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Relationship Between Part Pricing, Secondary Discounts, and Gross Profit in the Heavy- Duty Trucking Industry

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Walden University

College of Management and Technology

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Arlisa Campbell

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Walden University
2021

Abstract

Relationship Between Part Pricing, Secondary Discounts, and Gross Profit in the Heavy-Duty Trucking Industry

by

Arlisa Campbell

MSML, Western Governors University, 2017

BS, Missouri Southern State University, 2016

Doctoral Portfolio Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

March 2021

Abstract

Business leaders who fail to maximize gross profits place organizations at an increased risk of failure. Grounded in Jules Dupuit's cost-benefit analysis theory, the purpose of this quantitative ex post facto study was to examine the relationship between part price, secondary discounts, and gross profit in the heavy-duty trucking industry. Archival data records (N = 21,485) for 2019 part sales in the heavy duty trucking industry were analyzed using multiple linear regression. The multiple regression results indicated the full model, containing the 2 predictor variables (secondary discount and part price), was able to predict gross profit, F (1, 21483) = 106.531, p =.001, R^2 = .293. Both secondary discount and part price made a statistically significant contribution to the model. A recommendation is for parts managers and business leaders to implement internal training on the importance of part pricing and gross profit goals. The implications for positive social change include the opportunity for parts managers and organizational leaders to gain an understanding of part pricing strategies, its impact on gross profit earnings, and the potential to increase employment opportunities.

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Dedication

I would like to dedicate this doctoral study to my Grandpa Wally. My Grandpa was always my biggest fan, and I know he would be extremely proud of me and this accomplishment.

Acknowledgments

First, I have to give all the glory and credit to God. He supplied me with the knowledge, perseverance, patience, and determination to complete this degree. Without Him, none of this would have been possible. I am grateful to my husband, Andrew, who stood by my side and cheered me on every step of the way. All my late-night writing sessions have finally paid off! I am also grateful to my parents, Jeff and Cheryl. You both always supported me and pushed me to reach my fullest potential. Thank you to my brother, Barry, and my Grandma Donna for always showing me love and encouragement. I would also like to thank my friends and extended family for enduring this journey with me.

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I would also like to thank Dr. Douglas Campbell and Dr. Jim Savard for their contributions to my research during residency. You both played a vital role in developing the initial business problem and determining which theoretical framework fit best. Thank you for your academic contributions and thank you for your service.

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Section 1: Background and Context

Research on the relationship between cost-benefit analysis (CBA) and pricing in the heavy-duty trucking industry is limited. The CBA theory is used to determine financial factors by evaluating pros (benefits) and cons (costs) within an organization (Van Wee, 2013). The CBA theory can be used by organizational leaders in the heavy-duty trucking industry to determine pricing on products by evaluating the cost of manufacturing the product compared to the benefit of the sales price. Additional factors organizational leaders must consider when pricing product include secondary discounts and gross profit earnings.

Historical Background

Businesses are continuously looking for ways to increase profits. The U.S. heavy-duty trucking industry is no different. Many companies within the U.S. trucking industry are focusing on heavy-duty truck part sales. In an attempt to increase profits, many organizational leaders are interested to see if secondary discounts on part sales affects profitability. Many times, the organizational leaders will place a discount on parts to maintain competitive within the market. But additional research is necessary to determine the difference in gross profit of full price part sales compared to discounted part sales.

Most current research on heavy-duty trucking consists of research on truck drivers. Areas of research include truck driver retention, safety, intent to leave, and motivational factors. For example, Miller et al. (2017) discovered a relationship between truck driver turnover and truck driver safety, offering strategies for managers to

incorporate to reduce truck driver turnover. Research on sales and discounts exists on other industries, but from my review, no research focuses specifically on heavy-duty truck part pricing. For instance, Ardjmand et al. (2016) only discussed discount pricing with the effect of supply and demand, and Cai et al. (2016) discussed customers' intent to purchase items that have a discount and items with no discount.

Organizational Context

The organization I used for this portfolio is one of the largest heavy-duty trucking dealerships in the United States. This organization offers new and used medium and heavy-duty trucks and heavy-duty truck parts as well as truck leasing and carrier services. The organization has over 100 locations throughout 16 states in the United States. The company mission to customers is to offer the best customer service possible. The company slogan is "whatever it takes," which promotes employees to go above and beyond to satisfy the customer. The organization's mission statement focuses on both employees and customers: "To provide our employees with a responsive, safe and superior working environment; a spirit of team effort and rewarding them with the courtesy and respect they deserve."

The organization uses a matrix structure. The members of the matrix include the CEO, president, chief financial officer, vice president of operations, vice president of parts, vice president of IT, and vice presidents for each regional location. The organization is the largest privately traded trucking company in the United States. The Occupational Safety and Health Administration and the Department of Transportation enforce external regulations. The manufacturer applies purchase and sales pressure on the

organization. The manufacturer implements standards requiring locations be a set number of miles apart and only two new locations to be opened a year. Occupational Safety and Health Administration and Department of Transportation implement safety regulations including emissions standards, truck part requirements, and personnel safety items. Specific examples include requiring all trucking personnel to have safety goggles and a diesel particulate filter (DPF) on each truck to prevent soot from entering the atmosphere.

Problem Statement

Business leaders are engaging in gross profit manipulation at high rates (Poonawala & Nagar, 2019). But leaders within 80% of businesses fail to incorporate accurate part pricing (Edwards, 2016). The general business problem is that some parts managers are unable to project the impact of part prices on their gross profit. The specific business problem is that some parts managers in the heavy-duty trucking industry do not know the relationship between part price, secondary discounts, and gross profit.

Purpose Statement

The purpose of this quantitative ex post facto study was to examine the relationship between part price, secondary discounts, and gross profit in the heavy-duty trucking industry. The independent variables were part price and secondary discounts, and the dependent variable was gross profit. The population was all parts managers at various branches within a specific heavy-duty truck parts company due to each location selling the same products and the parts managers having immediate control of pricing. The geographical location involved various locations across the United States. The

information gathered from this study has the potential for business leaders to create positive social change by increasing sales, which would increase job opportunities within the company and encourages employees to stay in the community where they are currently employed. Employees remaining in the community also promotes family stability and community involvement.

Target Audience

The target audience for this portfolio includes stakeholders and business leaders within the automotive and heavy-duty trucking industries. Business leaders wanting to improve gross profit and establish new pricing strategies will benefit from this portfolio. The key stakeholders of the chosen organization include the president, CEO, vice president of operations, vice president of parts, and director of business development. The listed individuals are key stakeholders because they were owners and made all high-level decisions. I met with the CEO, vice president of operations, and vice president of parts and discussed business problems the organization was facing. The stakeholders were interested in how much potential profit was being lost due to parts managers at each branch creating secondary discounts on parts. Stakeholders were interested because parts managers and counter salesmen at each branch create the discounts, not the corporate parts department. The organization's computer system collected information from each transaction, but the president, CEO, vice president of operations, vice president of parts, and director of business development were seeking a better understanding of interpreting existing data.

Research Question

What is the relationship between part price, secondary discounts, and gross profit in the heavy-duty trucking industry?

H_0: There is no statistically significant relationship between part price, secondary discounts, and gross profit in the heavy-duty trucking industry.

H_1: There is a statistically significant relationship between part price, secondary discounts, and gross profit in the heavy-duty trucking industry.

Data Collection and Analysis

I obtained secondary data from one corporate parts business analyst within the organization. The organization had one corporate office and 72 branch locations. The business analyst collected the needed data from the company's AS400 system. The data included data on part sales involving a secondary discount from 72 branch locations: the price of secondary discounts, part pricing, and gross profit for each transaction that involved a secondary discount on a part sold.

I analyzed the data using SPSS statistical software. I used the multiple linear regression function within SPSS to determine the relationship between the independent variables secondary discounts, part pricing, and gross profit. I used the SPSS output to present descriptive statistics and inferential statistics. I used the descriptive statistics section to include the results of assumptions of outliers, multicollinearity, normality, linearity, homoscedasticity, and independence of residuals and noted any violations. I described the mean, standard deviation, and sample size. I showed a correlation between part pricing, secondary discounts, and gross profit to verify a relationship between

variables. I used the Pearson correlation parametric test to determine the degree of relationship between linearly related variables. Once the relationship was established, I completed a multiple linear regression analysis. A multiple linear regression was used to explain the relationship of multiple independent variables and one, continuous dependent variable. I then used the inferential results section to describe the standard multiple linear regression (α), independent variables, dependent variable, any noted violations, F ratio, and how close the data fit the regression line (R^2).

Significance

This secondary data analysis was valuable to the business leaders of the chosen organization to increase sales. Business leaders will use this evaluation to display if gross profit is being lost due to applying secondary discounts to sales. The increase in gross profit allows business leaders to create additional positive social change by improving stability and employee engagement.

Contribution to Business Practice

Results of this study are important to parts managers in the heavy-duty trucking industry because the results may provide insight to improve overall gross profit and pricing strategies involving parts pricing and secondary discounts. The potential improvements in pricing strategies can increase sales and profitability within the organization. Parts managers can implement new pricing strategies as they gain a better understanding of the relationship between part prices, secondary discounts, and gross profit.

Implications for Social Change

The implication of social change within this study was directed toward improving the American trucking industry's parts sector profitability. As the heavy-duty trucking industry grows, additional employment opportunities will become available increasing employment stability. The increase in employment opportunities can have a positive impact on the employees and their families, creating stability as well as positively impacting the U.S. economy and society. Stability will be created for families with parents having a stable job with a successful company in a growing industry. This will allow families to remain in their current communities, promoting community involvement and community service. The economy will be positively impacted with the increase in available employment for citizens and the increase in revenue for the heavy-duty trucking industry.

Theoretical Framework

Jules Dupuit established the CBA theory in 1848 (Maneschi, 1996). The CBA theory was used to evaluate what elements of the study were financially beneficial and which elements were not financially beneficial. Specific elements included measuring the costs of items and applying discount rates, if applicable. The CBA theory was a way to evaluate all pros (benefits) and cons (costs) of financial factors within an organization (Van Wee, 2013). In 1848, the CBA theory was initially used by the U.S. Army Corps of Engineers for water development projects (Brimah, 2020). It was not until the 1950s that economists incorporated the CBA theory for financial and economic purposes (Brimah, 2020). Dupuit also noted that prices are determined by how much a consumer is willing

to pay for a product (Barback, 1848/1952). The CBA theory was applicable for my research by creating a foundation for me to evaluate if secondary discounts were financially beneficial. I then determined whether creating a secondary discount on a part generated a big enough benefit or whether the price of the part and secondary discount combined was too big of a cost.

Representative Literature Review

A literature review is required for reliable academic research. A literature review is the combination of existing and new research a researcher uses as a basis to understand and expand research among a specific topic (Rewhorn, 2018). The researcher analyzes and synthesizes the existing research, which builds a deeper understanding of the research topic while also identifying gaps in the research (Xiao & Watson, 2017). My literature review included information relating to my theoretical framework, business management, pricing strategies, and the CBA.

I searched for articles from scholarly, peer-reviewed journals, books, and government reports. The key words I searched for included *heavy-duty trucking, trucking industry, truck parts, business management, pricing strategies, sustainability, teams, cost-benefit analysis, change management, and product pricing.* Most articles were published within the past 6 years, with most articles published in 2019.

Theoretical Framework

The popularity of the CBA continues to increase. For example, many recent researchers have used the CBA to determine the financial benefit of disease prevention. Shwiff et al. (2018) utilized the CBA to determine if the cost of vaccinating humans was

more beneficial than the cost of treating a rabies-infected human. Park et al. (2018) and Datta et al. (2019) also utilized the CBA to determine the cost-benefit of vaccinations, examining human papillomavirus (HPV) vaccinations in the United Kingdom to determine how to increase vaccinations rates while maintaining cost efficiency. For adolescents, the most cost-efficient option was to immunize girls only (Datta et al., 2019).

Additional Theoretical Frameworks

An additional theory applicable for product pricing that was not used for this study includes the activity-based costing method (ABC method). The ABC method establishes the foundation to determine product pricing based on all related costs. During the 1980s, the ABC method was established to determine high overhead costs (Wegmann, 2019). The ABC method was used to calculate all production costs to determine how much financial investment was in the product. Direct costs include labor, material, and manufacturing cost allocations (Gui & Na, 2019). Organizations have the opportunity to price products for a profit by determining the overall cost of the product and pricing accordingly. The ABC method has been used to evaluate overhead costs among marine and costal items (Gui & Na, 2019), but it is also applicable for the trucking industry. The combined price of materials, labor, and manufacturing of heavy-duty truck parts can be used to establish a minimum price for products. The ABC method focuses on the price to create the product, whereas other theories focus on supply and demand or competitive pricing.

Additionally, a different perspective on product pricing includes the cost contribution agreement (CCA) theory. The CCA theory was developed from the actions of military members where all members paid for the cost of the alliance until the alliance accomplished the intended objectives (Olson & Zeckhauser, 1966). The CCA theory was formed by determining what objective, or end goal, would account for equaling the cost of contributing to the alliance. The CCA theory is popular among the business sector. An alliance under the CCA theory is a business arrangement where business leaders share contributions and risks of joint developments with the understanding that each business will benefit (Organization for Economic Cooperation and Development, 2017). Developments include new products, new procedures, and new research. Although each member may contribute differently, each member has the ability to sell products discovered or created during research under the alliance (Lin et al., 2016). It is important for all the members to understand the objective of an alliance. The members who contribute the most to the alliance should benefit the most reward from the alliance (Russo & Cesarani, 2017). When all members understand that logic, the alliance will be successful. However, once alliance members begin to compete with other members, the alliance will fail (Russo & Cesarani, 2017). Establishing an alliance is appealing to organizations seeking to expand geographically.

Multinational organizations benefit from CCA theory by partnering with businesses in other geographic areas for the opportunity for expansion (Russo & Cesarani, 2017). The alliance structure offers shared risk and the opportunity to acquire additional resources without being fully established in another country (Russo &

Cesarani, 2017). Forming a team with strong, established organizations benefits business objectives as aligned businesses provide a stronger forefront (Kollmann, 2016). Accomplishing a strong forefront involves enforcing stability by maintaining mutual respect and understanding among alliance members.

CCA is also referred to as the cost sharing arrangement (CSA). The CSA structure in business endeavors involves the purchasing of an existing intangible item with the understanding that all partners will have equal benefit from future products (De Simone & Sansing, 2018). CSA and CCA are similar because each member of the arrangement shares equal cost, risk, and benefit (De Simon & Sansing, 2018). The CCA is structured for each member to contribute different amounts financially, but the CSA is structured to have each member contribute equal amounts of funds. The CSA structure creates more unity within the agreeing members by ensuring quality of funds and profits are equal among all members (Obied-Allah, 2016).

An additional pricing theory, similar to CCA and CSA, includes the advanced pricing agreement theory. The advance pricing agreement theory is common among organizations established across several countries. It is used to secure equal pricing for an extended period for specific customers (Afik & Lhav, 2015). The theory is comparable to bidding large purchase projects for specific fleets within the trucking industry. When a fleet company is contracting out a bid on a list of products, the fleet is looking to secure a set price on those products for an extended period. The advance pricing agreement theory focuses on taxation with enterprises established in multiple nations. The taxation element involves the arm's length principle which regulates fair taxation among organizations

conducting business in multiple countries (Ylonen & Teivainen, 2018). Establishing fair taxation prevents double taxes on same purchases and profits when transferring earnings across country borders.

Business Management

Business management is a popular topic within business. Many similarities exist between leaders and managers; both positions influence employees, work with people and strive to accomplish goals (Northouse, 2016). Decision making is also an aspect of both positions (Azad et al., 2017). Managers make decisions on correcting problems, and leaders make decisions on how to implement change within the organization. However, many differences also exist between managers and leaders. Managers supply consistency, organization, stability, and order (Northouse, 2016). They also solve problems and organize staff (Kotter, 2001). The primary focus of the manager is completing the task or product. On the other hand, leaders produce change, movement, alignment, and commitment (Northouse, 2016). Leaders also motivate, inspire, and communicate goals to employees (Kotter, 2001). Though managers focus on the task, leaders focus on the individuals completing the work (Springer, 2016). Leaders are more concerned with how the employees are feeling and understanding what motivates the employees. Leaders can be described as artistic, creative thinkers and managers as enforcing order and structure while embracing chaos (Pathak, 2013). Management is a position someone holds, whereas leadership is a behavior someone expresses.

Management also involves various areas of expertise referred to as specializations. A few of these specializations include leadership styles, employee

performance, strategic change, and organizational change. Change is typically initiated by top-level executives and pushed down into the organization (Franken et al., 2009). This process allows key stakeholders to control how the initial shift of change is presented and initiated. Although organizational change can happen at any time, change is frequently created when new CEOs and chief information officers are taking office. New CEOs and chief information officers generate changes to prove their worthiness of the new position and increase the organization's performance (Gerth & Peppard, 2014). Leaders ask three important questions when considering change: what to change, what to change to, and how to cause the change (Umble & Umble, 2014). Leaders discuss changing many business elements, including product pricing.

Business leaders are responsible for maintaining adequate pricing strategies. Although many pricing strategies exist, the purpose for appropriate pricing is to generate the largest profit margin for the selling company. For example, Wang et al. (2016) compared the fixed-dollar markup policy to the percentage markup pricing policy. Each pricing policy was deemed beneficial but under different circumstances. The percentage markup pricing policy yielded higher profits in most purchasing situations except when a large number of competitive companies. In instances when the market was extremely competitive, the fixed-dollar markup produced the largest profit margin due to the set pricing standard (Wang et al., 2016). The percentage markup pricing strategy is most popular in terms of retail pricing of product, but quality and service also influence an organization's pricing decisions.

Pricing strategies are also influenced by free products. Based on a study where both firms offered bundled premium services, one free product/one bundle and both offering free product options, most revenue was generated when both firms offered the free core product with the option to purchase the premium service (Zhang et al., 2016). But based on a study on Chinese airline pricing strategies, there is a relationship between low quality service and decline in demand of flights. When consumer demand decreased, the flight prices reduced to compensate for the loss of market demand; however, when the service quality increased, the flight pricing increased to match the increase in customer demand (Zhou & Zhou, 2019). These findings support that consumers are willing to pay a higher price to receive better quality of product. Consumer value also influences product pricing.

As indicated by the different pricing strategies and influences, business leaders face many business challenges including product pricing. A popular pricing technique is value-based pricing. Value-based pricing is when an organization sets the price of the product on the perceived value of the customer, not the cost of the product (Liozu, 2017). Customers are willing to pay the price they believe the goods are worth, while the organization makes a profit for what the product is selling for. Partitioned pricing is a motivating factor for customer willingness to pay. Partitioned pricing is when a business reveals a specific amount of the product cost (Abraham & Hamilton, 2018). If a product is highly promoted and the price is not revealed, consumers are more intrigued to purchase the product. However, with products that offer multiple items or include surcharges, consumers have a more positive response when the price is revealed

(Abraham & Hamilton, 2018). Although there are multiple variations of partitioned pricing, each showed a positive relationship with consumer willingness to purchase. Competitor pricing also drives product pricing, as businesses often change product pricing to beat other businesses that offer the same products and to gain a competitive advantage (Liozu, 2019).

Product pricing can also be influenced by employees' personal preference rather than competitor data. When making pricing decisions, it is important for employees to make ethical choices. Employees make unethical business decisions when influenced by specific social settings (Ameer & Halinen, 2019). Salesmen experience extreme pressure to increase sales and meet sales quotas. Such pressure increases the likeliness of a salesman making unethical business decisions to reach such high goals. Unethical behavior involves altering and influencing pricing on current and future products.

New products also require various pricing strategies. New product pricing sets the standard for value of the new product and influences the pricing for all future new products (Feurer et al., 2019). Managers must price products to generate revenue while remaining competitive in the market. Most new products are priced based on market characteristics (Altug & Sahin, 2019). A common strategy is presale marketing which benefits both consumers and businesses. Consumers benefit from presale marketing by knowing what products are about to hit the market before availability is sold-out (Feng et al., 2019). This benefits brand-loyal customers the most as they can plan for the next product from their favorite brands (Feng et al., 2019). Presale marketing has multiple benefits for businesses. Retailers use presale marketing techniques to extend selling

seasons, forecast demand, and build inventory (Feng et al., 2019). Many businesses experience higher sales around the holidays and launching presale marketing techniques outside of the holiday season can create additional sales. An example includes Apple products. Many customers are loyal to the Apple brand that includes phones, computers, headphones and more. Apple® might premarket a new pair of headphones in February to expand purchases outside of the holiday season. A similar scenario is present in the heavy-duty trucking industry. Summer is the peak season for heating, ventilation, and air condition (HVAC) parts for heavy-duty trucks. Presale marketing for new HVAC parts in the winter season creates the opportunity to gain the attention of brand-loyal customers and forecast future demand to build up inventory.

Another consideration for business managers is the effect of weather on organizations. Climate changes, including extreme weather events, can affect industries such as electrical companies. Weinhofer and Busch (2013) researched the climate factors that affected 11 electrical utility companies. Climate changes and weather events such as tornados and flooding can have a significant effect on electric companies. Strategies for managers to implement to manage climate risks include risk identification, risk assessment, risk response (Weinhofer & Busch, 2013). Although extreme weather events are typically sudden, organizations have the ability to create strategies to maintain and enhance efficiency during the extreme weather event (Weinhofer & Busch, 2013). This will not only benefit the organization, but it will also benefit the customers and community members affected by the weather event.

Change Management

Organizational change is a popular topic within business. The discussion of organizational change has expanded over the years to include change in process, change in structure, and change in management. When incorporating change, resistance to change is a factor to consider. Resistance to change can be both harmful and helpful (Bareil, 2013). Harmful resistance includes employee strikes and resignations, but helpful resistance includes using resistance as a resource to improve change implementation.

Employee cooperation is influenced by management. Managers have the ability to decrease resistance by using the correct change tools at the correct time (Christensen et al., 2006). An example includes starting the change using persuasion and building towards a forceful change. Employees are more accepting to change when they agree with the reasoning for the change (Christensen et al., 2006). Employee agreement with organizational change also effects employee work ethic. Organizational changes can affect employee morale, perceptions, and customer service (Campbell, 2014).

A popular change implementation tool is Kotter's eight-step model. The organization must also convince at least 75 percent of the managers that change offers more opportunities than the current process (Kotter, 2007). The second and third steps include building a guiding team and creating a vision. Building a guiding team will benefit the organization during change because change must first be implemented by the leaders (Moldovan & Macarie, 2014). The vision statement describes the hopes and aspirations of the organization's future (Gulati et al., 2016). The remaining steps include communicating the vision, empowering others to act on the vision, plan for and create

short-term wins, consolidate improvements and produce more change, and institutionalize new approaches. While all steps are important, step one sets the momentum for the following steps. To successfully establish a sense of urgency, the organization must understand how difficult it is to push people out of their comfort zones while paralyzing risks (Kotter, 2007). Kotter's eight-step model offers a phase approach. Kotter's organizational change model promotes faculty engagement and participation during change (Calegari et al., 2015). Each of the eight steps consists of a topic in which leaders can decide how to act to accomplish each step. The first step is to create a sense of urgency. Over 50 percent of companies fail during the first step (Kotter, 2007). Leaders can create urgency by conducting meetings and sending emails as well as other options.

An additional theory is the motivator-hygiene theory. Herzberg (2003) developed the motivator-hygiene theory. Herzberg used the theory to offer an explanation of factors that influence job satisfaction. The two factors that influence job satisfaction include motivation and hygiene (Herzberg, 2003). Motivational factors include wages, benefits, and training (Herzberg, 2003). Hygiene includes the employee environment. Hygiene only negatively affects job satisfaction when poor hygiene is present (Herzberg, 2003). Poor hygiene includes strict rules, over-bearing managers, and poor office structure (Herzberg, 2003). The motivational-hygiene theory can be used to determine additional motivational factors of employees.

It is essential for leaders to understand the implications of decisions and actions when improving sustainability (Epstein & Buhovac, 2014). Not considering negative

effects of change can create organizational turmoil and loss of profits. It can create such a negative effect that organizations might have to sell the company. Many entrepreneurs have sold their companies to larger organizations (Kearins & Collins, 2012). Not all entrepreneurs sell due to negative organizational standings; as some entrepreneurs sell when the company is as its highest high to earn the highest profit.

Sustainability is the process of determining present needs without harming future development of social, economic, and ecological developments (Martens, 2006). Dočekalová et al. (2015) define corporate sustainability as a multidimensional concept based off a specific idea on sustainability, that that develops into a more detailed process. An example includes the idea of an organization going green with paper copies and switching to a cloud storage. The original sustainability idea was to be a green organization by reducing paper usage, but the idea might develop into an even larger concept of going green such as eliminating water cups and installing water fountains to reduce waste.

Generating and maintaining sustainability also requires communication. Epstein and Buhovac (2014) discussed the importance of ideas and interactions between organizational decision makers and employees. Open communication is needed to improve performance and behavior (Epstein & Buhovac, 2014).

Many sustainability articles link sustainability and economic factors to one another. Birnik (2013) discussed the strategies managers might implement to reduce organizational risk in regard to climate change. The strategies are implemented in a four-step firm-level framework. The steps include acquiring knowledge, quantifying climate

impact, managing greenhouse gas emissions, and shaping competitive landscape (Birnik, 2013). While climate change can be an unpredictable change, planning for future changes can create a positive impact.

Additional responsibilities of leaders are to initiate and implement sustainability changes. These types of changes are typically implemented by a small group of executives and stakeholders at the top of the organization (Strand, 2014). The organization must have the ability to survive economic conditions while also keeping the environment in mind. Business leaders incorporate sustainability by using various strategies. Lampikoski et al. (2014) created a strategy referring to game. The four green innovation games include rationality, collaboration, radical, and clarity (Lampikoski et al., 2014). The authors use the term game because they believe the label appeals to business leaders. The purpose of the strategic games is to create activities for the organization to perform which then generates a value. Leaders can then evaluate the values to determine organizational performance (Lampikoski et al., 2014). The games are a tool to determine if new innovations are benefiting the organization in such a way the leaders planned it to.

Heavy-Duty Trucking Industry

Industries such as the automotive industry are aware of the need for planning sustainability. Hwang (2014) utilized a specific sustainability framework as a means to manufacture automobiles more efficiently. The framework consisted of four elements: technological, organizational, institutional, and social change (Hwang, 2014). Each of the first three elements are important in manufacturing to stay up to date on equipment,

regulations, and production opportunities. Social change creates a more positive experience for the customer. The automobile industry adheres to the social needs of its customers by offering environmentally friendly automobiles (Hwang, 2014). This option not only satisfies the customer (socially) but also benefits the environment (economically).

Truck drivers are in high demand across multiple industries. Seventy percent of all freight is delivered by trucks and involves over three million truck drivers (Prockl et al., 2017). Even though the trucking industry is the largest type of freight delivery, there is a low retention rate of truck drivers. One of the leading causes of low truck driver retention rates includes safety. In 2012, over 695 drivers were fatally injured, with 92 percent of driver fatalities being tractor-trailer drivers (Smith, 2015). Safety is a large concern for drivers and companies. Safety factors include sleep, hours of operation, work environment, and equipment operation. Although 61 percent of truck driver injuries were from falls, slips, and trips, additional injuries include equipment injuries (Smith, 2015). Inexperienced drivers are less likely to abide by safety regulations creating a greater risk of injury (Douglas & Swartz, 2017). To prevent equipment injuries, leaders must replace and maintain truck parts for employees. Truck drivers have one of the highest turnover rates among employees in the U.S. (Lemay et al., 2013). Retention is affected by intent to quit, company reputation, compensation, recruiters, top management, and time at home (Lemay et al., 2013). Additional elements include safety (Belzer & Sedo, 2017), dispatchers (Kemp et al., 2013), and government regulations (Cantor et al., 2011). Most research focuses on compensation and feelings towards employers, but the conceptual

framework allows qualitative research to be conducted to determine additional turnover factors.

Health and safety are two factors that contribute to truck drivers leaving their jobs (Cantor, 2011). Many drivers quit their jobs due to the harsh working conditions (Kemp et al., 2013). Truck driving is a high-risk occupation (Versteeg et al., 2018). Drivers' rick of both health and safety are increased when being on the road (Versteeg et al., 2018). Belzer and Sedo (2018) discovered that higher paid drivers drive safer than lower paid drivers. Compensation is also used as motivation for truck drivers to drive safely (Williams et al., 2011). Driver safety is also affected by federal regulations.

Federal regulations encourage truck drivers to drive safely or push them to quit the industry (Cantor et al., 2011). The government places strict laws on truck drivers by limited drive time, demanding rest time, and requiring continuous logging of all hours. Such strict laws have encouraged some drivers to increase their safety awareness, while the restrictions have caused other drivers to quit the profession (Cantor et al., 2011). Safety and health both contribute to truck drivers' increasingly high turnover rates (Versteeg et al., 2018).

Safety regulations expand past driver restrictions to include nationwide equipment requirements. The U.S. Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration established the first fuel efficiency regulation for medium and heavy-duty trucks in 2011 (Kopin & Musselman, 2015). Over the road heavy-duty freight trucks are the leading cause of global emissions (Kinnear et al., 2015). The main focus of the fuel efficiency regulation is to minimize CO_2 emissions. The

greenhouse gas emissions model is the first phase of the regulation (Kopin & Musselman, 2015). The purpose of Phase 1 of the initiative is to improve air quality while reducing greenhouse gas emissions which includes CO_2 (Klemick et al., 2015). Such regulations have had a direct impact on heavy-duty truck part sales.

The emissions regulations have increased the sales on DPFs. The sales generated by DPFs are for new units and for cleaned, recycled units (Du et al., 2018). Diesel engines release high levels of particulate matter and the EPA requires a DPF unit to reduce the particulate matter released by heavy-duty trucks (Li et al., 2019). DPF units also increase fuel consumption on heavy-duty trucks. When regularly cleaned or replaced, DPFs reduce particulate matter, engine efficiency, and fuel consumption (Du et al., 2018). DPFs are considered the best diesel after-treatment product by reducing particulate matter emissions an average of 54 percent and as high as 95 percent (Li et al., 2019).

Additional research explored what influences truck drivers' job satisfaction and commitment. Large et al. (2014) expanded on Cantor et al. (2011) discussion on drivers organizational and occupational commitment. Levels of organizational commitment influence drivers to change employers, while low occupational commitment causes drivers to change occupations to different industries. The authors measured the degree of relationships between satisfaction with working conditions, occupational satisfaction, occupational commitment, perceived organizational support, and organizational commitment (Large et a., 2014). A strong relationship was discovered between all elements with the exception of perceived organizational support and occupational

satisfaction in which no significance was found (Large et al., 2014). Drivers are also influenced organizational feedback. Huang et al. (2008) conducted a survey among Chinese and American drivers on the attitudes toward feedback. Questions included drivers' gender, age, location, hours driven, types of pay, and years of driving experience. The data represented a stronger desire among Chinese drivers for increased feedback on driving performance than American drivers (Huang et al., 2008). Chinese drivers preferred to receive feedback from peers, while American drivers preferred receiving feedback from supervisors (Huang et al., 2008).

Transition

Organizational leaders in the heavy-duty trucking industry were interested in increasing profits, particularly in the parts department. Many times, a discount was placed on a part to obtain the sale in a competitive market. The general business problem was that some parts managers are unable to project the impact of part prices on their gross profit. The specific business problem was that some parts managers in the heavy-duty trucking industry do not understand the relationship between part price, secondary discounts, and gross profit. The purpose of this quantitative ex post facto, portfolio study was to examine the relationship between part price, secondary discounts and gross profit in the heavy-duty trucking industry. Section two includes the method and design of the study. The method is quantitative, and the design is ex post facto and includes secondary data analysis and key stakeholders.

Section 2: Project Design and Process

The purpose of this study was to analyze the relationship between part pricing, secondary discounts, and gross profit within the heavy-duty trucking industry. This section addresses the methodology, design, and research elements of the study. Discussion on methodology, data collection techniques, organizational data methods, and data analysis techniques are also included in this section.

Method and Design

This section identifies the method and design that were used to address the research question. A description of how the dataset was collected and the ethical standards for the research are also described in this section.

Method

Quantitative methodology is used to examine the relationship between two or more quantifiable variables (Bhawna & Gobind, 2015). The main objective of this study was to determine whether there was a statistically significant relationship between part price, secondary discounts, and gross profit in the heavy-duty trucking industry. The quantitative method was appropriate for this study to examine the statistical relationship of the existing numerical data. An advantage of quantitative analysis was the ability to create visibility to the gross profit difference among part sales. A disadvantage to performing a quantitative analysis included the inability to understand why a secondary discount was used during a part sale.

Design

An ex post facto study was the chosen design to evaluate secondary data. Because secondary data were used in this study, the ex post facto design was appropriate. An ex post facto design involves an independent variable that has already occurred and was not manipulated by the researcher (Levine et al., 2017). The purpose of this secondary data analysis was to examine existing data from the chosen organization. Stakeholders, including the company president, CEO, vice president of operations, vice president of parts, and director of business development, were looking for ways to increase gross profit within the corporate parts division. A current topic among the stakeholders included if secondary discounts on parts affected gross profit earnings. The secondary data analysis was done to examine the relationship between part price, secondary discounts, and gross profit in the heavy-duty trucking industry. The ex post facto design was appropriate for this study to determine how the existing independent variables (part price and secondary discounts) affected the dependent variable (gross profit). A disadvantage of the ex post facto design was the lack of researcher knowledge of the quality of data obtained due to using secondary data (Allen, 2017). But an advantage of an ex post facto design was the ability to use existing data, which significantly reduced the time needed to collect data compared to other study designs.

Dataset

I obtained secondary data from one corporate parts business analyst within the organization. The dataset was a ratio scale of measurement due to the possibility of having a true zero. The reliability and validity of the dataset was high because the data

were gathered directly from the organization's computer system. The system recorded every invoice number at each branch location and included parts sold, pricing, discounts (if applicable), date, time, customer name, and salesperson for each transaction. There were no missing data, but the cleaning of data included removing sales involving a secondary discount made to the branch location's service department as those sales were intercompany sales and did not involve a regular customer. The nonprobabilistic sampling procedure was appropriate for the chosen population as the sample was not a random selection, though a disadvantage of nonprobabilistic sampling included the increased opportunity for bias.

Multiple regression was the statistical test used to examine the relationship between two independent variables and one dependent variable. There are four outliers associated with multiple linear regression analysis: (a) normality, (b) linearity, (c) homoscedasticity, and (d) multicollinearity (Casson & Farmer, 2014). The normality assumption refers to assuming the data are normally distributed. A P-P plot creates a visual representation to test the normality assumption. If variables are normally distributed, no violation occurred. If violated, the distribution would be highly skewed but could be corrected by removing outliers (Osborne & Waters, 2002).

The linearity assumption is displayed as a straight line on a residual scatter plot when no violations are present. A violated linearity assumption could create over and under estimation of the relationship between the independent variables and the dependent variable but could be corrected by removing the nonlinear aspects of the relationship from the dataset (Osborne & Waters, 2002). The homoscedasticity assumption is also

verified with a scatter plot of residuals. Homoscedasticity describes an equal constant variance between independent variables (Casson & Farmer, 2014). Homoscedasticity is represented by randomly scattered plots around zero. If violated, the scatter plot of residuals would be skewed in a cone or bowtie shape (Osborne & Waters, 2002).Violations to homoscedasticity create wide or narrow confidence intervals and should be corrected with the Goldfeld-Quandt test or Glejser tests (Osborne & Waters, 2002).

The fourth assumption is the absence of multicollinearity to ensure that each independent variable is dependent from other independent variables. Multicollinearity results are found in the linear regression output by completing a collinearity diagnostics linear regression analysis. Coefficients are identified with little confidence, or unidentifiable, when multicollinearity is present and can be corrected by adding more data or removing variables (Poole & O'Farrell, 1971). Linear regression assumptions ensure the variable data is trustworthy, reliable, and accurate.

Ethics

The purpose of the institutional review board (IRB) is to ensure ethical standards among Walden University research. The IRB ensures that both the university's ethical standards and U.S. federal regulations are enforced on research involving collected data. The ethical standards in place are to protect organizations and participants involved in the study. The organization of this study was protected by keeping the data and company name confidential. To protect the rights of the participants, the data will be securely stored on a hard drive, in a safety deposit box for 5 years. Further, consent for the

research was obtained from the organization's CEO. I conducted an initial meeting with the CEO to explain the purpose of the research request approval. I then conducted a second meeting where the consent form was presented and signed by the CEO, authorizing the research. IRB approval was obtained before data collection (approval number 06-04-20-0893129).

Transition and Summary

Section 2 included restating the purpose statement and research question. Further, it included a discussion of the method, design, and ethics. Section 3 includes a presentation of the quantitative secondary data analysis. A presentation of the findings includes both descriptive and inferential statistics. Recommendations for future actions and the social change impact are also discussed.

Section 3: The Deliverable

Executive Summary

This section provides a summary of the research findings. The purpose of the study, goals and objectives, and overview of the findings begin this section, followed by the presentation of findings including descriptive and inferential statistics. Tables and figures are included to represent the data. Recommendations for action, implication for social change, and skills and competencies are also included in this section.

Purpose of the Study

The purpose of this quantitative ex post facto study was to examine the relationship between part price, secondary discounts, and gross profit in the heavy-duty trucking industry. The independent variables were part price and secondary discounts. The dependent variable was gross profit. The findings from this study can contribute to positive social change by improving the American trucking industry's parts sector profitability. Growth in the heavy-duty trucking industry would create additional employment opportunities and increase employment stability. The results from this study could give leaders in the heavy-duty trucking industry insight into how improving product pricing may improve overall gross profit earnings.

Goals and Objectives

The goals and objectives of this secondary data analysis were to help the heavy-duty trucking industry leaders understand the relationship between part price, secondary discounts, and gross profit. By communicating an overview of product pricing and gross profit earnings, I aimed to encourage heavy-duty trucking leaders to consider what

pricing strategies were being used to improve gross profit earnings and to consider implementing different pricing strategies to improve gross profit earnings. Once strategies are considered and implemented, heavy-duty trucking leaders may begin to see improvements in gross profit earnings, which may increase organizational performance.

Overview of Findings

In the study, I examined whether parts managers in the heavy-duty trucking industry understood pricing strategies and gross profit. I sought to understand the relationship between part price, secondary discounts, and gross profit. The research question examined in this study was "What is the relationship between part price, secondary discounts, and gross profit in the heavy-duty trucking industry?" The hypotheses addressed whether there was a statistically significant relationship between these variables.

Presentation of the Findings

The following subsections answer the research question and display the findings from the study. I present the findings using descriptive statistics followed by the statistical results from the data analysis. I used the multiple linear regression analysis function in SPSS statistical software to examine the relationship between the independent variables (part price and secondary discounts) and the dependent variable (gross profit). A significant regression equation found F (1, 21483) = 106.531, p =.001, R^2 = .293. Because the significance (p) was less than .05, the null hypothesis was rejected.

Descriptive Statistics

The data included information on part sales involving a secondary discount from 72 branch locations for all 2019. The data included part price, price of secondary discount, and gross profit for each transaction involving a secondary discount on a part sold. The data included 21,485 transactions from 2019, $N = 21{,}485$. Table 1 depicts descriptive statistics for the study variables. Multiple linear regression analysis is based on a set of assumptions (Osborne & Waters, 2002). The five assumptions associated with multiple linear regression analysis include (a) normality, (b) linearity, (c) outliers, (d) homoscedasticity, and (e) multicollinearity.

Table 1

Descriptive Statistics for Study Variables

Variable	*M*	*SD*
Part Price	88.66	166.876
Secondary Discounts	76.86	155.576
Gross Profit	86.81	16.190

Note. Independent variables/dependent variable frequency. $N = 21{,}485$.

Independence of residuals included normality violation by examining the normal probability plot (P-P). Figure 1 illustrates a normal probability plot (P-P) of the regression standardized residuals. The data points follow a reasonably straight line, diagonal from the bottom left to the top right (Figure 1). However, most of the data points were not clustered near the plot line, providing evidence that the assumption of normality was violated (Pallant, 2010). Linearity and homoscedasticity were evaluated through the residual scatterplot to assess if the points were randomly distributed around the mean value of zero. Figure 2 illustrates the lack of linear relationship between the predictor and

dependent variables. A box shape of residual points is not present on the residual scatter plot, providing evidence of a violated linearity assumption. A skewed, bowtie shape on the scatter plot of residuals represents a linear and homoscedasticity violation (see Figure 2). Multicollinearity is represented by the variance inflation factor (VIF). VIF values of five or greater indicate the presence of multicollinearity (Levine et al., 2017). Multicollinearity was present as both predictor variables had a VIF equal to 53.647 (see Table 2).

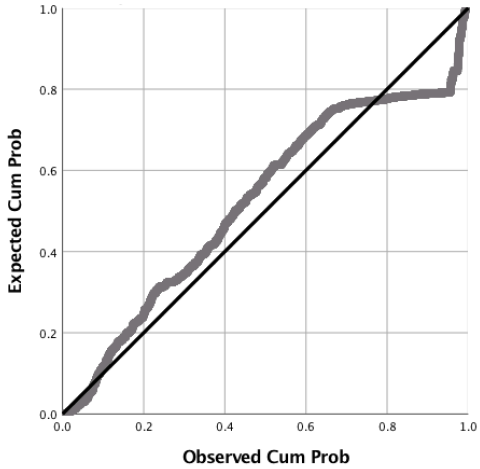

Figure 1. Normal P-P of regression standardized residuals for part price, secondary discount, and gross profit.

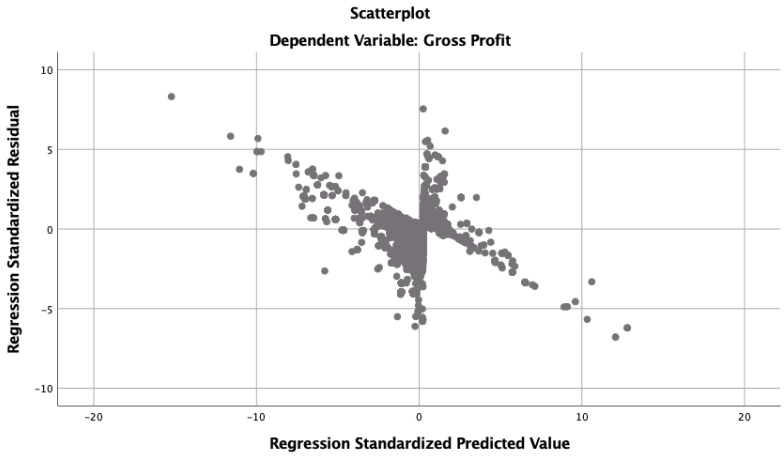

Figure 2. Residual scatterplot for linearity and homoscedasticity.

Table 2

Collinearity Statistics

	Collinearity Statistics	
Variables	Tolerance	VIF
Part Price	.019	53.647
Secondary Discount	.019	53.647

Note. N = 21,485.

Table 3 includes the correlation summary of the variables. A correlation analysis is used to identify an initial relationship between variables (Field, 2018). The results of this multiple linear regression analysis indicated that the model of the 2 independent variables (part price and gross profit) were significantly statistical to the depended variable (gross profit). The correlation was significant at the 0.01 level (2-tailed). Parametric tests, such as a histogram, produce a bell-shaped curve (Rovaiet al., 2013). Figure 3 illustrates a histogram of the dependent variable (gross profit).

Table 3

Correlation Summary for Variables

Variable		Part Price	Secondary Discount	Gross Profit
Part Price	Correlation	1.000	.991**	-.004
	Significance (2-tailed)	.	.000	.595
Secondary Discount	Correlation	.991**	1.000	.070**
	Significance (2-tailed)	.000	.	.000
Gross Profit	Correlation	-.004	.070**	1.000
	Significance (2-tailed)	.595	.000	.

Note. **Correlation is significant at the 0.01 level (2-tailed). N = 21,485.

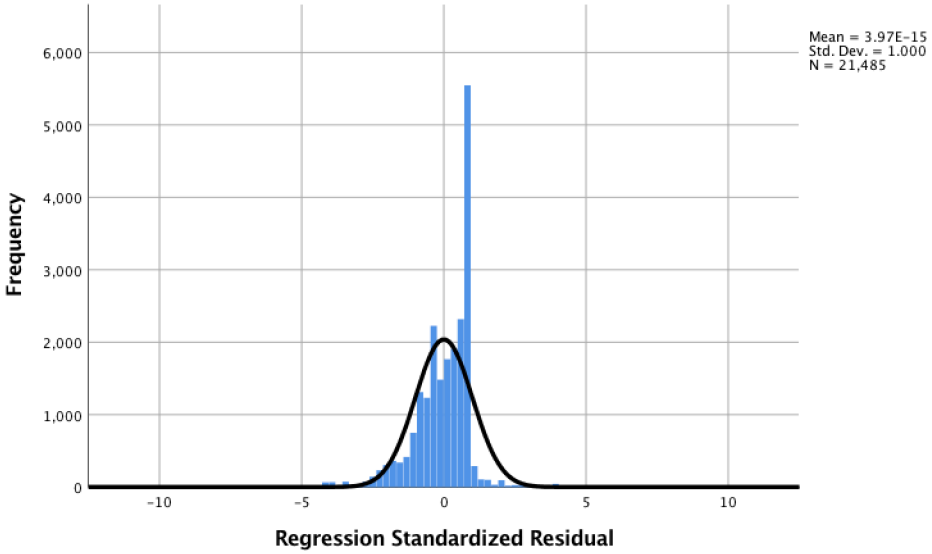

Figure 3. Histogram of gross profit.

Inferential Results

I conducted a standard multiple linear regression, α = .01 (2-tailed), using secondary data, to examine the relationship of part price and secondary discounts to significantly predict gross profit in the heavy-duty trucking industry. The independent variables were part price and secondary discounts. The dependent variable was gross profit. The null hypothesis was that there is no statistically significant relationship between part price, secondary discounts, and gross profit. The alternative hypothesis was that there is a statistically significant relationship between part price, secondary discounts, and gross profit. The *ß* (standardized coefficients) represents how much gross profit will increase or decrease. The multiple linear regression model was able to significantly identify gross profit: F (1, 21483) = 106.531, p = .001, R^2 = .293. The R^2 (.293) value indicated that approximately 29% of variations in gross profit is accounted for by the linear combination of the independent variables (part price and secondary

discounts). In the final model, secondary discount was statistically significant with secondary discount (t = 94.249, p = .000, β = 3.962) accounting for a higher contribution to the model than part price (t = -93.453, p = .000, β = -3.928). The final predictive equation was: Gross profit = 88.91 + (-0.38) (part price) + .41 (secondary discount). The contribution of each independent variable was evaluated to determine individual statistical influence. Table 4 shows the multiple linear regression analysis summary of the independent variables.

Table 4

Regression Analysis Summary for Independent Variables

Gross Profit	B	SE *B*	*β*	*t*	p	B 95% CI
Part Price	-.381	.004	-3.928	-93.453	.000	-.389, -3.73
Secondary Discount	.412	.004	3.962	94.249	.000	.404, .421

Note. B= unstandardized coefficient; SE B= standardized coefficient; *β= standardized coefficient; t*= coefficient divided by standard deviation; *p*= significance; *N*= 21,485; Dependent variable= Gross profit

Part price. The multiple linear regression indicated part price was negatively correlated with gross profit. The negative slope for part price (-.381) as a predictor of gross profit indicated there was a .381 decrease in gross profit for each additional 1-unit increase in part price, controlling for secondary discount. The B and *β* coefficients in Table 3 indicated that the negative impact of part price was -.381 and -3.928, respectively. The descriptive statistics for part price (*N*=21,485) show the mean as 88.656 and the standard deviation as 166.876. An overall significant regression equation found F (1,21483) = 106.531, p =.000, R^2 = .293, with part price significance (*p)* equaling zero.

Secondary discount. The positive slope for secondary discount (.412) as a predictor of gross profit indicated there was a .412 increase in gross profit for each additional 1-unit increase in secondary discount, controlling for part price. Gross profit tends to increase as secondary discount increases. The descriptive statistics for secondary discount (N=21,485) show the mean as 76.865 and the standard deviation as 155.576. An overall significant regression equation found F (1,21483) = 106.531, p =.000, R^2 = .293, with part price significance (*p)* equaling zero.

Recommendations for Action

The purpose of this quantitative ex post facto study was to examine the relationship between part price, secondary discounts, and gross profit. The statistical significance between part price, secondary discounts, and gross profit was determined by a multiple linear regression resulting in a p-value less than .05. The study findings from the hypothesis testing indicated the null hypothesis was rejected in the data set. The alternate hypothesis states there is a statistically significant relationship between part price, secondary discounts, and gross profit. Additional research on heavy-duty trucking part sales is recommended to determine part pricing strategies and motivational factors.

The results of this study may be beneficial to parts managers, business leaders, corporate owners, and scholars. Based on the research findings, the recommendations for action for parts managers and business leaders are to (a) understand that part price and secondary discounts influence gross profit, (b) implement internal training on the importance of part pricing and gross profit goals, (c) determine the pricing strategies that will increase gross profit, and (d) limit the number of secondary discounts offered on part

sales. The part price mean was 88.66 while the secondary discount mean was 76.86, which reveals that part price sales average higher gross profit than secondary discount sales.

Implications for Social Change

The implication for positive social change includes improving the American trucking industry's parts sector profitability. The results of the study provide insight to improve overall gross profit and pricing strategies involving parts pricing and secondary discounts. The significance of this study to the business practice was to provide an understanding of the relationship between part price, secondary discounts, and gross profit in the heavy-duty trucking industry. The results of the study provide parts managers the ability to implement new pricing strategies with a better understanding of the relationship between parts prices, secondary discounts, and gross profit. Business leaders should use the CBA theory as a way to evaluate pros (benefits) and cons (costs) of new pricing strategies (Van Wee, 2013). Leaders can then determine if the new strategy generates a large enough benefit, or if the current cost and new pricing strategy combined are too big of a cost. Increased gross profit earnings benefit both the trucking industry and the community.

As the heavy-duty trucking industry grows, additional employment opportunities increase employment stability. Increased employment opportunities create a positive impact on the employees and their families, increase stability, and positively impact the United States' economy and society. Increased revenue for the heavy-duty trucking industry positively impacts both the economy and employment opportunities for

community citizens. Stable jobs provide families stability and the chance to remain in their current communities, promoting community involvement and community service.

Skills and Competencies

I have researched heavy-duty truck part pricing for the past two years. Adequate pricing is necessary to remain relevant in a highly competitive market. My skillset has been in researching, analyzing, verifying, and comparing pricing trends in the heavy-duty trucking industry. Pricing data from dealerships, the original manufacturer, and aftermarket retail stores provides part pricing trends in the industry. Competencies needed for successful pricing are data analysis, market knowledge, manufacturer procedures, international regulations, and product inventory awareness. The experience from this research gave me a deeper understanding of product pricing in the heavy-duty trucking industry.

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