers base the amount of compensation they think they should receive on their perception of their input to the organization, including tenure and work effort, and the perceived pay levels of their co-workers. Employees base their pay level satisfaction on a comparison between what they actually earn compared to what they think they should receive. If actual wages are lower than the amount they think they are entitled to, their job satisfaction and pay satisfaction ratings will be low (Schreurs et al., 2013).

With pay being based on employees' perception of what they should be making, it not in the best interest of the employer to simply throw money at the problem since pay satisfaction of some employees is a reality in some organizations. The ability to participate in an organization making and receiving timely and accurate information has a positive correlation to job satisfaction (Schreurs et al., 2013). The employees may view some pay changes as an insult.

According to Smith (2015):

Comparisons with the firm and comparisons with salient others affect *reaction to a given pay change by determining whether an insult is felt*. If comparison pay falls, a firm could get away with a real – but not nominal – pay cut without a step reduction in morale, even if its output is rising. If the pay of similar other workers increases, such a pay cut would have an insult effect if the firm's output is rising, but not if it is falling. No matter how badly the firm is doing, nominal cuts cause a step decline in morale, unless other workers are also experiencing pay cuts. Thus, results provide particular motivation for downward nominal rigidity. (p. 853)

Importance of job satisfaction. In 2012 the Society for Human Resource Management (SHRM, 2017) performed a survey that included job satisfaction and discovered the top five influencers of job satisfaction to be as follows:

- The opportunity to use skills and talents (63%)
- Job security (61%)
- Compensation and pay (60%)
- The communication between senior management and employees (57%)
- Relationship with immediate supervisor (54%)

While 60% of the respondents rated compensation highly regarding job satisfaction, only 22% were highly satisfied with their pay. Five years later, a similar survey performed by SHRM showed that the opportunity to use skills and talents fell to fifth place at 56%. Job security fell to fourth place at 58%. Compensation and pay rose to second place at 61%. The fourth place, communication between senior management and employees and the relationship with immediate supervisors, fell off the list and was replaced with trust between employees and senior management at 61%. Respectful treatment of all employees at all levels was the most important contribution to job satisfaction at 65% (SHRM, 2017).

One survey performed by the executives of Deloitte Consulting discovered that 44% of employees intending to leave their current employment actually obtain new jobs. The factors summarized by Bandura and Lyons (2014) which caused employees to seek new employment over the next year included the following:

- 27% cited lack of career progress
- 22% cited new opportunities in their field that were available
- 22% were dissatisfied with their manager/supervisor

- 21% felt that there was a lack of challenge in the job
- 21% believed they suffered from lack of adequate compensation

Compare these results to another survey seeking information that would be the basis for employees to remain at their present position (Bandura & Lyons, 2014):

- 44% would reconsider leaving for a financial incentive or bonus
- 42% stated a promotion would be influential
- 41% wanted additional compensation
- 26% sought more flexible work arrangements
- 25% desired more support and/or recognition from manager

The lack of compensation ranks fifth as one of the factors employees cite as a reason for seeking new employment while the top three reasons that would help them to remain at their current employer include some form of financial gain.

As the economy changes, large swings in unemployment may occur, changing the viewpoint of employees as to which concepts are the most important to their sense of job satisfaction. Economic changes affect the needs and operation of businesses. Regardless where pay and compensation rank within the reasons affecting job satisfaction, pay and compensation are areas employers utilize to minimize employee turnover.

Employees that understand the process of their pay procedures and requirements for promotions earning pay increases have higher job satisfaction over those who do not have the knowledge to interact with their employers and improve their compensation (Ghani et al., 2014; SHRM, 2017; Treuren & Frankish, 2014). The influence of an employee's understanding of his or her pay system, positively or negatively, is affected by the manner in which the employer communicates the company's compensation program. The more illogical or complicated the

system, the more likely employees will be unable to interact with the company regarding pay, which contributes to the employee's inability to maintain a satisfactory compensation package (Treuren & Frankish, 2014). The inability of employees to participate fully in their remuneration plan tends to contribute to lower job satisfaction and creates the desire for them to seek employment elsewhere. Employees that fully understand the remuneration process and can actively participate in the raise, bonus, and benefits decision-making procedures tend to be happier employees (Ghani et al., 2014; Treuren & Frankish, 2014).

Job satisfaction of automotive technicians. Job satisfaction is a highly researched topic. Locke (1976) estimated that 3,350 articles existed as of 1972. While there has been prolific research performed on job satisfaction, there are few studies regarding automotive technicians or automotive mechanics. This researcher located only two sources containing information directly related to the job satisfaction of automotive repair technicians.

Carlisle & Company, Inc., administered a survey in 2013 to nearly 9,000 technicians employed at 15 original equipment manufacturers (OEM), otherwise known as new vehicle manufacturers ("Carlisle & Company," 2014). Descriptive statistics taken during the survey demonstrate an increase in automotive dealership technicians attending a trade school or two-year college with a corresponding decrease in technicians attending only high school. The younger the technicians, the higher the probability their education extended beyond high school. The top two reasons for the technicians' reason for selecting their current job were brand loyalty and pay. Technical training was the number one reason given for job satisfaction, followed by work quality, work environment, supervision, OEM concern, and career. Pay came in at seventh place as a contributor to job satisfaction for dealership technicians. Yadetie (1987) concluded:

Graduates of the specialized auto mechanics programs who were employed on jobs in which they utilized all of their training were more satisfied with their present job; and also had greater occupational satisfaction than graduates of the general auto mechanics programs who were employed in jobs utilizing all of their training (p. v).

Based on these two articles, training is a factor affecting job satisfaction of automotive technicians. Better training and education should allow dealership technicians the ability to earn more pay, but the Carlisle survey (“Carlisle & Company,” 2014) placed pay nearly last of the factors measured affecting job satisfaction.

Curriculum and Accreditation

Curriculum. Technicians throughout the United States can earn industry-wide certification by passing written examinations in one of eight areas combined with two years of qualifying experience. Students attending NATEF-certified schools tend to score higher than their counterparts attending non-certified programs. In addition, Automotive Service Excellence (ASE) certified programs utilize a curriculum developed by industry leaders, thus ensuring ASE-certified programs use the latest tools and equipment that gives graduates an advantage over students attending non-certified training programs (VanDalsem, 2010). While both programs teach similar subjects, the certified school’s programs tend to be more up to date which allows the graduates of certified programs to become productive workers quicker since they will require less update training to be provided by the employer.

Curriculum decisions based on the needs of all stakeholders are necessary to provide the skills necessary for vocational students to obtain gainful employment while helping graduates to be satisfied in their jobs when possible. Since graduates from specialized automotive training programs have a higher job satisfaction rating than those completing a general automotive

program (Yadetic, 1987), it would seem logical to teach all students a specialized curriculum. However, the Yadetic (1987) study did not account for the types of companies employing the graduates. There was almost a 2:1 ratio of general program students to specialized program students with no indication if they were working for a dealership or an aftermarket repair shop. Working conditions are not the same from one repair facility to another; therefore, evaluation of working conditions and salary need to occur as part of the process of data evaluation.

Education. Research demonstrates that education is a factor affecting job satisfaction; however, research does not show that more education is better for job satisfaction. Over education, also known as being overqualified, occurs when the education level required for the job is less than the education level the incumbent has attained (Salahodjaev, 2015). Overqualified employees can be overqualified by the virtue of being appropriately educated but can be over-skilled for their current job. Formal education does not necessarily equate to greater skills since experience is a method to gain skills. Employees can have skill sets different from those required in their current job. Their “abilities, capacities, attitudes and knowledge . . . determine their levels of professional skill” (Badillo-Amador & Vila, 2013, p. 1). When these skills are higher or lower than required by the current position, a mismatch in skills occurs. Since actual workplace skills are difficult to measure, it is common practice to use formal education to measure professional skills. Since education is not the only instrument for workers to acquire professional skills, formal education’s impact is minor to skill mismatches (Badillo-Amador & Vila, 2013). Over-skilled and over-educated aspects are important contributors to job satisfaction as workers tend to be the happiest when their skills and education match their current position. Not only are the workers satisfied, their productivity is better, which has a positive

impact on their contributions to economic growth (Badillo-Amador & Vila, 2013; Salahodjaev, 2015).

Education mismatches contribute to wage inequalities between employees working in the same type of job. For the employer, over-education and required education offer a positive rate of return while under-educated employees give a negative rate of return. While both over-educated and required-educated qualities offer a positive rate of return, the required employee has a higher rate of return than the over-educated employee does. It is in the best interest for employers to fill positions with properly skilled and educated workers to maximize the company's return on labor investment (Badillo-Amador & Vila, 2013).

The need for automotive repair technicians will continue to increase as consumers purchase a greater number of vehicles. In 2012, vehicle sales increased 15% over the previous year, the third consecutive year with a double-digit increase in automobile sales. With new car customers seeking fuel efficient and environmentally friendly vehicles, manufacturers must continue to improve their products, resulting in a need for continuous improvement in technology (McAlinden, 2013). This need for qualified technicians with up-to-date certification should be a boon for community colleges, especially those that teach manufacturers' specified curriculum. With the nearly continuous change in technology, schools must constantly upgrade curricula and train the instructors to maintain pace with current vehicle production.

In addition to fuel efficiency and cleaner air, manufacturers are advancing technology related to safety of their vehicles. Volkswagen is developing an electronic sun-visor where a computer detects when and where the sun's rays would strike the driver's eyes and darken the area of the windshield to prevent the sun blinding the driver (Manley, 2012). The same company has developed a system that reduces the chance of a vehicle leaving the road if the driver

accidentally falls asleep by using cameras that detect the lines painted on the side of the road; the system attempts to maintain the vehicle in its lane (Manley, 2012).

Due to the rapid expansion of new technology in the automotive repair field, not only do the up-and-coming new automotive repair technicians need up-to-date curriculum, current technicians need access to continuous training at the academic level and on-the-job training (Woods, 2015). The current trend in education is to improve student completion rates which will increase the workforce numbers but at the same time may allow current employees to fall behind in their technical skills as changing technology outpaces the technicians' ability to maintain their professional skills due to lack of continuing education. Woods (2015) believes businesses need to have an ongoing partnership with their local schools to voice their needs both immediate and long term while simultaneously the partnered school must respond in a timely fashion to the needs of local businesses. Postsecondary schools accredited by NATEF are required to develop an advisory committee consisting of representatives from businesses in the local area. Members on the advisory committee must be from a variety of automotive industries with a minimum of five members. The committee must meet a minimum of twice a year with a minimum of five members present to hold an official meeting. NATEF has dictated minimum requirements that the committee must complete, including the changing and development of their program's curriculum. During these meetings, the local businesses make their needs known, and it is up to the local schools to develop and offer the curriculum and education needed by the school's partners (NATEF, n.d.).

In today's rapidly changing business environment combined with ever-changing technology (Manley, 2012; Woods, 2015), personnel must maintain an up-to-date skill set. On-the-job learning has always been an effective method to gain new skills necessary for employees

to remain competitive with their peers. Workers fostering a lifelong learning attitude possess the competitive edge necessary to survive in today's business world ("Lifelong learning," 2013).

According to the "Lifelong Learning" (2013) article,

There are four levels of training that need to be considered when evaluating the need for L&D (learning and development) activities. The most essential training is mandatory. This training enables companies to meet legal requirements. This may include compliance with Health & Safety legislation, or the need for employees to maintain essential registered qualifications. The next most important level of training is anything that could be defined as vital. Vital training ensures that the company has the necessary skill-set to meet their contractual obligations to clients. (p. 23)

In a study performed in India using senior and middle level managers as subjects, Kardam and Rangnekar (2012) concluded that experience and education level do not statistically affect overall job satisfaction. While automotive technicians are not middle or senior level managers, this result does not match the results reported by Carlisle & Company, Inc., in a survey of automotive service technicians working at a dealership, where dealership automotive technicians rated training as very important ("Carlisle & Company," 2014). This is highly probable since dealerships require technicians to receive new car manufacturer's training to advance (FCA, n.d.; Ford, n.d.; GM, n.d.; Honda, n.d.; Toyota, n.d.).

Sinclair Community College offers a general automotive program plus the GM ASEP, Honda Pact, and Mopar CAP programs. The general program provides a pathway to an associate in applied science degree (AAS) by completing 65 semester credits. Students following this path have a paid internship eight weeks into the program and 95% find employment within one month of program completion; within two years of completing their degree, graduates earn \$48,000 to

\$89,000 (Sinclair Community College, 2016). Honda PACT students complete their AAS by completing 65 semester credits, have a paid internship eight weeks into the program, and 95% find employment within one month after graduation. Honda PACT graduates earn \$48,000 to \$89,000 within two years after graduation. GM ASEP students complete their AAS by completing 65 semester credits, have a paid internship eight weeks into the program, and 95% find employment within one month after graduation. GM ASEP graduates earn \$48,000 to \$89,000 within two years after graduation. Mopar CAP students complete their AAS by completing 65 semester credits, have a paid internship eight weeks into the program, and 95% find employment within one month after graduation. Mopar CAP graduates earn \$48,000 to \$89,000 within two years after graduation. The curriculum for each manufacturer's program is identical to the general automotive program and the master syllabus for each course is identical to the general automotive program's master syllabus. The general automotive program, the Honda PACT, the GM ASEP, and the Mopar CAP program are master certified by the NATEF using standards developed by the automotive industry. In addition to the same training received by students in the general program, all students in a manufacturer's program earn manufacturer's certifications that help the students to secure employment in a dealership associated with the applied training. All programs require the same number of credit hours to graduate so there is no financial benefit in taking one program over another (Sinclair Community College, 2016).

Cerritos College offers general automotive, Ford Asset, GM ASEP, and Mopar CAP programs. The general program requires 34 units of automotive courses, 18 units of general education, plus an additional eight units of electives to earn 60 units to complete an associate in arts degree in automotive technology. All three manufacturers' programs require 48 units of automotive courses and 18 units of general education course, for 66 units. The manufacturers'

programs will cost their graduates an additional six units in tuition and fees. However, the manufacturers' programs require 15 units of paid internship, averaging \$8 to \$12 per hour, spread out over five semesters with work schedules based on employers' need (Cerritos College, n.d.).

Accreditation of automotive programs. All of the manufacturers' technical training programs have many things in common. All of them are two-year programs and allow graduates to earn an associate's degree. The NATEF certifies all of the schools and all instructors are factory certified in their area of expertise. All manufacturers' programs require an internship or co-op program as part of the curriculum (FCA, n.d.; Ford, n.d.; GM, n.d.; Honda, n.d.; Toyota, n.d.).

Founded in 1983, NATEF was developed to improve the quality of automotive technician training at secondary and postsecondary schools nationwide by providing an accrediting process. Every three to five years, industry experts review NATEF's accrediting standards to ensure the standards are up to date in order to keep pace with rapidly changing technology. NATEF-accredited schools undergo an extensive two-day evaluation to gain their initial accreditation (NATEF, n.d.). Each school performs a self-review at the midway point of their accreditation period and undergoes an accrediting evaluation every five years to renew their accreditation. Each program in a multi-program school must undergo its own evaluation since each is a stand-alone program. Each manufacturer requires certification of its program at the master level, the highest accreditation standards possible through NATEF. In addition to the technical skills required by the students, each school must teach workplace-employability skills. These supplemental tasks include personal standards and work habits/ethics. All specified skills required by NATEF are standardized, and each school must receive an average score of 4.0 or

greater on a five-point scale to become accredited. An evaluation team led by an industry experienced team leader fully trained by NATEF in the evaluation process performs each accreditation evaluation (NATEF, n.d). In addition to teaching the required NATEF tasks, schools teaching the specialized curriculum must teach the factory-specific curriculum dictated by the manufacturer. This ensures that each student receives a well-rounded technical education.

Internships. NATEF is the accrediting agency for entry-level automotive training programs. The organization evaluates training programs employing standards developed by the automotive industry, which also reviews the standards for adequacy approximately every three to five years. The accreditation process provides many benefits to all stakeholders by ensuring that accredited automotive programs provide a higher quality education, helps maintain a trained pool of entry-level technicians, and introduce employers to schools graduating higher quality technicians. More importantly for the automotive industry, accreditation encourages more respect for the automotive service organization and promotes a higher level of professionalism (NATEF, n.d.).

In 2013, NATEF updated its standards, increasing the total contact hours for students from 1,080 hours to 1,200 hours. Along with the increase in hours, NATEF added a Workplace Employability Supplemental Task List. These additional workplace employability skills address the following:

Personal Standards (see Standard 7.9)

1. Reports to work daily on time; able to take directions and motivated to accomplish the task at hand.
2. Dresses appropriately and uses language and manners suitable for the workplace.
3. Maintains appropriate personal hygiene.

4. Meets and maintains employment eligibility criteria, such as drug/alcohol-free status, clean driving record, etc.
5. Demonstrates honesty, integrity, and reliability.

Work Habits / Ethics (see Standard 7.10)

1. Complies with workplace policies/laws.
2. Contributes to the success of the team, assists others, and requests help when needed.
3. Works well with all customers and coworkers.
4. Negotiates solutions to interpersonal and workplace conflicts.
5. Contributes ideas and initiative.
6. Follows directions.
7. Communicates (written and verbal) effectively with customers and coworkers.
8. Reads and interprets workplace documents; writes clearly and concisely.
9. Analyzes and resolves problems that arise in completing assigned tasks.
10. Organizes and implements a productive plan of work.
11. Uses scientific, technical, engineering and mathematics principles and reasoning to accomplish assigned tasks.
12. Identifies and addresses the needs of all customers, providing helpful, courteous, and knowledgeable service and advice as needed. (NATEF, n.d.)

The automotive industry has recognized the need to improve employability skills, frequently referred to as soft skills, by including them in the curriculum that all accredited schools must teach. The automotive manufacturers that have established partnerships with schools to provide manufacturers' training have also recognized the importance of internships or

co-op education by requiring all graduates from their programs to participate an internship by working at one of their dealerships (FCA, n.d.; Ford, n.d.; GM, n.d.; Honda, n.d.; Toyota, n.d.).

Research has shown that the use of structured internships benefits each major stakeholder: the student, faculty, and the employer. Students received valuable work experience and expanded job skills while simultaneously exploring prospective career paths. The augmentation of the student's education benefited both the faculty and the students. The employer's greatest benefit was using the interns to perform the smaller tasks that freed up the senior more experienced workers to tackle larger projects (Wentz & Trapido-Lurie, 2001).

A three-year study conducted by Ryken (2004) followed students' completing internships in a biological technology program from high school through community college. The research project studied paid summer jobs for high school students and year-round cooperative jobs for those students in the local community college. The high school students taking part in the program were more likely to continue their education and dropout rates dropped substantially with 90% of the high school seniors enrolling in college. Internships have a positive impact on students (Ryken, 2004). All of the major automotive manufacturers training programs (ASEP, PACT, Mopar CAP, ASSET, and T-TEN) that have agreements with numerous postsecondary schools nationwide require the students to participate in co-op education or an internship (FCA, n.d.; Ford, n.d.; GM, n.d.; Honda, n.d.; Toyota, n.d.).

One measure of the value of education is the recipients' earning ability. Research has shown that the greater the amount of college, the greater the paycheck (Jacobson, 2011). If colleges would set priorities and develop better learning programs, their graduates would earn more income over their lifetime. This includes getting graduates the skills needed for employment. Students graduating from a community college have every right to expect to have

the skills and abilities necessary to be a constructive employee for their employer. Employers also have expectations that community college graduates have the necessary employability skills to be productive in their new job (Rosenberg, Heimler, & Morote, 2012). Employers believe that most graduates have the necessary hard skills in the area of their expertise; however, they lack the necessary soft skills required to be a productive worker in the 21st century workforce. Soft skills are those skills that employees possess that are transferable across multiple career paths. These skills include teamwork, communication, leadership, problem solving, and interpersonal relationships (Mitchell, Skinner, & White, 2010). Employers have also identified weaknesses in quantitative reasoning and written communications in addition to the listed soft skills (Mitchell et al., 2010). Many schools, especially those with career and technical education programs, rely on their general education courses to teach students these soft skills.

A study by Bassi and Ludwig (2000) demonstrates the value of the GM ASAP program to both the student and the dealership. Crown Auto World recruited and trained recent graduates of junior college and vocational-technical schools. Their success in training these technicians resulted in the company participating in the GM ASEP program, a two-year program at a local community college. Assuming the ASEP graduates hired by Crown maintain the average technician tenure of eight years, Crown will earn \$59,500 per apprentice. During the students' training period, they will earn a salary and benefits equal to \$33,079 plus they have the added benefit of employment after graduation. The students initial pay rate was \$5.50 per hour and they can advance to \$12.00 per hour with the opportunity to gain health insurance when working greater than 30 hours per week (Bassi & Ludwig, 2000). The obvious benefit to the students is the nearly 100% guarantee of obtaining a job upon graduation and the opportunity to increase

their pay and benefits. The advantage to the dealership is the profit gained from each new technician hired.

Manufacturers' programs. The Mopar Career Automotive Program (CAP) recruits students seeking certification to repair Fiat and Chrysler automobiles. Mopar CAP has agreements with 29 community colleges and technical centers throughout the United States. The program started in 1984 with the Chrysler Apprenticeship Program and grew into the program it is today. The Mopar CAP is one of the quickest methods to become a fully-certified level two Chrysler technician (FCA, n.d.). Upon graduation, students typically shift from a part-time employee to a full-time employee at a Chrysler, Jeep, Dodge, Ram, or Fiat Studio dealership.

The Toyota Technician & Education Network (T-TEN) has collaborated with 40 community colleges and vocational schools to provide Toyota trained technicians to over 1,400 dealerships nationwide. Over 10,000 graduates have completed the program since 1986, the program's first year. Each year Toyota or Lexus dealers hire nine of 10 T-TEN graduates (Toyota, n.d.).

The Honda Professional Automotive Career Training program (PACT) has collaborated with 24 postsecondary schools to provide Honda-trained technicians to Honda and Acura dealerships throughout the United States. PACT graduates can earn up to 10 Honda-recognized certificates while learning the skills necessary to succeed in dealerships or independent repair shops (Honda, n.d.).

General Motors Automotive Service Educational Program (GM ASEP) is one of the largest programs with partnership with 54 postsecondary schools throughout the United States and Canada. The GM ASEP program, instituted in 1979, has graduated over 15,000 students.

GM ASEP graduates can complete 80% to 100% of the training required by GM to become certified technicians (GM ASEP, n.d.).

Ford Motor Company has the largest dealership-training package consisting of the Automotive Student Service Educational Training Program (ASSET), Ford Accelerated Credential Training Program (FACT), Maintenance and Light Repair Program (MLR), and the Youth and Adult Automotive Training Center Program (YAATC), providing training at over 88 locations. The ASSET program is comparable to the other manufacturers' programs, while the other Ford programs produce lower level certified technicians to fill entry-level positions in Ford and Lincoln dealerships (Ford, n.d.).

Owners of vehicles expect quality maintenance and repairs completed correctly and quickly; it is necessary for each manufacturer to maintain a reliable pipeline of factory-certified technicians. Students graduating from the T-TEN program can earn an associate's degree in automotive technology, be ASE-certified in a minimum of two areas, and be a Toyota-certified expert technician with two years of work experience (Manley, 2012).

Automotive dealerships continue to contribute to the economy; consumers spend nearly one in every eight retail dollars at a car dealership. Toyota dealerships are focusing on the after sales service and striving to maintain a highly skilled workforce. Nearly 19% of Toyota and Lexus dealers current repair technicians are graduates of the T-TEN program. The T-TEN program averages approximately 400 graduates annually with an 85% to 90% placement rate. The retention rate after one year of employment is 65% (Manley, 2012).

Dealership technicians. In a survey performed in 2013, Carlisle & Company surveyed 9,000 service technicians from 15 major vehicle brands ("Carlisle & Company," 2014). The survey discovered two major areas of concern: the communication between service advisors and

the implementation of dealer express lube lanes. Service advisors are the front line between the customers and the repair facility. Service advisors interact with the customer and collect data needed to repair the customer's vehicle. Technicians stated that 43% of the repair orders they received needed further information from the service advisor, costing them 30 minutes of follow up time each day. Technicians also charged their service advisors of providing customers with unrealistic repair completion times, creating the perception that technicians performing the repair are taking shortcuts that result in the same repair needing to be performed more than once.

The second area of job dissatisfaction was the dealer's quick lube lanes implemented to improve declining customer retention by offering 30-minute oil changes. In theory, dealers hire low cost entry-level technicians to service the quick lube lanes with the promise of progressing to higher-level positions. The length of time spent in the quick lube lanes was proportional directly to the dissatisfaction of the technicians' career progression. Technicians that exhibited dissatisfaction in their ability to progress and advance through the ranks were more likely to leave the industry entirely rather than switching jobs ("Carlisle & Company," 2014).

In his dissertation, Yadetie (1987) used the long-form Minnesota Satisfaction Questionnaire (MSQ) and the Minnesota Satisfactoriness Scales (MSS) to measure job and occupational satisfaction, and "job satisfactoriness." He studied two groups: automotive mechanics graduating from a general automotive program and automotive mechanics graduating from an automotive program using a specialized curriculum. Service technicians graduating from specialized auto mechanics program using all of the skills in which they received training were more content in their jobs than those graduating from general automotive programs. Employers gave higher ratings to technicians graduating from specialized programs over those

graduating from general programs when employed in jobs where both sets of graduates had the ability to utilize all of their skills learned in school (Yadette, 1987).

Related Literature

Religion

In order to obtain an improved understanding of behaviour at work, employees should be studied from physical, psychological, and spiritual dimensions. Although the physical and psychological dimensions of individuals at work have been studied extensively, the spiritual dimension has been neglected for many years (van der Walt & de Klerk, 2014, p. 379).

Many business ethics studies establish a relationship between spirituality and job satisfaction; however, relatively few studies have compared the connection between formal religions and job satisfaction (Ghazzawi, Smith, & Cao, 2016). In the United States, Gallup polls reliably find that nine out of 10 Americans express a belief in God and 45% of those subjects that proclaimed to be religious believed they had an awareness of God in the workplace (Walker, 2013). Even though there is a large percentage of employees that believe in a God, employers in the United States have done little to devote any resources or consideration to this topic (Walker, 2013). While there has been much attention placed on researching the workplace, especially job satisfaction and organizational commitment, the principal variables have been secular in nature and the spiritual variables were overlooked. Theoretically, spiritual influences that workers have, should be linked to the workplace in many areas, especially job satisfaction and the obligations of the employing organization (Neubert & Halbesleben, 2014).

Currently there is an increase in research studying the relationship between religiosity and its effects on employee well-being. Stress arising from personal and professional reasons

can affect the quality of work and result in reduced productivity (Achour, Mohd Nor, & MohdYusoff, 2016). Establishments that allow for and provide for spiritual improvement have better performance outcomes than those employers who do not allow for spiritual growth in the workplace. The spiritual needs of employees are just as important as their physical, emotional, and cognitive needs (Dandona, 2013). There is a growing awareness of spirituality and religiosity taking place in the workplace. Since employees utilize different methods of coping with life's problems, including job stress, demands, and strain, employee spirituality and religion have become areas of interest to researchers due to the coping effects of religion and spirituality (Neubert & Halbesleben, 2014). According to Tejada (2014), "Spirituality may be an effective coping strategy when employees face difficult events such as frustrating work or other difficult situations such as aggressive co-workers" (p. 179). It may be in the best interest of employers to promote and allow spirituality in the workplace.

Frowning upon or actually repressing religiosity creates one major issue regarding its toleration. Even though the Title VII of the Civil Rights Act of 1964 and 1991 prohibits discrimination centered upon religious beliefs and requires employers to accommodate individuals' religious principles and practices, the number of cases involving religious discrimination and accommodation brought before the Equal Employment Opportunity Commission has increased (Walker, 2013). A major impact on an employee's job satisfaction is the indirect consent of the employer to allow the employee to arrive at work as a complete person. To prevent employees from being forced to leave personal individualities such as gender, religion, or ethnicity at home when going to work, good managers will work at producing a wide-ranging environment that encourages the development of the whole person (Ghazzawi et al., 2016). According to Tejada (2014), "Spiritual well-being seems to be a robust

component of job satisfaction in the presence of adverse conditions and situations” (p. 178).

Employers inspiring spirituality are, in reality, encouraging their employees to bring their whole selves to work, therefore improving personal fulfillment and satisfaction, which will result in a greater commitment to work and the organization (Dandona, 2013).

Organizations that accommodate their employees’ spirituality and allow them to follow their religious beliefs promote harmony by helping to minimize misunderstanding by creating a healthy, tolerant workplace. Overall, it increases job satisfaction (Ghazzawi et al., 2016). Employees permitted to pursue openly their spirituality experience less self-esteem issues, and they are secure with themselves based on their beliefs. Not all people believe spirituality takes place within the workplace and that work is spiritual. However, there are many areas where the application of spiritual intellect is appropriate and benefits are secured (Dandona, 2013). Faith at work demonstrated a positive and significant relationship with life satisfaction, affective commitment, and normative commitment that indicates that integrating faith with work contributed to improved overall life’s satisfactions (Walker, 2013).

People committed to religion are inclined to value achievement, responsibility, and independence. Intrinsic religiousness had a positive correlation to cognitive work values (Cardos, & Mone, 2016). However, Cardos and Mone (2016) did not find any statistically significant relationship between spirituality and work values. They did, however, find a small relationship between religiosity and work values that may indicate religiosity has an impact on people’s career decisions or how satisfied they are with their work.

While most researchers focus on the effects religiosity, spirituality, or faith had on job satisfaction and work commitment, the research of Ghazzawi et al. (2016) focused on the five largest religions: Buddhism, Christianity, Hinduism, Islam, and Judaism. These five religions

can be aligned into two broad categories, immanent and transcendent religions. Immanent religions are those that the deity is nature- or humanity-based while transcendent religions are the religions where the deity is separate from and outside of nature and humanity. This study considers, Christianity, Islam, and Judaism to be transcendental religions and Buddhism and Hinduism to be immanent religions. The study by Ghazzawi et al. (2016) found the following:

Members of immanent and transcendent religions at the same level of religious intensity have different levels of job satisfaction. Contrary to our thinking, believers of immanent religions showed a significant positive relationship with job satisfaction, while believers of transcendent religions did not. (p. 21)

Many studies compare religiosity to job satisfaction. Few studies compare a single religion's religiosity and its impact on job satisfaction. Achour et al. (2016) conducted one such study in Malaysia, a multiracial and multicultural country with Islam being the official religion. Malaysia has a constitutional right to religious freedom, and 61% of the countries inhabitants are Muslim (Achour et al., 2016). Many Malays follow the Muslim traditional fundamental practices, including praying five times daily, fasting for 30 days during Ramadhan, and performing the Pillars of Islam, the basic beliefs of Islam (Achour et al., 2016).

Results of this study were comparable to the previously discussed studies concerning religiosity. Religiosity was negatively associated with job strain and positively associated with personal wellbeing. The higher the religiosity, the better the experience with wellbeing coupled with less stress in the workplace. According to Achour et al. (2016):

Personal religiosity such as prayer and supplication to God, patience, trust in God, and recitation of the Qur'an may potentially reduce life stress from the lives of Muslims. The strategy of Muslim social support is a powerful collective reflection of individuals'

religious adherence and internalizing of religious values and norms, and as such harmonizes with other coping techniques that emanate from the same common flow of wisdom, motivation, and discipline. The striking difference between Islamic and other coping techniques is the clear emphasis placed on the individual's relationship with the Creator and reliance on Him in all aspects of life as a strategy to cope with and reduce strain, stress, and depression, bringing about the restitution of hope. (p. 1308)

Burnout

The perception of fairness presented by an organization to its employees contributes to the mental health of its employees. When workers have a positive feeling about the fairness of their employer, especially regarding equality in distributing awards, rewards, and other resources without discrimination, their mental health and satisfaction will increase. Fairness contributes to a lack of burnout (Safikhani, 2017). Burnout is an extended response to enduring emotional and solitary stress related to one's job. The symptoms of this syndrome include emotional exhaustion, increased cynicism, and lower personal efficacy (Leary et al. 2013; Simha, Eloy, & Huang, 2014). As job satisfaction rates increase, burnout decreases. According to Kare and Kamalian (2017), increasing job satisfaction by a single unit will decrease job burnout by 0.56 units. Workers observing their organization treating them as unfair will most likely suffer from high levels of cynicism and depersonalization. Simha et al. (2014) stated:

Organizations that aim to create a fair climate may succeed in combating organizational cynicism even in the presence of depersonalization. Perceived fairness can therefore be used by managers and leaders to reduce the level of organizational cynicism among their burned out employees. (p. 494)

Workers suffering from burnout have a high probability of physically suffering from headaches, sleep disorder, irritability, anxiety, and high blood pressure. While at work, they may be tired, lethargic, or sluggish and their marriage may become less successful (Safikhani, 2017). In addition to stress, managerial incompetence or dysfunctional leadership has a great negative association with engagement, job satisfaction, and burnout. The impact of poor management is devastating to employees (Leary et al., 2013).

Cynicism is also a symptom of burnout; however, it may not be as readily apparent to others as the previously discussed symptoms. Cynicism is an attitude workers hold against their employer. Workers reveal this negative outlook by being unduly critical of their organization (Simha et al., 2014). Cynicism has a positive relationship with burnout and a negative relationship with job satisfaction and job performance. As job satisfaction increases, the less cynicism workers display; when burnout increases, the more likely workers are excessively cynical about their workplace and job (Kim, Ra, Park, & Kwon, 2017).

Stress can contribute to burnout; while not all forms of stress are precursors to burnout, high workloads combined with extended mental pressure, lack of interest in work, and/or lack of proficiency for the job assignment are all stressors that can lead workers to burnout (Safikhani, 2017). Downsizing during economic downturns can leave the remaining workers overcome with helplessness as they attempt to fill the gaps left by the laid off workers. Their employers raise expectations and responsibilities requiring longer work hours until the workload starts to become unmanageable. At this point workers start to experience role overload. Role overload is a form of work related stress that occurs when the workers' perception of their ability to perform their job properly is less than the demand of the job. It can increase burnout and reduce job satisfaction. Minimizing or reversing the effect of role overload on workers is accomplishable if

they are empowered to make decisions affecting the organization. If workers perceive they are working for the good of the company, burnout subsides and job satisfaction increases (Andrews & Kacmar, 2014).

Organizations and managers can minimize the effect of burnout by empowering workers to make the decisions necessary to perform their jobs. Empowerment reduces the effect of job demand and helps maintain a feeling of justice by the employees and establishes a sense of fairness, which puts downward pressure on burnout and improves job satisfaction (Andrews & Kacmar, 2014). Empowerment provides employees with feelings of competence, self-determination, and of being able to have an impact on organizational outcomes (Andrews & Kacmar, 2014). A study investigating the influence of job demand and job status on job involvement among non-burnout employees determined that an increase in the job demands of employees not suffering from burnout do not necessarily result in an increase in burnout, it may decrease burnout. This implies that employees with high job satisfaction have fewer tendencies to experience burnout (Olusa, 2015).

Since demands in the workplace are unavoidable and the amount of stress workers undergo in the workplace is unpredictable and unavoidable, managers and supervisors need to keep “Excitable, Skeptical, Cautious, Reserved, and Leisurely” (Olusa, 2015, p. 125) behaviors under control as these poor leadership traits produce a negative impact on employee engagement, job satisfaction, and burnout. It is important for the employer to maintain procedural and organizational justice as this minimized the influence of job burnout (Safikhani, 2017). Simha et al. (2014) asserted:

[Anyone] who perceives his or her organization as lacking in perceived fairness will be more likely to have high levels of depersonalization and cynicism. This suggests that

organizations that aim to create a fair climate may succeed in combating organizational cynicism even in the presence of depersonalization. Perceived fairness can therefore be used by managers and leaders to reduce the level of organizational cynicism among their burned out employees. (p. 494)

Summary

This study adds to and fills large gaps in the current literature relating to the job satisfaction levels of automotive technicians. While job satisfaction is a broadly studied research subject, the research using technicians as the subject is exceedingly sparse. Very few studies and little literature exists comparing automotive technicians' job satisfaction based on their career pathway. Understanding the job satisfaction levels of technicians pursuing an automotive repair career based on the training received provides technical schools with additional information to advise students properly on an educational path that maximizes their happiness with their chosen field and to allow their schools to utilize scarce and expensive resources efficiently.

CHAPTER THREE: METHODS

Overview

This casual-comparative study used Paul E. Spector's Job Satisfaction (JS) survey to measure the JS of two groups of automotive technicians. Group 1 was comprised of automotive technicians working at a new-car dealership who completed a two-year NATEF-accredited training program that taught an approved manufacturer's training curriculum. Group 2 was comprised of those automotive technicians working at a new-car dealership who completed a two-year NATEF- accredited automotive training program that did not teach a new-car manufacturer's training curriculum. This casual-comparative design studied the job satisfaction of automotive technicians who graduated from a two-year specialized manufacturer's training program and the graduates of a general automotive training program. This study measured job satisfaction in terms of overall job satisfaction, pay, fringe benefits, and assigned job tasks. The participants of this study were recruited from automotive technicians working in dealerships located within a 50-mile radius of a postsecondary school that has a MOPAR CAP, Honda PACT, GM ASEP, Ford ASSET, or a Toyota T-TEN program. This study utilized Spector's Job Satisfaction Survey (JSS) to collect the different facets of job satisfaction. The means of the different facets were calculated and compared using the independent *t*-test.

Design

A casual-comparative research design was used to determine if there was a difference in job satisfaction levels between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs. A casual-comparative design is a non-experimental study used to evaluate a cause and effect relationship between groups of individuals that includes and secludes

the independent variable (manufacturer's training) and decides if the groups differ on the dependent variable (job satisfaction; Gall, Gall, & Borg, 2007). The casual comparative-design is the most appropriate design as it allows this non-experimental study to compare the overall JSS levels and JSS means associated with pay, fringe benefits, and assigned job tasks between the two groups of graduates. The means of the two groups were calculated and used to compute the differences in means between the two groups using an independent *t*-test (Gall et al., 2007).

Research Questions

RQ1: Is there a difference in job satisfaction levels between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs?

RQ2: Is there a difference in job satisfaction levels due to differences in pay between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs?

RQ3: Is there a difference in job satisfaction levels due to differences in fringe benefits between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs?

RQ4: Is there a difference in job satisfaction levels due to differences in assigned job tasks between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs?

Null Hypotheses

H₀1: There is no significant difference in job satisfaction levels between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs as shown by Spector's Job Satisfaction Survey.

H₀2: There is no significant difference in job satisfaction levels due to differences in pay between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs as shown by Spector's Job Satisfaction Survey.

H₀3: There is no significant difference in job satisfaction levels due to differences in fringe benefits between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs as shown by Spector's Job Satisfaction Survey.

H₀4: There is no significant difference in job satisfaction levels due to differences in assigned job tasks between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs as shown by Spector's Job Satisfaction Survey.

Participants and Setting

The population for this study is automotive technicians who completed a two-year postsecondary automotive technology program and were working at a new car dealership with emphasis placed on FCA, Ford, GM, Honda, or Toyota dealerships. This study compared the job satisfaction of technicians completing a general automotive training program to those technicians completing a manufacturer's specialized training program. In addition to the job satisfaction

information, the following demographic data were collected: gender, age range, race, household income, manufacturer's program completed, current dealership brand, and years of experience.

The sample was a convenience sample drawn from dealerships located in the southeast region of Virginia. Selection of this area occurred due to the proximity of dealerships located within a one-hour commute of the four postsecondary schools with automotive programs located within the area. Selection of the one-hour commute criterion occurred because most community college students will work within a one-hour commute of where they attended school (Shaw, 2017).

The Mopar CAP program estimates 4,000 students in the pipeline attending 12-, 18-, or 24-month programs at 80 institutions (Mayersohn, 2017). Assuming equal student distribution at the 30 two-year schools, there are 750 graduates per year, resulting in an average of 25 graduates per school, not accounting for any attrition. According to Wilson (2017), in 2015, the annual turnover rate for all dealership positions was 71%; this would correspond to approximately seven recent graduates per school working after the first year.

Mopar CAP, Honda PACT, GM ASEP, Ford ASSET, and Toyota T-TEN schools are accredited by the National Automotive Technicians Education Foundation (NATEF; Honda, n.d.; FCA, n.d.; Ford, n.d.; GM, n.d.; Toyota, n.d.). NATEF accreditation standards require each accredited school to have an active advisory board, which includes dealership personnel (NATEF, n.d.). Each of the four schools were contacted via email and one school agreed to participate in the study. This researcher contacted each of the manufacturer's lead instructors from the participating schools and obtained the instructor's agreement to assist in this study. This researcher briefed the advisory board members at one advisory board meeting and requested assistance in carrying out this project. Using the contact information provided by the

participating school, an email containing study information, a recruiting letter, and a recruiting poster were sent to the service managers explaining the research project and requesting their assistance and permission to conduct the survey with their employees. The sample size of this study is 26 participants. This sample size met the minimum requirements recommended by Gall et al. (2007) for a large effect having a statistical power of 0.5 at an alpha level of 0.05.

Instrumentation

The instrumentation consisted of a questionnaire to collect demographic data and Paul E. Spector's Job Satisfaction Survey. Paul E. Spector, a member of the Department of Psychology at the University of South Florida, developed the survey in 1985 (Spector, 1985). The survey consists of 36 summative questions using a six-point Likert-type scale. A coefficient alpha was calculated for each subscale and total scale with all being greater than 0.50. A test-retest was performed on a small sample, $n=43$, 18 months apart. The correlation coefficients between the subscales were high considering the time between samples and the considerable changes, reorganization, layoffs, and new top administration which occurred (Spector, 1985).

In Spector's (1985) study, a multi-trait and multi-method analysis was performed using the subscales of the Job Satisfaction Survey (JSS) and the Job Descriptive Index (JDI). This analysis provided the major evidence for discriminate and convergent validities (Spector, 1985). The validity correlations between equivalent subscales of the two instruments were all higher than the non-corresponding subscales across the instruments. The validity correlations between the equivalent subscales between the two instruments were significantly greater than zero and of reasonable magnitude, 0.61–0.80 (Spector, 1985).

Spector grants permission for the free use of the JSS if it used for noncommercial educational or research purposes and the user agrees to share selected results with him (Spector,

2011). The submitted data will be utilized to keep the norms and bibliography of studies that have used the JSS updated on Spector's JSS website. The bibliography currently has 55 different studies that have used the JSS survey as the primary instrument. This author will provide the requested data, the means per sub-scale, total score, sample size, country of study, and a brief description of the sample as requested by the developer for permission granted to use the survey instrument (Spector, 2011).

The possible responses are as follows:

1. Disagree very much
2. Disagree moderately
3. Disagree slightly
4. Agree slightly
5. Agree moderately
6. Agree very much

One point is scored for the most disagreement up to six points for the most favorable response.

The negatively worded items (2, 4, 6, 8, 10, 12, 14, 16, 18, 19, 21, 23, 24, 26, 29, 31, 32, and 34) are reversed scored. Spector (2011) noted that the negatively worded items are not every other question.

The JSS measures overall job satisfaction levels and nine facets of job satisfaction. The following table lists the nine individual areas measured and the overall or total job satisfaction along with each areas coefficient alpha based on a sample size of 2,870.

Table 1

Spector's (2001) Nine Facets of Job Satisfaction

Scale	Coefficient Alpha	Description
Pay	.75	Pay and remuneration
Promotion	.73	Promotion opportunities
Supervision	.82	Immediate supervisor
Fringe Benefits	.73	Monetary and nonmonetary fringe benefits
Contingent Rewards	.76	Appreciation, recognition, and rewards for good work
Operating Procedures	.62	Operating policies and procedures
Coworkers	.60	People you work with
Nature of Work	.78	Job tasks themselves
Communication	.71	Communication within the organization
Total	.91	Total of all facets

Note. This table was reprinted from “Job Satisfaction Survey, JSS,” by P. E. Spector, 2001, retrieved from <http://shell.cas.usf.edu/~pspector/scales/jssovr.html>. Copyright 2001 by P. E. Spector. Reprinted with permission (see Appendix A).

Each of the nine sub-sections of the survey consists of four items. The sum of the four items is the total score for each sub-section, and the total job satisfaction is the sum of all 36 items. Each sub-section could have a score ranging from 4 to 24 and the total job satisfaction could have a score ranging from 36 to 216 with the lowest score indicating the least job satisfaction and the highest score corresponding to the largest job satisfaction. If any items are not scored by the participant, Spector (2011) recommends taking the mean of the item numbers

listed for each subscale missing data (see Table 2) and substituting that number for the missing data. This will minimize having a false low score.

Table 2

Spector's (1999) Job Satisfaction Sub-scale Scoring

Subscale	Item numbers
Pay	1, 10, 19, 28
Promotion	2, 11, 20, 33
Supervision	3, 12, 21, 30
Fringe Benefits	4, 13, 22, 29
Contingent rewards	5, 14, 23, 32
Operating conditions	6, 15, 24, 31
Coworkers	7, 16, 25, 34
Nature of work	8, 17, 27, 35
Communication	9, 18, 26, 36
Total satisfaction	1–36

Note. This table was reprinted from “Instructions for Scoring the Job Satisfaction Survey, JSS,” by P. E. Spector, 1999, retrieved from <http://shell.cas.usf.edu/~pspector/scales/jssscore.html>. Copyright 1999 by P. E. Spector.

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The demographic questionnaire was combined with the JSS into a single survey and presented to the participants using an online survey tool developed using Google Forms. The average time required to complete the survey was approximately 15 minutes.

Procedures

Collection of the data to complete this casual-comparative study occurred using Spector's Job Satisfaction Survey and a demographic questionnaire. The Liberty University Institutional Review Board (IRB) approved the methodology for this study. Upon receiving approval from the IRB, this researcher contacted the lead instructor for each manufacturing program at the school participating in the study. The initial contact was in person followed by an email. This initial notification identified the purpose of the study and requested assistance in introducing the study to the dealer members on the advisory board representing dealerships that have graduates of a manufacturer's program employed at their dealership. The selected dealerships were emailed requesting their assistance in securing technicians to volunteer to take part in the survey. The email contained information regarding the survey and its purpose and the procedure to access the digital instrument located on a website developed by the researcher for the sole purpose of making the survey instrument available. The researcher followed up the email with a personal visit with service managers.

Data Analysis

This casual-comparative study of job satisfaction compared the job satisfaction of automotive technicians working in a dealership who have completed a two-year postsecondary automotive program containing manufacturers' specialized training to technicians working in a dealership that have completed a two-year general automotive program without specialized manufacturers' training. The independent *t*-test compared the differences in the means for all facets of Spector's JSS of the two groups of graduates (Gall et al., 2007).

The International Business Machines (IBM) Statistical Package for the Social Sciences (SPSS) version 26 software calculated the means, standard deviations, the significance level, and

the difference in means. According to Gall et al. (2007), the independent t -test tests for differences in means and is appropriate for small sample testing ($N \leq 29$); the use of the t -test must meet three assumptions:

1. Scores form an interval or ratio scale.
2. The scores in the populations are normally distributed.
3. Score variances for the populations under study are equal (Gall et al., 2007).

The first assumption that scores from a Likert-like scale form an interval or ratio scale is argumentative since Likert-type scales used in this survey are ordinal and do not contain an actual zero point, nor are the distances between any two adjacent points the same. This does not meet the true definition of an interval or ratio scale (Gall et al., 2007). However, there are studies that agree that the independent t -test is appropriate for evaluating Likert-type scales (Harpe, 2015; Warachan, 2011). According to Harpe (2015), a parametric analysis, the independent- t test, may be appropriate if verification of the assumptions occurs. Kolmogorov-Smirnov and Shapiro-Wilk tests confirmed normality and Levene's test confirmed equality of variance.

A study by Warachan (2011) concluded the two-sample t -test was robust for Likert-type data and performed well in controlling Type I errors for the five-point and seven-point scales. According to Gall et al. (2007), "Statisticians have found that t -tests provide accurate estimates of statistical significance even under conditions of substantial violation of these assumptions" (p. 315).

CHAPTER FOUR: FINDINGS

Overview

This casual-comparative study compared the job satisfaction levels of the graduates from a postsecondary two-year program that included specialized manufacturer-sponsored training to those graduates of a postsecondary two-year general automotive program. Measurement of job satisfaction levels in terms of overall satisfaction, pay, fringe benefits, and assigned job tasks was performed. This information may assist schools offering multiple automotive programs in deciding the best way to allocate scarce dollars for each program. This chapter includes a discussion of the research questions, descriptive statistics, null hypotheses, and findings.

Research Questions

RQ1: Is there a difference in job satisfaction levels between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs?

RQ2: Is there a difference in job satisfaction levels due to differences in pay between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs?

RQ3: Is there a difference in job satisfaction levels due to differences in fringe benefits between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs?

RQ4: Is there a difference in job satisfaction levels due to differences in assigned job tasks between graduates of postsecondary two-year automotive programs that included

specialized manufacturer-sponsored training and those automotive technicians from general automotive programs?

Null Hypotheses

H₀1: There is no significant difference in job satisfaction levels between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs as shown by Spector's Job Satisfaction Survey.

H₀2: There is no significant difference in job satisfaction levels due to differences in pay between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs as shown by Spector's Job Satisfaction Survey.

H₀3: There is no significant difference in job satisfaction levels due to differences in fringe benefits between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs as shown by Spector's Job Satisfaction Survey.

H₀4: There is no significant difference in job satisfaction levels due to differences in assigned job tasks between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs as shown by Spector's Job Satisfaction Survey.

Descriptive Statistics

Forty-five emails containing a recruitment letter and recruitment poster were sent to the service managers of new-car dealerships. Four emails returned as undeliverable. Of the two groups of automotive technicians surveyed, Group 1 completed a two-year program that included specialized manufacturers' training while group two completed a two-year program that consisted of general automotive training. The groups, sample sizes, mean, standard deviation, and standard error mean are listed for each area in Tables 3–6 below. The mean for the OEM-trained technicians was numerically higher in the overall job satisfaction, job satisfaction based on pay, and job satisfaction based on working conditions while the mean for job satisfaction based on benefits was numerically higher for the general group of technicians.

Table 3

Overall Job Satisfaction by Automotive Technician Group Descriptive Statistics

	Group Trainer	<i>N</i>	<i>M</i>	<i>SD</i>	<i>SE</i>
JSS Scores	OEM Trained	18	138.1667	15.87914	3.74275
	General	8	131.1250	16.47888	5.82616

Table 4

Job Satisfaction by Automotive Technician Group Descriptive Statistics Based on Pay

	Group Trainer	<i>N</i>	<i>M</i>	<i>SD</i>	<i>SE</i>
Pay Scores	OEM Trained	18	14.0556	3.20794	.75612
	General	8	12.3750	2.50357	.88515

Table 5

Job Satisfaction by Automotive Technician Group Descriptive Statistics Based on Benefits

	Group Trainer	<i>N</i>	<i>M</i>	<i>SD</i>	<i>SE</i>
Benefit Scores	OEM Trained	18	14.3333	4.31141	1.01621
	General	8	15.7500	3.65474	1.29215

Table 6

Job Satisfaction by Automotive Technician Group Descriptive Statistics Based on Job Tasks

	Group Trainer	<i>N</i>	<i>M</i>	<i>SD</i>	<i>SE</i>
Condition Scores	OEM Trained	18	15.8333	2.03643	.47999
	General	8	14.7500	2.25198	.79620

Results

Assumption Tests

The independent samples *t*-test measures the differences in means to test the hypotheses. This test must meet two major assumptions, the homogeneity of variance, and assumption of normality. Levene's test tested for homogeneity of variance and the Kolmogorov-Smirnov test and the Shapiro-Wilk test tested for the assumption of normality. The results of the tests for assumption of normality are listed in Table 7 and the results of Levene's test for homogeneity of variance are listed in Tables 8–11.

Table 7

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	<i>df</i>	Sig.	Statistic	<i>df</i>	Sig.
JSS Scores	.181	26	.028	.902	26	.017
Pay Scores	.147	26	.156	.933	26	.091
Benefit Scores	.131	26	.200*	.958	26	.347
Condition Scores	.145	26	.170	.929	26	.075

*This is a lower bound of the true significance.

^aLilliefors Significance Correction

Null Hypothesis One

The first null hypothesis stated that there is no significant difference in job satisfaction levels between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs as shown by Spector's Job Satisfaction Survey. An independent samples *t*-test, testing the differences in means, tested this hypothesis. Prior to performing the *t*-test, two major assumptions were confirmed, the homogeneity of variance and the assumption of normality. Levene's test (Table 8) was used to test for homogeneity of variance, $p = .788$, which demonstrated the results of the test were not significant and the assumption of equal variance was met. The assumption of normality was tested using the Kolmogorov-Smirnov test, $p = .028$, and the Shapiro-Wilk, $p = .017$. Both tests indicated a violation of the assumption of normality. According to Gall et al. (2007), *t*-tests can "provide accurate estimates of statistical significance even under conditions of substantial violations of these assumptions" (p. 315). Based on this statement an independent *t*-test was performed to compare the means of the difference in job satisfaction levels between graduates of postsecondary two-year automotive programs that

included specialized manufacturer-sponsored training (OEM trained) and those automotive technicians from general automotive programs (General). The mean of the OEM trained ($M = 138.2$, $SD = 15.9$) was numerically higher than the General participants ($M = 131.1$, $SD = 16.5$); however, the independent t -test did not demonstrate a statistically significant difference between the two groups, $t(24) = 1.03$, $p = .79$.

Gall et al. (2007) recommends performing “both a t -test and a nonparametric counterpart” (p. 315). A Mann-Whitney U test was performed ($U = 46.5$, $p = .156$, $r = -.28$) that validated the t -test. Rejection of the first null hypothesis did not occur as there was no significant difference in job satisfaction levels between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs based on this study.

Table 8

Independent Samples Test for Overall Job Satisfaction Scores

	Levene's Test for Equality of Variances		t -test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% CI for Difference	
								Lower	Upper
Equal variances assumed	.074	.788	1.032	24	.312	7.04167	6.82265	-7.03959	21.12292
Equal variances not assumed			1.017	13.054	.328	7.04167	6.92476	-7.91206	21.99539

Null Hypothesis Two

The second null hypothesis stated there is no significant difference in job satisfaction levels due to differences in pay between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs as shown by Spector’s Job Satisfaction Survey. An independent samples- t -test, testing the differences in means, tested the hypothesis. The t -test

must meet two major assumptions, the homogeneity of variance and normality. Levene's test (Table 9) was used to test for homogeneity of variance, $p = .411$, which demonstrated the results of the test were not significant and the assumption of equal variance was met. The assumption of normality was tested using the Kolmogorov-Smirnov test, $p = .156$, and the Shapiro-Wilk, $p = .091$. Both tests indicated a non-violation of the assumption of normality. The mean of the OEM trained ($M = 14.0556$, $SD = 3.20794$) was numerically higher than the General participants ($M = 12.3750$, $SD = 2.50357$) and the independent t -test did not demonstrate a statistically significant difference between the two groups, $t(24) = 1.310$, $p = .203$. Rejection of the second null hypothesis did not occur as there was no significant difference in job satisfaction levels due to differences in pay between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs based on this study.

Table 9

Independent Samples Test for Pay Scores

	Levene's Test for Equality of Variances		t -test for Equality of Means						
	F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	95% CI for Difference	
								Lower	Upper
Equal variances assumed	.700	.411	1.310	24	.203	1.68056	1.28305	-.96752	4.32864
Equal variances not assumed			1.444	17.177	.167	1.68056	1.16413	-.77361	4.13473

Null Hypothesis Three

The third null hypothesis stated there is no significant difference in job satisfaction levels due to differences in fringe benefits between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs as shown by Spector's Job Satisfaction Survey.

An independent samples t -test, testing the differences in means, tested the hypothesis. The t -test must meet two major assumptions, the homogeneity of variance and normality. Levene's test (Table 10) was used to test for homogeneity of variance, $p = .480$, which demonstrated the results of the test were not significant and the assumption of equal variance was met. The assumption of normality was tested using the Kolmogorov-Smirnov test, $p = .200$, and the Shapiro-Wilk, $p = .347$. Both tests indicated a non-violation of the assumption of normality. The mean of the OEM trained ($M = 14.333$, $SD = 4.31141$) was numerically lower than the General participants ($M = 15.7500$, $SD = 3.65474$) and the independent t -test did not demonstrate a statistically significant difference between the two groups, $t(24) = -.807$, $p = .428$. Rejection of the third null hypothesis did not occur as there was no significant difference in job satisfaction levels due to differences in fringe benefits between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs based on this study.

Table 10

Independent Samples Test for Benefit Scores

	Levene's Test for Equality of Variances		t -test for Equality of Means					95% CI for Difference	
	F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	.514	.480	-.807	24	.428	-1.41667	1.75520	-5.03922	2.20589
Equal variances not assumed			-.862	15.842	.402	-1.41667	1.64387	-4.90436	2.07103

Null Hypothesis Four

The fourth null hypothesis stated there is no significant difference in job satisfaction levels due to differences in assigned job tasks between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those

automotive technicians from general automotive programs as shown by Spector's Job Satisfaction Survey. An independent samples- *t*-test, testing the differences in means, tested the hypothesis. The *t*-test must meet two major assumptions, the homogeneity of variance and normality. Levene's test (Table 11) was used to test for homogeneity of variance, $p = .504$, which demonstrated the results of the test were not significant and the assumption of equal variance was met. The assumption of normality was tested using the Kolmogorov-Smirnov test, $p = .170$, and the Shapiro-Wilk, $p = .075$. Both tests indicated a non-violation of the assumption of normality. The mean of the OEM trained ($M = 15.8333$, $SD = 2.03643$) was numerically higher than the General participants were ($M = 14.7500$, $SD = 2.5198$) and the independent *t*-test did not demonstrate a statistically significant difference between the two groups, $t(24) = 1.213$, $p = .237$. Rejection of the fourth null hypothesis did not occur as there was no significant difference in job satisfaction levels due to differences in assigned job tasks between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs based on this study.

Table 11

Independent Samples Test for Job Condition Scores

	Levene's Test for Equality of Variances		<i>t</i> -test for Equality of Means						
	<i>F</i>	Sig.	<i>t</i>	<i>df</i>	Sig. (2- tailed)	Mean Difference	Std. Error Difference	95% CI for Difference	
								Lower	Upper
Equal variances assumed	.459	.504	1.213	24	.237	1.08333	.89300	-.75973	2.92640
Equal variances not assumed			1.165	12.341	.266	1.08333	.92969	-.93609	3.10275

CHAPTER FIVE: CONCLUSION

Overview

This chapter provides the conclusion of the casual-comparative study comparing the job satisfaction levels in terms of overall satisfaction, pay, fringe benefits, and assigned job tasks between automotive technicians who graduated from a two-year manufacturers' sponsored training program and work in a new car dealership to those technicians that graduated from a two-year general automotive training program. It consists of a discussion of the statistical analyses and the implications of those results. Additionally there is a discussion of limitations and recommendations for further research of this casual-comparative study.

Discussion

The purpose of this casual-comparative study was to compare the job satisfaction of automotive technicians who graduated from a two-year manufacturers' sponsored training program to those that graduated from a general automotive training program. This casual-comparative study measured job satisfaction in terms of overall satisfaction, pay, fringe benefits, and assigned job tasks. Four research questions were evaluated.

Research Question One

Research Question 1 asked is there a difference in overall job satisfaction levels between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs. While the mean of the specialized manufacturer-sponsored training was numerically higher than the mean of automotive technicians from the general automotive programs, there was not a statistically significant difference in overall job satisfaction between the two groups.

Research Question Two

Research Question 2 asked if there is there a difference in job satisfaction levels due to differences in pay between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs. While the mean of the specialized manufacturer-sponsored training was numerically higher than the mean of automotive technicians from general automotive programs, there was not a statistically significant difference in job satisfaction based on pay between the two groups.

Research Question Three

Research Question 3 asked if there is a difference in job satisfaction levels due to differences in fringe benefits between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs. While the mean of the specialized manufacturer-sponsored training was numerically lower than the mean of automotive technicians from general automotive programs, there was not a statistically significant difference in job satisfaction based on fringe benefits between the two groups.

Research Question Four

Research Question 4 asked if there is a difference in job satisfaction levels due to differences in assigned job tasks between graduates of postsecondary two-year automotive programs that included specialized manufacturer-sponsored training and those automotive technicians from general automotive programs. While the mean of the specialized manufacturer-sponsored training was numerically higher than the mean of automotive technicians from general

automotive programs, there was not a statistically significant difference in job satisfaction based on differences in assigned tasks between the two groups.

This study did not discover any statistically significant differences in job satisfaction between the two groups of technicians. According to Herzberg's dual-factor theory of job satisfaction and motivation, there are two distinct and independent dimensions of job satisfaction; the first dimension is job satisfaction and the second dimension is job dissatisfaction (Furnham et al., 2009). According to House and Wigdor (1967):

These dimensions are not opposite ends of the same continuum, but instead represent two distinct continua. High satisfaction is not in the main brought about by the absence of factors that cause dissatisfaction. Those job characteristics that are important for, and lead to, job satisfaction but not to job dissatisfaction are classified as "satisfiers," while those that are important for, and lead to, job dissatisfaction but not to job satisfaction are classified as "dissatisfiers." (p. 370)

Hertzberg's job satisfiers connected to the actual work itself include achievement, recognition, work itself, responsibility, and advancement. Of these, one of the top influencers of positive job satisfaction is the work itself (House & Wigdor, 1967). Automotive technicians, by their very nature tend to be "car guys." They enjoy working on cars and take pride in completing a challenging diagnostic repair. Job dissatisfiers include influences related to the actual work environment; ineffective policies and incompetent supervision are the two leading roots of dissatisfaction among workers. While job satisfiers tend to motivate workers to better performance and purpose, dissatisfiers do not. Improving dissatisfiers will not necessarily improve individual motivation and effort and contribute to overall job satisfaction (House & Wigdor, 1967).

Implications

While the data collected suggests there are no significant differences in job satisfaction between the two groups of participants, the question becomes, Which stakeholder benefits the most from the manufacturer-sponsored training programs? Technicians completing manufacturers' training while in school are factory-certified and qualified to perform warranty work for the dealership while technicians not receiving manufacturers' training must obtain their certification by completing training at a geographically remote manufacturer's training center. These centers may be located at a substantial distance from the dealerships, resulting in lost productivity while the technician is away from the center for up to several days at a time. While the technicians from both groups would be at different levels of certification with equivalent seniority, if they identified with Sypniewska's (2014) fourth cluster, they would be satisfied with their job if they perceived they had job stability, opportunity for promotion, development opportunities, and work content. It appears the largest beneficiary of manufacturer-sponsored training programs is the dealerships themselves because they have certified technicians capable of performing warranty work sooner than those technicians that completed a general training program. Both groups of participants are valuable assets to dealerships.

During the recruitment of participants, this researcher personally visited 14 different dealerships. During discussions with service managers and shop supervisors, a common theme emerged. The turnover rate of automotive technicians had increased substantially over the past two years. Each dealership visited was seeking to hire immediately a minimum of three new technicians with several looking for as many as six additional technicians. Technicians were becoming career changers, moving to new jobs that utilized their acquired skills and a perceived better compensation program. Technicians were switching to diesel technician, shipyard

positions, and maintenance technicians for large buildings such as hospitals. All of the dealerships visited used the flat-rate compensation plan. Far fewer automotive technicians that completed a two-year program were working for dealerships. According to Wilson (2017), in 2015, the annual turnover rate for all dealership positions was at 71% and may be getting worse.

In 2012 there were more than 40,600 postsecondary automotive technician completions; this number fell to 37,400 in 2017 (Settle, 2019). In direct competition for automotive technicians is the diesel industry. According to Settle (2019), diesel completions increased from 9,500 in 2011 to 13,000 in 2017. He contributes this increase partially to good starting salaries for truck diesel technicians. The automotive industry must change its pay structure and provide competitive entry-level compensation packages comparable to those offered by industries seeking the same skill sets automotive technicians possess.

To help alleviate these shortages of qualified personnel, the automotive industry, dealerships, and technical schools will have to collaborate and discover new and inventive ways to entice more individuals to enter the automotive technician field. As reported by the *Fixed Ops Journal* (McGavin, 2019), a Virginia dealership group in conjunction with lawmakers, local sheriff's office, and a local community college developed a program to provide a pipeline of technicians for its group. Non-violent offenders incarcerated at the Norfolk City Jail were recruited to train as automotive service technicians. Priority Auto Group guaranteed the inmates selected for the program full-time employment upon graduation. This training provided by faculty from Tidewater Community College allowed the inmates to earn college credit for the courses they completed during their participation in the program. This type of a program appears to be a win-win situation for all involved. The dealership gets technicians, the community

college increases its enrollment, and the inmates have the potential to move beyond the revolving door and stay out of the prison system.

Limitations

Several limitations were present in the study and examined when evaluating the results. The use of a convenience sample threatens the external validity of the study (Gall et al., 2007). The sample used in this study was a convenience sample selected from the southwest region of Virginia due to the location's proximity to multiple postsecondary automotive training programs. The data obtained from the participants in this area may not accurately represent the entire population due to differences in economic conditions and employment rates when compared to the entire population.

Initially the primary mode of participant recruitment was email. An email sent to their supervisors requested permission to survey their employees and to participate in the study. The supervisors also received a personal visit by this researcher after response to the emails resulted in few active participants. All supervisors at the dealerships selected for the study agreed, after the visit by this researcher, to provide their employees with the recruitment information, and participation did increase. It is unknown if all supervisors forwarded the information to their employees. The supervisors provided the recruitment information to the potential participants. Since the instrument was available on a public domain web site, it was possible for people outside of the target population to participate in the survey. To minimizing this limitation, the removal of unqualified participants occurred based on their response to the demographic questions.

Another limitation discovered accidentally after collection of the data was completed occurred when this researcher met a participant after he had taken the survey. He was prohibited

from completing the survey due to his response to one question. One of the survey questions asked, “Do you work at a new car dealership?” He interpreted this question as to whether his dealership was “new” (his dealership was operating out of an older building) instead of a dealership that sold new cars. This limitation potentially resulted in a lower number of participants contributing to the data collected.

One school that previously provided two of the manufacturer’s programs had dropped all of their manufacturer’s programs after the beginning of the study and prior to providing the survey to the participants. This may have resulted in a smaller number of graduates available to work at a dealership.

Recommendations for Future Research

Recommendations for studies on this topic include the following:

1. This study could be repeated with a larger sample size and include all technicians working at a new car dealership.
2. A longitudinal study following the students of an automotive school that offers multiple automotive programs of study, including general and manufacturer’s programs. This study would include dropout rates while attending school and job satisfaction as experience increases and study reasons for attrition or changes to employment.
3. A comparison of job satisfaction rates between dealerships that still use the flat-rate payroll plan to those that have adopted a different payroll plan.
4. A study of the actual reasons technicians leave their current employment.
5. A case study of a new car dealership with low turnover rates that identifies reasons technicians stay with their current employer.

6. A study comparing turnover rates and job satisfaction levels of the graduates of different schools to see if different education programs affect the outcome.
7. A future study that evaluates the trend in available seats in certified programs that provide training for future technicians.

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APPENDIX A

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