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# Relationship between Financial Knowledge and Business Performance for Truck Owner-Operators

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# Walden University

College of Management and Technology

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Tahsen Alqatawni

has been found to be complete and satisfactory in all respects,  
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the review committee have been made.

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2016

Abstract

Relationship between Financial Knowledge and Business Performance for Truck Owner-  
Operators  
by  
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MS, Strayer University, 2011

BS, Yarmouk University, 1991

Doctoral Study Submitted in Partial Fulfillment  
of the Requirements for the Degree of  
Doctor of Business Administration

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## Abstract

Owner-operator lack of knowledge about financial and operation costs is a serious impediment to business survival. The purpose of this correlational study was to examine the relationship between the knowledge of financial and operational costs among trucking owner-operators and their business performance. The theoretical framework for the study was the resource-based theory and knowledge gap theory. A convenience sample of 78 owner-operator truckers across the United States participated in this study. The response rate was 17% for a web-based survey that was distributed to owner-operators in Facebook, and 83% for the paper-based surveys from the owner-operators who were visiting more than 10 truck stops in Delaware, Maryland, New Jersey, and Pennsylvania. The findings from multiple linear regression analysis indicated a significant relationship between the trucking owner-operators' financial knowledge, operational costs knowledge, and financial performance. A significant relationship also existed between the financial knowledge of trucking owner-operators, operational costs knowledge, and nonfinancial performance. The findings of this study provide the owner-operator with a better understanding of factors that relate to business performance, which may inform their reasons for successes and failures. The implications for social change will occur if the failure rate of owner-operators declines and the opportunities for sustainable businesses increase. Sustainable owner-operator performance could lead to higher employment by the trucking industry and contribute to a better economy.

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## Section 1: Foundation of the Study

The truck owner-operator has always been a primary element of nearly every part of the trucking industry (Taylor, Garver, & Williams, 2010). Owner-operators are an important group related to facilitating the global supply chain by functioning easily and efficiently (Taylor et al., 2010). Monaco and Redmon (2012) defined the owner-operator as a truck driver that owns his or her truck and contracts with carriers. The trucking industry faced some unique financial challenges and was the subject of remarkably little academic research. Particularly, few researchers have explored the financial challenges faced by the small freight carriers, specifically the owner-operators in the United States (Voss, Cangelosi, Rubach, & Nadler, 2011). Brady (2010), who conducted research on the success rate of small trucking companies, argued that the most prevalent reason for owner-operator failures was a result of lack of understanding business operation costs. An excellent truck driver does not necessarily become a successful owner-operator if she or he does not have basic financial management skills and knowledge. Financial literacy becomes an increasingly valuable skill for anyone making decisions in today's economy, as many small-business owners fail because they are unable to understand basic financial concepts.

### **Background of the Problem**

Trucking companies are one of America's backbone industries. According to U.S. Census Bureau Economic Statistics (2010), the number of trucking firms across the nation is approximately 530,000. The industry includes mostly small companies mostly; 97% of trucking companies operate fleets of 20 or fewer trucks (ATA, 2012). In 2007,

more than 81% of trucking firms operated only one vehicle, which made up the majority of owner-operators (Census, 2013).

Owner-operators are an influential group when it comes to keeping the global supply chain functioning smoothly and efficiently (Taylor, 2010). According to the U.S. Bureau of Labor (2013), there are 793,470 heavy tractor-trailer truck drivers across the nation. To be an owner-operator is a dream for many truck drivers because of the freedom and independence that can occur with this designation. According to the Owner-Operator Independent Drivers Association (OOIDA) (2012), the numbers of owner-operators registered in the U.S. is approximately 350,000, a large number that includes all types of owner-operators. In 2008, the Federal Motor Carrier Safety Administration (FMCSA) estimated that the numbers of independent owner-operators in the long haul are over 76,000.

The purpose of this study is to analyze the effect of financial knowledge on owner-operator performance. Financial knowledge means possessing the skills and confidence to make appropriate decisions to manage personal or business finances (Taft, Hosein, Mehrizi, & Roshan, 2013). The owner-operator performance includes both financial and nonfinancial performance. Financial performance is a measure of a company's financial health, ability to generate income over a given period, and refers to the degree to which financial objectives are achieved (Hernaus et al., 2012). Nonfinancial performance is an indicator used to evaluate customer satisfaction, customer retention, a number of new products developed, and employee turnover (Hernaus et al., 2012).

## **Problem Statement**

Companies that are part of the transportation industry had one of the lowest survival rates over the first five years of their existence as compared to other industries (BLS, 2014). The 5-year survival rate for all transportation companies was around 60%, and more than 81% of these are owner-operators (BLS, 2014; Census, 2013). The general business problem was that business sustainability decreases because of limited financial knowledge by microentrepreneur owner-operators (Drexler, Fischer, & Schoar, 2014). The specific business problem was that some trucking owner-operators have limited information about the relationship between financial and operational costs knowledge and business performance.

## **Purpose Statement**

The purpose of this quantitative correlational study was to examine the relationship between the financial and operational costs knowledge of trucking owner-operators and business performance. The target population of this study was heavy-duty truck owner-operators in the U.S. According to the FMCSA (2011), there were about 76,000 independent owner-operators in long-haul service in 2008. In 2010, the number of independent owner operators in long-haul service was 68,400. I used a correlational research design to determine the degree of relationship between the predictor variables (financial knowledge, operation costs knowledge) and the criterion variable (business performance, including both financial and nonfinancial performance) from the same groups of participants (trucking owner-operators).

The positive social change can occur through the development of basic financial education that will strengthen the performance of owner-operators within the trucking industry in the United States. The target of this study was to maximize the business value of a significant part of a community and the positive effects of this study may exceed the owner-operator population to encompass the whole transportation sector. Improving the performance of the transportation sector may reflect on the quality of the service provided to society in general. The findings from this study may prove useful to organizations that provide financial services to the owner-operator group.

### **Nature of the Study**

The nature of this study was to examine the relationship between the independent variables of financial knowledge and operation costs knowledge and the dependent variable of business performance. The quantitative approach was the best tool to use to determine the relationship between two or more quantifiable variables (Turner, Balmer, & Coverdale, 2013). Choosing a research approach depends on the primary goals of the research questions. In seeking a methodical approach to produce generalizable and comparable data, a quantitative design is the best choice to create a profound description of a particular case, group, situation, or context. The quantitative approach allows researchers to explore the critical ethical issues that need approval and confidentiality.

The quantitative approach is about quantifying relationships between variables and produce summaries of data that support generalizations about the cases under study. Quantitative studies typically include a small number of variables and various cases and apply prescribed methods to ensure validity and reliability. Each choice requires the

consideration of different aspects to determine which particular research design might be the best option.

The hallmark of qualitative work is its ability to push insights and expose the boundaries of the theoretical (Bansal & Corley, 2012). Qualitative research does not work on the predictive relationship and does not consist of proposing and testing hypotheses (Bendassolli, 2013). Mixed-method approaches appear to be very helpful in various cases (Turner et al., 2013). The mixed-method study requires analysis of both qualitative and quantitative data. Mixed-method research is time consuming, but it is useful when data collected using quantitative methods is not sufficient for a particular study's purposes. Quantitative research, from the worldviews of researchers, is an accurate, reliable measurement, and includes applicable statistical techniques, providing wider analysis. Researchers often used qualitative designs to address questions of meaning or experience while they used quantitative designs to address causation, or correlations between variables (Leedy & Ormrod, 2013). I chose quantitative over qualitative and mixed-method design because the research questions focused on the relationship between variables. I used the quantitative correlational design to examine the degree of relationship between the predictor variables (financial knowledge, operation costs knowledge) and criterion variables (owner-operator performance) from the same groups of participants (trucking owner-operators).

## **Research Question**

To conduct this study, I examined how the trucking owner-operators' financial knowledge and operation costs knowledge related to their business performance. The research question for this study is; to what extent is there a relationship between the financial and operational costs knowledge of trucking owner-operators, and business' performance? The business performance includes financial and nonfinancial performance (Avci, Madanoglu, & Okumus, 2011; Chiang, & Birtch, 2012). I measured the financial performance of the owner-operator in this study based on profitability. Nonfinancial performance measures are often used for performance evaluation, such as customer satisfaction, growth of number of customers, self-satisfaction as a driver, quality of services, and business reputation (Dekker, Groot, Schoute, & Wiersma, 2012; Prieto & Revilla, 2006). To answer the research question, I examined the following sub-questions:

Q1: To what extent is there a relationship between the financial and operational costs knowledge of trucking owner-operators, and financial performance?

Q2: To what extent is there a relationship between the financial and operational costs knowledge of trucking owner-operators and nonfinancial performance?

## **Hypotheses**

To answer the research questions, I proposed two hypotheses:

$H_o$ 1: There is no statistically significant relationship between the trucking owner-operator financial knowledge, operational costs knowledge, and financial performance.

$H_a1$ : There is a statistically significant relationship between the trucking owner-operator financial knowledge, operational costs knowledge, and financial performance.

$H_o2$ : There is no statistically significant relationship between the trucking owner-operator financial knowledge, operational costs knowledge, and nonfinancial performance.

$H_a2$ : There is a statistically significant relationship between the trucking owner-operator financial knowledge, operational costs knowledge, and nonfinancial performance.

The study question include four variables, as follows: (a) the financial knowledge variable (Fin-k) represents the degree of an owner-operator's financial knowledge; (b) the costs knowledge variable (Cost-k) represents the extent of understanding the business operator cost by the owner-operator; (c) the financial performance variable (Fin-p) represents the net profit margin ratio, which I used to calculate owner-operator business profitability; and (d) the nonfinancial performance variable (Nfin-p) represents the level of nonfinancial performance by the owner-operator.

Barad (2010) defined profitability as the ability of a company to generate profit after any costs, overhead, and other expenses, and provide income through the sacrifice of resources. Profitability determines how efficient the owner-operator is in using his or her assets and minimizing his or her costs to generate profit. Financial analysts calculate profitability ratios in different ways, the most notable being the net profit margin or asset turnover rates (Hofmann, 2013).

For the purposes of this study, I used the net profit margin ratio (NPM) to represent the profitability ratio. The profitability ratio formula is:

$$\text{Net profit margin (NPM)} = \frac{\text{Net Income}}{\text{Net Sales}}$$

### **Theoretical Framework**

The theoretical framework linking the researcher to existing knowledge can build upon the work of others and direct all the research aspects into the formulation of the primary research question, by selecting and activating the variables to interpret the results (Marton & Choo, 2012). I used the theoretical framework of a quantitative study to understand the relationship between the expected variables (Marton & Choo, 2012). Based on the nature of the study, I adopted two theories, the resource-based view (RBV) and the knowledge gap theory, for further understanding the problem of the lack of owner-operators' financial knowledge within the academic literature.

The primary theory for this study is the resource-based view (RBV). Kraaijenbrink, Spender, and Groen (2010) stated the RBV was one of strategic management's most widely accepted and cited theories, which explained the internal sources of a firm's sustained competitive advantage. RBV emphasizes knowledge as a type of asset that gives a competitive advantage and the ability for sustained performance (West, & Noel, 2009). Accordingly, the RBV application connects to the stated research questions. The task of this research project is to examine the effect of the lack of financial knowledge on business performance.

I adopted the knowledge gap theory, which is concerned primarily with information and knowledge. The theory emphasizes that knowledge is not equally

distributed throughout society (Bonfadelli, 2002). The theory assumes that the better-educated person has prior knowledge that makes him or her able to manage communications and any related social contacts more effectively than those with less formal education (Tichenor, Donohue, & Olien, 1970). According to the knowledge gap theory, there is a significant knowledge gap between owner-operators with and without business backgrounds or education. The owner-operators with a basic business education are better able to handle the business aspects of an operation.

### **Definition of Terms**

*Financial knowledge:* Financial knowledge means possessing the skills and confidence to make appropriate decisions in managing personal or business finances (Taft et al., 2013).

*Knowledge gap theory:* The knowledge gap hypothesis proposed by Tichenor et al. (1970) that stated there are relating gaps in knowledge between populations, according to socioeconomic levels; persons of higher socioeconomic status will gain more knowledge.

*Non-employer business:* A business that has no paid employees with annual business receipts of \$1,000 or more and is subject to federal income taxes. These businesses are commonly self-employed (Census, 2013).

*Operating costs:* The operating costs are the costs per unit of a product or service and the expenses relating to the operation of a business (Santos, Lavarda, & Marcello, 2014; Shields & Young, 1994).

*Owner-operator:* The truck owner-operator is an individual who owns a truck and works under his or her operating permit (Monaco, 2010). The FMCSA (2011) defined owner-operators as employers and drivers that may behave as both an employer and a driver at the same time or as a driver for another company at other times depending on contractual agreements and operational arrangements.

*Owner operator performance:* The owner-operator performance includes both financial and nonfinancial performance. Financial performance is a measure of a company's financial health, its ability to generate income over a given period, and refers to the degree to which financial objectives are achieved (Hernaus et al., 2012). Nonfinancial performance measures customer satisfaction, customer retention, the number of new products developed, and employee turnover (Hernaus et al., 2012).

*Profitability:* Barad (2010) defined profitability as the ability of a company to generate profit after any costs, overheads, and other expenses, providing incomes using the sacrifice of resources. Profitability has two facets; the profit represents the absolute figure of profit, and the ability reflects the power of business to earn profits (Barad, 2010).

### **Assumptions, Limitations, and Delimitations**

#### **Assumptions**

According to Leedy and Ormrod (2013), assumptions act as a foundation for any study that explains what the researcher takes for granted to be true. I considered and addressed the ethical issues and professional standards as they affect my subject of study, conducting research to identify the effect upon owner-operator performance

resulting from lack of financial knowledge. The primary assumption of this quantitative correlational study was that the respondents are honest, have integrity, and were accurate in their responses. I also assumed that respondents would not have preferences influencing their choice of information shared with the researcher as socially valid outcomes for their business. The second assumption of the study was that responses would not be subject to bias or tendencies that affect the participant answering the questions. The third assumption was that the owner-operator believes it necessary to preserve business profitability and stability. The knowledge of what relationship exists between the lack of financial knowledge and the performance will help advance this cause. An additional assumption was that the research instrument concepts and vocabulary used in the survey questionnaire formulated a simplified and easy method that was familiar to participants.

## **Limitations**

Limitations represent study potential weaknesses or problems and are critical components of a viable research proposal (Leedy & Ormrod, 2013). The primary limitation of this quantitative, correlational study was that the study area is too large because truck drivers work all over the map, which might make the data collection more difficult. The second limitation was that the owner-operator selfreported financial status, which may be misreported. The third limitation that was the difficulty in obtaining accurate statistical numbers for owner-operators because of conflicting figures from different sources and the presence of varying differences over the definition of the term owner-operator.

## **Delimitations**

Delimitations are critical components of a viable research proposal that refer to what the researcher is not going to do (Leedy & Ormrod, 2013). Financial Analysts use four basic types of financial ratios to measure business stability that measure various aspects of the business, including liquidity, profitability, and operational efficiency. Financial ratios are the primary analysis tool used to gain insight into a business's financial stability or its ability to survive and grow over the long term. The four types of financial ratios are the net profit margin, return on assets, debt to equity, and the times interest earned. For the purposes of this study, I delimited the measures used to include only net profit margin because this ratio is pertinent to the research question. The net profit is easy for owner-operators to recognize while the other ratios require a deeper knowledge of the financial information.

I adopted the Census and FMCSA definition of owner-operators. The study's scope includes the truck owner who has a commercial driver's license (CDL) that allows him or her to operate a commercial motor vehicle over 10,000lbs, and drive a truck with a trailer that runs long-haul freight. I excluded the owner-operators with employees, anyone who operates a commercial truck weighing less than 10,000lbs, and short-haul freighters. Finally, I invited participants via two methods: a paper-based or web-based survey. Web-based surveys are particularly well suited for large sample sizes and large geographic areas. I used convenience sampling to select a convenient location to conduct a paper-based survey and pick a naturally occurring truck driver from the owner-operator pool.

## **Significance of the Study**

### **Contribution to Business Practice**

A study on this subject exactly in this area is fundamental to the whole trucking industry. Trego and Murray (2010) argued that there is a lack of accurate knowledge of trucking operational costs, which are essential for transportation planning models. The significance of this study was to explore the financial challenges faced by small freight carriers, specifically the owner-operators in the United States. Verifying the degree of understanding of the financial knowledge and operation costs related to the business performance of the owner-operator will help increase the stability of the trucking industry. The benefits of management and the pool of scholarly resources included analyzing the core of the problem.

The owner-operator has been the subject of very little academic research (Taylor, 2010). The result of this study could provide benefits to the owner-operator, the trucking industry, and society as a whole. Information gleaned from the study could influence owner-operator performance and stability. These new hypotheses, if borne out, would have significant implications for owner-operators. The findings from this study may enhance owner-operator knowledge about operating costs and developing financial management skills could improve their chances of success. The result of this study might guide leaders' strategies to improve business performance policies, leading to beneficial outcomes for truck owner-operators. My aim was to fill the gap between success and failure of owner-operators by providing insights necessary to increase opportunities for sustainable businesses.

## **Implications for Social Change**

I introduced some significant facts in the field of small business sustainability for the trucking owner-operator in the United States. These facts affect the owner-operator directly and those who are looking at starting new businesses. The results of this study could provide benefits to the transportation industry, small businesses, the self-employed, and entrepreneurs. The findings from this study may provide small business owners and entrepreneurs with insight into the reasons for their success.

Improving the performance of the transportation sector may reflect on the quality of the service provided to the society. The results provide an introductory staging from which further research may evolve. A positive social change might take place if the failure rate of small trucking businesses declines and the opportunities for sustainable businesses increase. The positive effects could extend to the general population, as the success of small business boosts the economy.

## **A Review of the Professional and Academic Literature**

A literature review is an evaluation of a body of research that addresses a research question (Onwuegbuzie, Leech, & Collins, 2012). A literature review also provides a new interpretation of existing literature and represents the most significant step of the research method (Onwuegbuzie et al., 2012). According to Rhoades (2011), the literature review's purpose is to combine and summarize the literature as it links to the research subject and avoids accidental duplication of existing research.

I focused on the group of the trucking owner-operator, specifically on their financial knowledge and business performance. Financial knowledge means possessing

the skills and confidence to make appropriate decisions in managing personal or business finances (Taft et al., 2013).

I obtained the information in the current study from various sources such as search tools included in the Walden University Library, Google Scholar, and databases such as ProQuest, Emerald Management Journals, and SAGE. I used the following keywords in searches for relevant literature: *owner-operators, motor carrier operation costs, trucking operation costs, transport operation costs, small-business owner financial knowledge and skill, profitability, performance, entrepreneur knowledge and skill, the knowledge gap and total costs of ownership.*

### **Owner-operator**

Trucking companies are one of America's backbone industries; transportation secretary LaHood announced that the freight industry is the lifeblood of the economy of the United States or any developed country (USDOT, 2012). Freight carriers carried 9.2 million tons of goods in 2011, which represents 67% of the nation's freight with an estimated value of approximately \$ 604 billion (Fender & Pierce, 2013). The trucking sector consists mostly of small companies so that 96% of trucking companies operate fleets of 20 or fewer trucks (Voss et al., 2011). In 2007, more than 81% of trucking companies were operating one truck (Census, 2013). Owner-operators are self-employed truck drivers that own and operate their trucks (Vernon & Meier, 2012).

Taylor, Garver, and Williams (2010) defined owner-operators as independent contractors who do not have an employment association with the carriers. They noted that owner-operators have been a fundamental element of facilitating the global supply chain

easily and efficiently (Taylor et al., 2010). Dixon (2011) noted that the truck owner-operator is an individual who owns as well as operates his or her truck, under his or her authority, and he or she handles all paperwork. Monaco and Redmon (2012) defined the owner-operator as truck drivers that own their trucks and contract with carriers.

In 1930, Congress passed a federal regulation of interstate trucking (as cited in Taylor & Delaney 1990). The Motor Carrier Act (1935) excluded agricultural commodities from rate and line regulation. Neglecting this unregulated market led to ideal situations for small-business owners to invest in and buy their trucks, which in turn resulted in the emergence of the owner-operator business model (Taylor & Delaney 1990).

Owner-operators are an influential group related to the function of the global supply chain (Taylor et al., 2010). OOIDA (2012) defined owner-operators as individuals who own and operate their trucking business, and they may operate under self-authority or lease on to a carrier. Owner-operators have been the subject of little academic research (Taylor et al., 2010). Specifically, there are few studies explaining the challenges faced by the owner-operator and their influence on the trucking industry (Dixon, 2011; Larson, Arne, & Jairo, 2013).

In 2010, the U.S. Department of Transportation noted that the number of trucking companies across the nation was 1.24 million, and 90.2 % were operating six or fewer trucks (ATA, 2012). The 90.2 % represents more than 1.1 million small trucking companies in the United States, most of which are owner-operators. According to the OOIDA, the number of owner-operators registered in the U.S. is almost 350,000. The

number of non-employers in trucking businesses, those who are without paid employees, in 2010 was 490,288 (Census, 2013). This figure declined by 10% from 2007 to 2010. According to the Census and FMCSA definition, the previous number of non-employer businesses must be owner-operators. In 2011, the FMCSA estimated the number of non-employer independent owner-operators in long-haul service in 2008 was around 40,000 firms, after excluding the company with power units of 10,000 pounds or less and short-haul freighters. At the same time, the FMCSA had estimates of 36,891 independent owner-operator businesses with employees, which made independent owner-operators in 2008 about 76,000 firms. There were approximately 68,400 independent owner-operators in long-haul service in 2010, resulting in a percentage of owner declines in the recession period.

In 2012, The OOIDA conducted a survey of owner-operators; the summary indicators derived from the surveyed responses were:

- Females represented 3% of owner-operators
- 38% of owner-operators have some college
- 16% are relying on an Individual Retirement Account (IRA)
- 29% of owner-operators have no medical insurance; high expenditure was the main reason
- The average annual cost of insurance for trucks and trailers is around \$6000
- The median of gross income, expenses, and net income was \$160,000, \$119,500, and \$50,000, respectively

- The average fuel mileage was 6 miles per gallon
- 65% of owner-operators had no truck payment
- The average annual maintenance and repair costs were \$10,000

Add a summarizing statement to connect the data of the list back to your study.

Han, Corsi, and Grimm (2008) noted that 69% of the total general freight carriers used owner-operators. The authors discussed that the carriers preferred using owner operators rather than hiring truck drivers (Han et al., 2008). The authors argued that there was a significant effect of using company drivers instead of owner-operators when the shipment includes less-than-truckload services.

According to the Bureau of Labor Statistics (2014), the transportation industry had one of the lowest survival rates over the first 5 years compared to other industries. The 5-year survival rate for all transportation companies was around 60% and more than 81% of them were owner-operators (BLS, 2014; Census, 2013). Owner-operators are facing challenges that threaten to undermine their effectiveness and reduce the level of service currently supplied to shippers. Challenges include regulatory actions regarding safety and the environment that could potentially demand significant costs and service interruptions on owner-operators. Few studies explained the challenges faced by the owner-operator and their effect on the trucking industry (Clarens, & Smith, 2012; Dixon, 2011; Lambert, Wu; Larson et al., 2013).

Dixon (2011) discussed owner-operator retention in central Oregon and evaluated the main issues facing owner-operators, including all operational costs, load densities, and quality of life quantitatively. Dixon collected data from surveying 108 participants,

including current or former owner-operators, using the regression and Pearson's correlation to examine the relationship between fuel costs and the number of years as an owner-operator. Dixon found no correlation between the variables and concluded that the owner-operator might not fully understand the current and potential effects of items such as fuel tax and resource dependence.

Larson, Arne, and Jairo (2013) discussed sustainable trucking through the reduction of emissions and fuel consumption. The authors reviewed the literature with lessons from green transportation leaders, which explained the methods of reducing emissions and fuel consumption. These sound methods required substantial capital investment and collaboration among the relevant stakeholders to move forward. The authors stated that reducing emissions and fuel consumption will require replacing or upgrading the engines or vehicles, which presents a significant challenge and increases the costs for small fleets and owner-operators.

Some scholars emphasized the positive or negative aspects of government regulations on the owner-operator (Britto, Corsi, & Grimm, 2010; Cantor et al., 2011). Britto et al. applied regression and analyzed multiple regressions to examine the relationship between a motor carrier's financial position and its safety performance. Britto et al. used data from the Motor Carrier Safety Status Measurement System and the net profit margin as the independent variable to measure motor carrier financial performance. The results from Britto et al. provided evidence that a strong financial position in a given year was mostly associated with the best safety performance in the following year.

## Theoretical Framework

The theoretical framework linking the researcher to existing knowledge can build upon the work of others (Marton & Choo, 2012). The researcher uses a theoretical framework to direct all the research aspects into the formulation of the primary research question by selecting and activating the variables to interpret the results (Marton & Choo, 2012). The researcher uses the theoretical framework of a quantitative study to understand the relationship between the expected variables (Marton & Choo, 2012). The researcher creates a theoretical framework based on the theory and research, which includes basic concepts, models and theories (Marton & Choo, 2012). I adopted two theories, the resource-based view (RBV) and the knowledge gap theory, for further understanding the problem of the lack of owner-operators' financial knowledge within the academic literature.

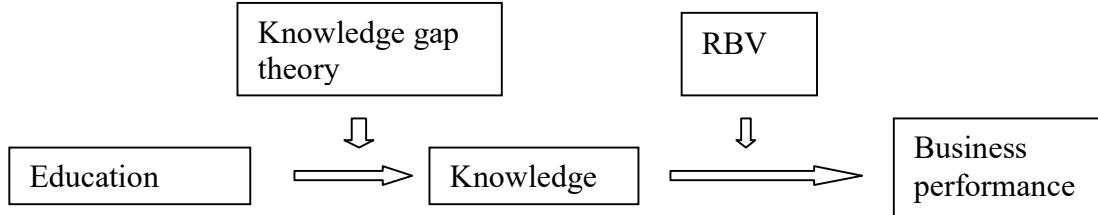
The primary theory for this study is the resource-based view (RBV). Kraaijenbrink, Spender, and Groen (2010) stated the RBV was one of strategic management's most widely accepted and cited theories, which explains the internal sources of a firm's sustained competitive advantage. In 1984, Wernerfelt coined the term resource-based view; this theory confirms the importance of focusing on firms' assets rather than on their products (Barney, Ketchen, & Wright, 2011). RBV emphasizes knowledge as a type of asset that gives a competitive advantage and the ability for sustained performance (West, & Noel, 2009). Knowledge is a significant asset for small business and is necessary for a business to survive in the global market (Omerzel & Antoncic, 2008). Entrepreneurs' knowledge and skill have a noticeable positive effect on

profitability and business performance (Omerzel & Antoncic, 2008). Accordingly, the RBV application connects to the stated research questions. The fundamental task of this research project is to examine the effect of the lack of financial knowledge on business performance.

The knowledge gap theory is primarily concerned with information and knowledge. The theory emphasizes that knowledge is not equally distributed throughout society (Bonfadelli, 2002). Tichenor, Donohue, and Olien (1970) formulated this hypothesis in the early 1970s to study mass media. The theory assumes the better-educated person has prior knowledge, which made him or her able to manage communication and any related social contacts efficiently (Tichenor et al., 1970). According to the knowledge gap theory, there is a significant knowledge gap between the owner-operators with and those without business backgrounds or education. The owner-operators with a basic business education are better able to handle the business aspects of an operation.

Misunderstandings can range from misinterpretations of the business enterprise to certain aspects of the job, which cause knowledge gaps between the workers (Clarke, 2009). The dispute or lack of knowledge of operating costs will create a knowledge gap with other owner-operators. A lack of knowledge will put the company at risk. The theory assumes that providing the other group with some basic business education could narrow knowledge gaps. A primary education in finance and management skills will help the owner-operator business survive.

Figure 1 shows the combination of the knowledge gap theory and knowledge resource-based view (RBV):



*Figure 1.* The combination of knowledge gap theory and RBV

### The Resource-Based View (RBV)

The RBV is one of the most strategic management, has widely accepted and cited theories (Kraaijenbrink et al., 2010; Marler, & Fisher, 2013; Neves, Hamacher, & Scavarda, 2013). RBV is a model that considers resources as a core element of the outstanding performance of the company, which enables the company to achieve and maintain a competitive advantage (Kraaijenbrink et al., 2010). The theory of the growth of the firm by Edith Penrose in 1959 discussed early ideas on the importance of resources on corporate performance (Barney, Ketchen, & Wright, 2011). Frameworks that focused externally, such as the five forces model by Porter (1980) dominated the earlier literature (as cited in Barney et al., 2011). RBV began to take shape in 1984; Wernerfelt coined the term resource-based view, which confirmed the importance of focusing on firms' assets rather than on their products as contributing to the firm's success (Barney et al., 2011). Scholars used the RBV to provide a conceptual foundation to focus on human knowledge and its influences (Chao & Chandra, 2012; Ibrahim et al., 2012; Senaji & Nyaboga, 2011).

Senaji and Nyaboga (2011) discussed the relationship between knowledge management implementation and a firm's performance. The author noted that the management literature recognized knowledge as most respected resource for the 21st century and exemplified the role of knowledge in the achievements of competitive advantage and superior performance. Senaji and Nyaboga found that knowledge is valuable and a unique resource, which provides a basis for a firm's competitive advantage.

West and Noel (2009) believed that RBV confirms knowledge as a resource type that gives a competitive advantage and potential for business sustainability. The authors examined the relationship between business knowledge sources and new venture performances by surveying CEOs of 177 start-up firms. West and Noel (2009) noted that the knowledge conducive to growth to obtain other types of valuable resources was essential for the further development of the venture.

Omerzel and Antoncic (2008) examined the relationship between entrepreneurial knowledge and firm performance in small and medium enterprises. They argued that knowledge is the entrepreneur's most valuable asset in the face of global competition, even though many do not pay enough attention to that fact (Omerzel & Antoncic 2008). Omerzel and Antoncic developed an entrepreneurship knowledge model, which tested 168 of the entrepreneurs in Slovenia by using a structured questionnaire. The study findings showed that the entrepreneurs' knowledge and skill had a noticeable positive influence on profitability and business performance.

Chao and Chandra (2012) examined the effect of owners' IT knowledge on business, applying the resource-based view as a theoretical foundation. Chao and Chandra surveyed 217 small manufacturers and financial-services companies. The study findings showed the owner's knowledge of IT had a significant effect on IT strategic alignment. Chao and Chandra considered knowledge to be an essential resource that cannot be easily codified, but it makes the company less vulnerable to competitive corrosion (Chao & Chandra, 2012).

### **Knowledge and Skill**

Drawing on the RBV perspectives, knowledge, and skill of owners and managers have a positive effect on business performance (Akande, 2011; Arend et al., 2012; Grawe et al., 2011; Martín-de-Castro et al., 2011; Moreno et al., 2012). Knowledge as a resource has a prominent place in business administration literature of the world (Ahrweiler et al., 2011; Baumane-Vitolina & Cals, 2014; Fransson, 2011; Zheng, Zhang, & Du, 2011). On a daily basis, small-business owners are making more financial decisions, which require a level of financial knowledge and skills. Senaji and Nyaboga (2011), West and Noel (2009), and Omerzel and Antoncic (2008) considered knowledge as the most respected resources that gives a competitive advantage and positive effect on business performance. The literature related to small firms consistently shows that an owner's lack of financial knowledge can be a serious impediment to business success (Agyei-Mensah, 2011; Atkinson & Messy, 2011; Halabi, Barrett, & Dyt, 2010; Huang, Nam, & Sherraden, 2013; Lusardi & Mitchell 2011; Papulová & Mokros, 2007; Wise, 2013).

Knowledge is an essential component of any firm, stored within the abilities of the people because of learning and experience or rooted in structural and technological resources (Schiuma, 2012). Based on a study by Urban and Naidoo (2012), there is a positive link between operators' skills and small business sustainability. To run a successful business, a manager needs a wide range of small business management skills including marketing, sales and promotion, human resources, finances, communication and negotiation, legal issues, and health safety and maintenance (Urban & Naidoo, 2012).

Unger, Rauch, and Rosenbusch's (2011) research indicated findings regarding the relationship between human capital and entrepreneurial success. Empirical results consistently show that a high level of human capital, including education, experience, knowledge, and skills is associated with a high degree of entrepreneurial success. Unger et al. argued the human capital success relationship was higher for human capital investment's outcomes, which are knowledge and skill driven, than direct human capital investments, which are experience driven.

Human capital is cognitive and noncognitive (Ployhart & Moliterno, 2011). Knowledge, skills, ability, and experience are the principle types of cognitive human capital. Ployhart and Moliterno argued that knowledge and skills could be either context-generic or context-specific, and defined knowledge as an understanding of principles, facts, and processes.

Owner-operators need business skill and knowledge to manage their operational business successfully in the trucking industry. Papulová and Mokros (2007) argued that managerial skills and knowledge are an essential to building a successful small business,

and could give small businesses a competitive advantage, creative thinking, and innovation. The most significant failures were a lack of skills and knowledge needed for managing a business (Papulová & Mokros, 2007).

Agyei-Mensah (2011) investigated how small firms practice the financial decisions and whether this requires a degree of financial knowledge. Agyei-Mensah adopted a mixed-method approach and selected a sample of 80 small retailers. The sample size was a limitation and the author considered this an exploratory study. Agyei-Mensah argued that deficient financial management practices are a serious cause of small business failure. Financial management is essential to business success, and the owner of a small business has to prepare a financial statement to be able to compute their profits (Agyei-Mensah, 2011).

Financial literacy becomes an increasingly valuable skill for anyone making decisions in the 21<sup>st</sup> century economy, where many small-business owners fail because they are unable to understand basic financial concepts. Halabi, Barrett, and Dyt (2010) addressed the issue of understanding financial literacy used to determine small-firm performance. The authors argued that financial management skills are essential to the survival of small firms; a lack of financial literacy could be a primary factor of business failure (Halabi et al., 2010). The authors suggested that increasing the financial literacy skills of a firm's owner would be beneficial. The limitation of the Halabi et al. study was the low number of business owners whom the authors interviewed.

Van Rooij, Lusardi, and Alessie (2012) examined the relationship between financial knowledge and household wealth. The authors discussed the two channels

through which financial literacy might encourage the accumulation of wealth. Van Rooij et al. used a financial knowledge scale to measure numeracy and understanding of economic concepts. The study findings showed there is a positive link between financial knowledge and household wealth. No evidence exists that highlights a remarkable effect of financial literacy on financial knowledge.

### **Knowledge Gap Theory**

In consideration of the literature previously mentioned in the Knowledge and Skill section, knowledge is wealth, and the lack of knowledge means a lack of wealth (Agyei-Mensah, 2011; Halabi, Barrett, & Dyt, 2010; Papulová & Mokros, 2007; Ployhart & Moliterno, 2011; Van Rooij et al., 2012). I will use the knowledge gap theory to address an interesting view of the relationship between the lack of knowledge and performance. Tichenor, Donohue, and Olien (1970) developed the knowledge gap theory. The theory stated that there is a gap in knowledge between populations of different socioeconomic levels; usually persons of higher socioeconomic status are better able to gain knowledge than those of lower socioeconomic status. The authors argued that varying communication skills, education, and background knowledge caused a knowledge gap in society. Tichenor et al. argued that the better-educated person has prior knowledge that makes him better able to manage communication effectively. Tichenor et al. also mentioned that those with a higher status level would have better social contacts.

The knowledge gap hypothesis is primarily concerned with information and knowledge (Bonfadelli, 2002). Bonfadelli investigated the theoretical and empirical relationship between the Internet and knowledge gaps. The authors surveyed 2000 young

males between 1997 and 2000. The collected data showed that there is still a gap using the Internet, where the most educated people used the Internet effectively more than those with less education.

The knowledge gap resulted from a misconception because an employee misunderstood certain aspects of the job role (Clarke, 2009). Clarke believed that the gap could also be extremely costly to a business, suggesting minimizing the business risks by addressing the gap through training. Gurke (2013) noted that to work efficiently and effectively, companies must address the knowledge gap by providing their employees with developed knowledge and resources.

Seghers, Manigart, and Vanacker (2012) investigated the financial knowledge gap between entrepreneurs, arguing that the broader knowledge base of business owners with more education could easily obtain knowledge that is more relevant. Most entrepreneurs have a lack of financial knowledge, even if they have extensive experience (Seghers et al., 2012). Consequently, the authors suggested that business owners might increase funding through education that enhances the knowledge of financial alternatives to entrepreneurs.

## **Education**

In consideration, all those mentioned above of the knowledge gap theory Bonfadelli, (2002) and Seghers et al. (2011) found there is a knowledge gap between the lower- and higher-educated groups. Business owners with more education can easily reach knowledge (Seghers et al., 2011). The owner-operator needs to know how to read a

profit and loss statement. They are eventually responsible for business operations and profitability.

The owner-operator, like any small-business owner, might want to consider obtaining some basic business education. An education is one of a few factors that have a positive effect on small business success and providing better decision making for business owners (Philip, 2011). Bernstein and Carayannis (2012) discussed the importance of education in entrepreneurship, arguing that the entrepreneurs with education are more successful than entrepreneurs without such education. Papulová and Mokros (2007) suggested providing further education to leverage management skills and knowledge, which could help small entrepreneurs to survive in the current environment. Mokros believed that positive business outcomes strongly associated with the level of a business owner's education.

Jusoh, Ziyae, Asimiran, and Kadir (2011) investigated the business owner competencies needed for success. The authors argued that the entrepreneurs' education is an essential need to cover most of the issues that affect business, such as sources of funding, accounting skills, and financial management. Jusoh et al. noted that providing the appropriate training and education to entrepreneurs would increase their knowledge and skills, which reduces the number of business failures.

Kasseeah (2012) examined the effect of educational levels on the performance of owner-managers of small businesses in Mauritius. The author found that education is a fundamental factor in contributing positively to the performance of the owner-manager, which reflects positively on the company's performance. Kasseeah argued that the owner-

manager should be encouraged to enhance their levels of education to achieve high levels of success in their business.

Dzathor, Mosley, and White (2013) noted the relationship between the level of education of the owner-operator and business performance and success. Dzathor et al. examined the effects of owner-operator characteristics on nascent venture performance. The authors used financial performance indicators to measure business performance. The authors adopted the data from the Kauffman Firm Survey. The findings showed that the owner-operators' level of education, work experience, and hours worked in the business have a significant effect on nascent venture performance.

Entrepreneurship education addresses entrepreneurs' lack of knowledge and promotes the creation of new projects (Bernstein & Carayannis, 2012). The authors discussed the importance of entrepreneur education, arguing that the entrepreneurs with an education are more successful than those without such education. Bernstein and Carayannis suggested that self-efficacy for entrepreneurs in running a successful business increases their interest in education.

Kasseeah (2012), Dzathor et al. (2013), Bernstein and Carayannis (2012), and Jusoh et al. (2011) concluded that education would increase the knowledge of an entrepreneur owner-operator, which would enhance his or her business performance. Seghers, Manigart, and Vanacker (2012) investigated the financial knowledge gap between entrepreneurs, finding that the broader knowledge base of business owners with more education allows them to reach relevant knowledge easily.

Most entrepreneurs have a lack of financial knowledge, even if they have extensive experience. The authors suggested that business owners might increase their funding through education, which would enhance the knowledge of financial alternatives to entrepreneurs. Education plays a significant function in the success of the owner-operator as measured in earnings. The above literature acknowledged that knowledge and education are essential resources for entrepreneurs and start-up businesses.

### **Business Profitability; Financial Performance**

Profitability is the essential goal of all business ventures. The business generates revenue to cover operating costs and maintain itself, and the business will not survive in the long run without profitability. Barad (2010) defined profitability as the ability of a company to generate profit after any costs, overhead, and other expenses, and provide incomes for the sacrifice of resources. “Profitability” is a compound of two words; its represents the absolute figure of *profit*, and *ability* reflects the power of business to earn profits. Achieving the best level of profitability could be by improving a net profit ratio and a turnover ratio of business. The net profit margin is a percentage of the margin made on each sale, and the turnover ratio states the rotation of capital for affecting the sales proceeds (Barad, 2010).

The profit margin is particularly useful when comparing firms in the same industry (Singapurwoko, 2013). A higher profit margin indicates a more profitable business, which has better control over its costs compared to competitors. Singapurwoko used the net profit margin ratio to determine the financial performance difference between family and non-family businesses in the same industry.

Hofmann and Lampe (2013) examined the balance sheet structure of 150 quoted logistics service providers from all over the world, to discover any differences between individuals and groups of logistics service providers. The authors used appropriate measures of financial performance and profitability to justify these differences. Hofmann and Lampe suggested various ways to achieve profitability, including focusing on asset turnover rates or high net profit margin.

Olson and Zoubi (2011) examined the relationship between capital structure and profitability. Olson and Zoubi assumed poor operational performance might indicate a lower profitability ratio, which may occur because of a lack of control over the expenses. Olson and Zoubi explained how the profitability ratio level controls effectiveness as indicated by the returns generated on sales and investments. Consequently, the profitability ratio is the most significant financial tools for bankers, financial institutions and other creditors (Olson & Zoubi, 2011). This measure has also been widely accepted in extant studies (Chen, Hsu, & Tzeng, 2011; Inoue & Lee, 2011; Hofer et al., 2012; Rosenbusch, 2013).

I used the net profit margin ratio (NPM) to represent the profitability ratio in this study. The net profit margin ratio has components of financial performance, and it is an indication of how effectively the firm has control over costs (Almazari, 2012). The increased effectiveness of the company is in converting revenue into actual profits that result from the high net profit margin (Almazari, 2012). Britto et al., (2010) and Francia, Porter, and Sobngwi (2011) used the net profit margin as an independent variable to measure motor carrier financial performance.

## Nonfinancial Performance

An excellent business performance is one the biggest concerns of companies to survive in the presently highly competitive business environment (Hernaus, Bach, & Vuksic, 2012). Managers are applying various emerging business tools to achieve better results and higher profit margins. Until the mid-1980s, the financial report was the traditional measurement of business performance. Afterward, organizations started to apply such nonfinancial performance measures like customer satisfaction, customer retention, employee turnover, and the number of new products developed (Hernaus et al., 2012).

Vélez-González, Pradhan, and Weech-Maldonado (2011) discussed the influence of nonfinancial measures on financial performance. Nonfinancial measures such as efficiency, productivity, and quality have found growing acceptance in the business world. Many scholars have debated that financial performance is not sufficient to measure organizational performance (Vélez-González et al., 2011). Managers need additional metrics, beyond the financial reports, to evaluate the effectiveness of their operations and strategies, by measuring business efficiency, quality, and customer satisfaction and retention. Vélez-González et al. argued that the integration of financial and nonfinancial measures provides a strategic performance management instrument.

Profitability represents financial performance whiles the employee satisfaction, service quality and customer satisfaction represents a nonfinancial performance (Tarigan & Widjaja, 2012). Tarigan and Widjaja examined the relationship between nonfinancial performance and financial performance, using a balanced scorecard framework. The

authors collected data from 94 employees and customers in 55 restaurants and cafes in Indonesia and adopted the multivariate analysis for processing the data. In the final analysis, the study results showed a positive relationship between nonfinancial performance and financial performance, but there is no significant influence. The considerations mentioned above indicated that nonfinancial performance could be measured, such as through customer satisfaction, a growth of the number of customers, self-satisfaction, and quality of services (Chen, Hsu, & Tzeng, 2011; Goh, Elliott, & Quon, 2012; Speckbacher & Wentges, 2012).

### **Trucking Operator Cost: Cost management knowledge**

The foundation of any business is the understanding and knowledge of its costs. Understanding costs adds possibilities of efficiency gains that may increase profit or reduce costs. The shipper and broker make inefficient and unfair contracts because markets do not reflect the full costs related to trucking (Belzer & Swan, 2011; Vernon & Meier, 2012). Brady (2011), the trucking business coach, discussed the lack of financial knowledge of the owner-operator, explaining that an excellent truck driver did not necessarily make a terrific owner-operator without possessing basic financial management skills. Brady argued that the reason most owner-operators fail was a lack of understanding of the business operation costs.

Fender and Pierce (2013) conducted research to document and compute the operational costs of motor carriers at different levels by fleet size, sector, and region within the country. Fender and Pierce categorized the operation costs into two main groupings:

- Vehicle-based: fuel and oil costs; purchase payments or truck and trailer lease; repair and maintenance; tires; truck insurance premiums; licensing and overweight-oversize permits; and tolls.
- Driver-based: driver pay; driver benefits; and driver bonus payments.

Fender and Pierce (2013) presented the average costs of a motor carrier per mile in 2008-2011. Fender and Pierce summarized the information in the following table.

Table 1

*Average Carrier Costs per Mile, 2008, 2009, 2010 and 2011*

Motor Carrier Costs	2008	2009	2010	2011
<u>Vehicle-based</u>				
Fuel & Oil Costs	\$0.63	\$0.41	\$0.49	\$0.59
Truck/Trailer Lease or Purchase Payments	\$0.21	\$0.26	\$0.18	\$0.19
Repair & Maintenance	\$0.10	\$0.12	\$0.12	\$0.15
Truck Insurance Premiums	\$0.06	\$0.05	\$0.06	\$0.07
Permits and Licenses	\$0.02	\$0.03	\$0.04	\$0.04
Tires	\$0.03	\$0.03	\$0.04	\$0.04
Tolls	\$0.02	\$0.02	\$0.01	\$0.02
Subtotal (vehicle)	\$1.07	\$0.92	\$0.94	\$1.10
<u>Driver-based</u>				
Driver Wages	\$0.44	\$0.40	\$0.45	\$0.46
Driver Benefits	\$0.14	\$0.13	\$0.16	\$0.15
<b>TOTAL</b>	<b>\$1.65</b>	<b>\$1.45</b>	<b>\$1.55</b>	<b>\$1.71</b>

Fender and Pierce (2013) noted that the trucking industry was a highly competitive market, with exceptionally slight profit margins. An owner-operator must be especially attentive to all expenses, including marginal costs. Fender and Pierce estimated an average cost per mile in 2011 of about 171 cents. The study findings showed that the fuel costs and driver wages are the major costs for motor carriers.

Owner-operators must apply a prudent cost control for both fixed and marginal costs to survive. Voss, Cangelosi, Rubach, and Nadler (2011) examined the techniques of survival by the small carrier, referring to the challenges facing this sector, which lies in the task of turning a profit in a low-margin in a highly competitive industry. The authors argued that the small carrier must survive under circumstances including high input costs, serious safety regulations, effective use of fixed assets, difficulty in collecting receivables, and the need to keep customers.

Minimizing the truck operating costs has been a primary element in the survival and growth of the trucking industry. Holguin-Veras et al. (2013) believed that estimating the cost of producing merchandise or services is essential to the freight cost analysis. Holguin-Veras et al. considered that operational costs are the main emphasis of freight costs, which includes all expenses incurred in the daily running of a business from both fixed and variable costs. The operational costs may be either direct, which are affected by consumption, or indirect, which are not affected by consumption.

Berwick and Farooq (2003) argued that there are considerable differences in cost structures between large and small motor carriers. The trucking costs depended on the economies of size, economies of utilization, and the structure of fixed and variable costs of a motor carrier (Berwick & Farooq, 2003). The economies of size for small owner-operators are minimal, and the cost structure differs from larger firms because the administration and overhead costs may be less or negligible. Berwick and Farooq developed truck-costing model software to estimate truck costs under different equipment configurations, which helped to estimate truck costs for owner-operators. Most owner-

operators do not consider opportunity costs whenever they wait to load and unload at the shipper while the software application included this operations cost. The software provides full information to the trucking and shipping industry, which makes it easier to estimate truck-operating costs. The software application includes components making up both variable and fixed costs as follows:

Variable Costs:

- Fuel cost that depends on market prices and fuel economy based on weight, speed, and external factors.
- Tire cost is a combination of tire price, and tire-wear makeup tire costs. There is a direct correlation between tire-wear and gross vehicle weight.
- Maintenance and repair cost depends on the age of the equipment, dealer warranties, weight, and operating conditions.

Fixed Costs:

- Equipment costs are combined purchase price, ownership type, interest rates in the case of a lease, or return on investment, annual miles, estimated useful life, and salvage value.
- License fees, insurance, and sales tax
- Management and overhead costs, which are minimal to owner-operators, because they are managers, and the overhead costs are not applicable.

The increased number of trucking companies operating in the United States created a fiercely competitive environment with thin profit margins (Trego & Murray, 2010). As a result, trucking companies must operate prudently and with the goal of

containment for both fixed and marginal costs to survive. Trego and Murray emphasized that knowledge about industry economics and marginal costs was essential to transportation planning and investment.

Monaco (2010) believed that the owner-operator is quite a risky business because of fluctuations in fuel prices, insurance costs, and capital expenditure. Based on this, the owner-operator must operate significantly to reduce fixed costs, and work extra hours to survive. The results showed that the average hours worked were beyond 11 hours a day, interspersed with long hours of waiting in shipping departments. The owner-operator net earnings in 2006 averaged approximately \$35,000, considerably lower than the \$44,432 that employee drivers earn on average. The author noted that the owner-operator who did not have truck payments earned significantly more than both owner-operators with truck payments and employee drivers, which gives an incentive for owner-operators to buy inexpensive, older trucks.

Graves (2012) discussed the effect of the fuel price hike on small businesses in the United States. Graves described how high fuel prices pose the biggest threats to the US recovery, which affected the small trucking company more than a larger firm. The fuel cost per sales ratio is 2.7 times greater than that of large businesses. Graves argued the high fuel price would cause serious financial challenges to the small trucking company.

The cost reduction of resources used in business activities is an essential element in achieving profitability for owner-operators. Johnson and Center (2011) investigated

relative advantages and disadvantages of the owner-operator status by surveying 154 independent drivers. Some of the primary findings from this study were:

- Fuel cost influences the owner-operator profitability most, followed by maintenance costs, repair costs, and the least influential is the cost of insurance.
- Freight rates and freight availability were the most significant income factors to profitability, followed by fuel surcharge and detention pay.
- Physical damage insurance was the main expense factor to profitability, non-trucking (bobtail) insurance, followed by liability insurance and cargo coverage insurance, occupational accident insurance, and workers' compensation.

### **The TCO Model**

In the 21<sup>st</sup> century economic climate, with business more difficult and challenging than ever, owner-operators need to ensure their viability by keeping business costs down. The owner-operator has to understand the real cost of operating a truck regarding the total cost of ownership. The Gartner Group in 1987 developed the total cost of ownership (TCO) model (Mastalerz, 2011). TCO is a critical tool in decision-making and aids in understanding short- and long-term costs and benefits. The model provides a basis for life cycle cost analysis considering the equipment purchase price, fixed costs, and variable operating costs (Al-Alawi & Bradley, 2012; Ernst et al., 2011).

Snelgrove (2012) stated that the TCO makes available methodologies for making business decisions while providing a true analysis of the income statement and

recommending the best deals for business. TCO is one the most fundamental concepts in the transportation industry, which quantifies and measures the operation costs and encourages trucking companies to reconsider the wisdom of different methods of vehicle operation costs. Snelgrove indicates developing practices of including not only cost elements but also all differentiating elements that offer to customer value in TCO calculations.

According to Waldrop (2012), TCO analysis helps to calculate all costs associated with purchase, including hard costs and soft costs. Waldrop argued that the TCO approach allowed both firm and supplier extra flexibility in negotiating terms and fees. The TCO process can produce a better position for the owner and his company to maximize the results, and collaborate more closely with the supplier to meet business financial goals (Waldrop, 2012).

### **Transition and Summary**

Section 1 was an introduction to the current research study, purpose, framework, and existing body of literature. A review of the literature defined the owner-operator and discussed the lack of financial knowledge of the owner-operator. Brady (2011), Trego and Murray (2010), and Berwick and Farooq (2003) consider the reason of most owner-operator failures was a lack of understanding of business operation costs. A successful owner-operator is one who has basic financial management skill and knowledge. The resource-based theory provides owner-operators with valuable resources. The theory highlights the resources as a core element of the exceptional performance of the business that prepares the owner operator to achieve and maintain a competitive advantage. The

knowledge gap theory attempts to explain the reasons for the knowledge variation or lack of knowledge among people and attributes this to the socioeconomic status in a particular level of education. The perspective from much of the existing body of literature is that the better-educated person has prior knowledge, which makes him or her able to succeed more easily. Seghers, Manigart, and Vanacker (2012) investigated the financial knowledge gap between entrepreneurs, suggesting enhancing the entrepreneurs' financial knowledge through education, which could help him or her to survive in any environment.

Finally, researchers of the scholarly literature discussed trucking operator costs, explained both variable and fixed costs, and estimated the average cost per mile. Fuel cost is the factor most influences owner-operators' profitability, and high fuel prices will cause serious financial challenges for a small trucking company. A review of the literature confirmed that minimizing truck-operating costs has been an important element in the survival and growth of the trucking industry. The objective of Section 2 is to provide more details on the population and sample, as well as information on data selection, methodology, techniques, and the framework of the study.

## Section 2: The Project

In this section, I covered the use of a correlational approach to examining the extent of the effects of the lack of financial knowledge on business performance. The section includes: (a) restatement of study purpose, (b) the researcher role, (c) participant description, (d) research method, (e) a description of the population and sampling, (f) ethical research, (g) data collection, (i) data analysis method and techniques, (j) discussion about the study's reliability and validity. Additionally, in this section I reviewed the study instruments that were designed to examine the relationship between financial knowledge and owner-operator performance.

### **Purpose Statement**

The purpose of this quantitative correlational study is to examine the relationship between the trucking owner-operator financial knowledge, operational costs knowledge and business performance. I addressed aspects of the problem and its causes by collecting data from owner-operators through the Owner-operator Knowledge Financial Performance (OKFP) survey and gathering statistic data from government sources. The implications for social change are the appropriate and sustainable solutions that I proposed to strengthen the financial position of owner-operators within the trucking industry in the United States. I proposed appropriate and sustainable solutions to strengthen the financial position of small trucking companies. I targeted parts of the community, their usefulness beyond the owner-operator population to the whole transport sector, and organizations that provide financial services to the owner-operator community.

### **Role of the Researcher**

The role of the researcher is engaging in the design, collecting, organizing, analyzing, and interpretation of data on financial knowledge degree and owner-operator performance. A researcher should be sure to check the validity of the study, storing of data from the research materials, and anticipate and address any potential ethical issues. I used SPSS software version 21 to analyze the data and carry out the complex calculations needed for the statistical testing. As a result, I determined the predictions regarding whether the null hypothesis should be accepted or rejected. This research has relevance to my experience. I have 15 years of practitioner experience in the trucking industry as a manager of a truck dealer who provides heavy-duty truck parts and service to owner-operators.

### **Participants**

The target population of this study is heavy-duty truck owner-operators in the U.S. I designed the study survey using surveymonkey.com. I invited participants in this study via two methods: a paper-based or a web-based survey. I used the nonprobability convenience sample, which is easily accessible, inexpensive, and can quickly gather and analyze data (Baker et al., 2013). I used convenience sampling to select a convenient location to conduct a paper-based survey and pick naturally occurring truck drivers from the owner-operator pool (Chen, Shih, & Yu, 2012).

I have no direct relationship with the participants. I invited participants to participate in the study by paper-based survey or the web survey. I handed the paper-based survey to the owner-operators who were visiting truck stops in the northeast United

States, visiting more than 10 truck stops in Delaware, Maryland, New Jersey, and Pennsylvania. The participants represent a large segment of society because the truck stops are conveniently located near a major highway, and owner-operators come from all parts of the United States. I distributed the online surveys through different methods, using SurveyMonkey™, which created a survey URL to distribute via OOIDA.com and owner operator Facebook. The web survey ad included a welcome screen, drawing attention to the ease of response, and directing operators toward how to proceed to the survey.

The sample size needs to be large enough to represent the population that satisfies the powerful research outcome. A sample size of only 74 owner-operators will construct a 95% confidence level. The 95% confidence level indicates that the research has only a 5% chance of not being true. Choosing a large sample size will lead to unnecessary waste of money and time (Suresh & Chandrashekara, 2012). Suresh and Chandrashekara (2012) used the power analysis to estimate the minimum sample size needed. The power is the possibility of correctly rejecting the null hypothesis that the sample estimates (Suresh & Chandrashekara, 2012). I used G\*Power version 3.1.9 software to determine the appropriate sample size for the study. I found that the minimum sample sizes are 43 for a power level of 80% and 74 for a power level of 95% with an alpha of .05 using the linear multiple regression measures with medium effect size by 15%. The minimum target sample will be 43.

The data collection process started after Walden University Institutional Review Board (IRB) approval, the approval number is 09-16-15-0335044 (see Appendix A). To

gain access, ensure confidentiality, and certify the ethical protection of participants, I prepared an invitation letter to participate in research and consent format. The SurveyMonkey™ platform included a consent form on the first page of the survey. The participant received a detailed explanation of the purpose, extent, nature, and benefits of the study to the owner-operator business. Participation was voluntary, and I informed the participant he or she might stop participating at any time and decide not to answer any specific question. To maintain integrity, all information concerning the participants remains classified and private. I protected the data in a secure place for 5 years away from public access, where I am the only person with access. Finally, the raw data will be available to all interested researchers upon request.

### **Research Method and Design**

The purpose of the study was to examine the effect of the lack of financial knowledge (dependent variable) on owner-operator performance (independent variable) through an owner-operator financial knowledge performance survey (OFPK). I attempted to provide thorough reviews for each method and design available, and which of these would provide the best way to address the research questions. In this section, I highlighted the reasons for selecting the quantitative method and correlational design and why this kind of method and design are appropriate for this research.

### **Method**

To conduct scholarly research, there are three primary methods that can be selected: quantitative, qualitative, and mixed method (Cameron, 2011; Terrell, 2012). Researchers use a research method to determine how to conduct the research (Wahyuni,

2012). I adopted the quantitative method for this study, focusing on a descriptive correlational design to the generalized relationship between financial knowledge level and owner-operator profitability. The quantitative research method is a tool used to examine the status and a technique that depends on measurable characteristics (Leedy & Ormord, 2013). Quantitative research starts with specific questions in advance and uses a valid instrument designed to test the hypotheses (Arghode, 2012; Collin & Wansink, 2011; Testa, Livingston, & Tamsen, 2011).

In contrast, the qualitative study takes a different approach from a quantitative study because the objective is to gather natural or holistic data from observation or the participant's perspective (Testa et al., 2011). According to Bansal and Corley (2012), the hallmark of qualitative work is its ability to push insights and expose the boundaries of theory. A mixed-method approach is the integration of quantitative and qualitative methods, which generates a synergy and guides the researcher to a deeper understanding (Savage-Austin & Honeycutt, 2011; Testa et al., 2011). Agyei-Mensah (2011) thought that the mixed-method study reduces the possibility of personal bias. The researcher use qualitative designs to address questions of meaning or experience while using quantitative designs to address causation, or correlations between variables (Leedy & Ormrod, 2013). I preferred quantitative over qualitative design because the research questions focused on the relationship between variables.

The nature of this study was to examine the relationship between financial knowledge and operation cost knowledge as independent variables and business performance as a dependent variable. According to Turner, Balmer, and Coverdale

(2013), a quantitative approach is the best tool to determine the relationship between two or more quantifiable variables. The quantitative approach yields solid evidence of population needs (Weathers et al., 2011). From the views of researchers, Leedy and Ormrod, (2013), Balmer and Coverdale (2013) quantitative research is an accurate, reliable measurement, and applicable statistical techniques provide wider analysis. I used a quantitative research design to examine the degree of correlation between the criterion (financial knowledge) and predictor variables (owner-operator performance) from the same groups of participants (owner-operators).

### **Research Design**

The research design should align with research questions and hypotheses (Wahyuni, 2012). According to Meckstroth (2012), to implement an experimental design the researcher must conduct an experiment through the environment variable's manipulation. Quantitative studies include experimental, correlational, quasi-experimental, and Delphi study designs (Bergman, 2011). A quasi-experimental design attempts to identify causal relationships while correlation does not imply causation. A nonexperimental correlational design is the most appropriate design for this study because there is no manipulation of environmental variables in the data. I used descriptive quantitative research, specifically the correlational design, which examines potential relationships between two variables (Leedy & Ormrod, 2013; Turner et al., 2013). According to Leedy and Ormrod, a descriptive correlational design implements the strength of the relationship between variables, which makes the correlational design the most appropriate design for this study.

## **Population and Sampling**

The population of the study includes all small trucking operators operating in the United States. The sampling populations in this study are the truck owner-operators who are voluntary recruits to the survey. I used a nonprobability convenience sample, which is easily accessible, inexpensive, and allows for quick collection and analysis of data (Baker et al., 2013). According to Muskat, Blackman, and Muskat (2012), the researcher must choose a population that is capable of providing a sufficient sample size that produces accurate data. I engaged enough participants to meet the sample size and potential requirements of the study.

According to the U.S. Census, there were 490,288 nonemployer trucking companies in 2010 while this number was 542,509 in 2007, which means the number of nonemployer companies has declined by 10%. According to the Federal Motor Carrier Safety Administration (FMCSA), a nonemployer represented trucking firms without employees; these must be owner-operators. The FMCSA estimated the number of owner-operators at 76,429 in 2008, after excluding the short-run trucking companies and those which operate vehicles less than 10,000 lbs. The number of owner-operators in 2010 had declined by 10% to around 68,400.

When I tested the hypotheses, I used G\*Power version 3.1.9 software to determine the appropriate sample size for the study. I found that the minimum sample sizes are 43 for a power level of 80% and 74 for a power level of 95% with an alpha of .05 using the linear multiple regression measures with medium effect size by 15% (see

Appendix D). Figure 2 illustrates the sample size requirements of the study, and I sought between 43 and 74 participants for the study.

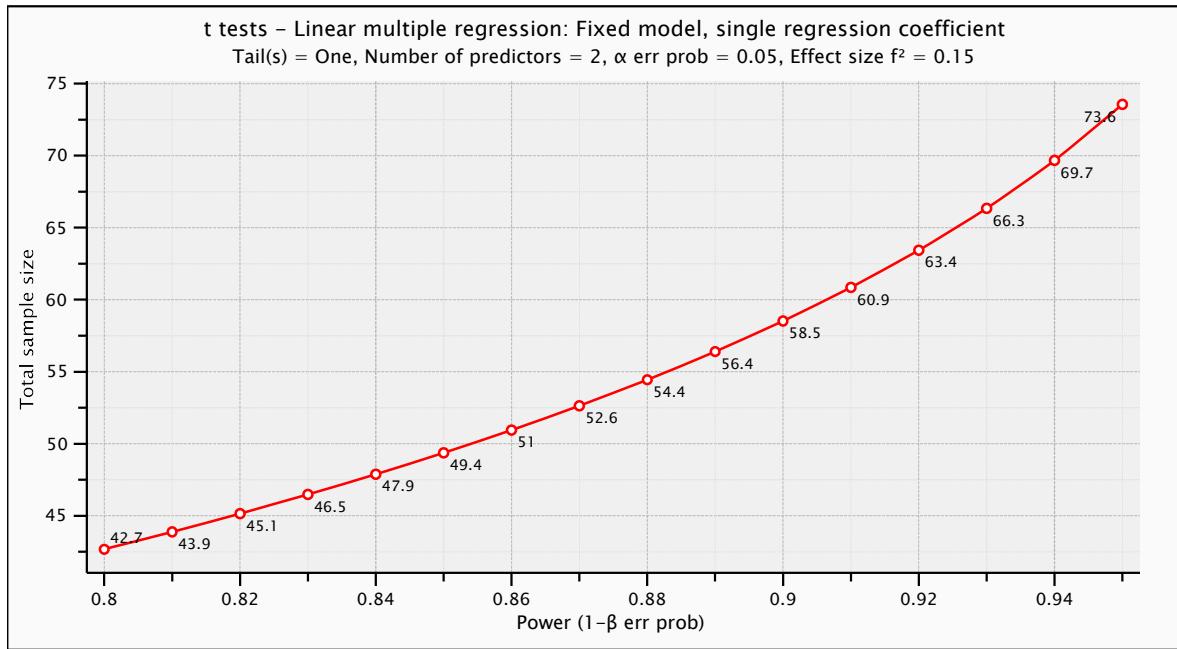


Figure 2. Power analysis of linear multiple regression and sample justification.

The target sample size is 43; increasing the sample size to 74 will be appropriate to achieve a confidence level of 95% (Pathak, 2012). The 95% confidence level implies that the null hypothesis has 5% chance of not being true. A participant who is eligible to participate in the study must meet the following criteria: (a) he or she is an owner-operator, (b) he or she operates vehicles over 10,000lbs, (c) and he or she offers long-haul truck service.

### Ethical Research

I conducted the survey after receiving the approval from the Institutional Review Board (IRB) at Walden University. I provided the required consent form for each participant in one of the two methods: paper or electronic. The participation was

voluntary, and I informed the participant that he or she might stop participating at any time and decide not to answer any specific question. The participants were free to withdraw at any time, without giving a reason.

The participant received a detailed explanation of the purpose, extent, nature, and benefits of the study to the owner-operator business. The participant was the owner-operator who holds a commercial driver's license (CDL). Federal and state governments require that the driver with a CDL must be at least 21 years old to drive a commercial vehicle across state lines (OOIDA, 2012). To maintain integrity, all information concerning the participants remains classified and private. I stored the data in a protected and secure place for 5 years away from public access where only I have access. After 5 years, I will destroy the data.

### **Data Collection**

#### **Instruments**

A survey including closed-ended questions served as an instrument for collecting data, to identify the effect of the lack of financial knowledge on owner-operator performance. The OFKP survey contains four different parts: (a) demographic questions, (b) financial knowledge, (c) business cost knowledge, and (d) and nonfinancial performance (see Appendix B). A pilot study was unnecessary, because the research instruments were previously tested.

I used a financial knowledge scale with multiple-choice self-assessed questions created by the consumer credit survey in 1999 (Prawitz, 2011). The consumer credit survey data collected from approximately 12,000 participants (Perry & Ards, 2002).

Researcher used and designed multiple-choice questions to measure basic concepts that are the foundation for everyday financial transactions and decision-making (van Rooij, Lusardi, & Alessie, 2012). I used a scale in this study to measure basic levels of financial knowledge (independent variable) by owner-operators.

Shields and Young (1994), created a cost knowledge scale, which is a five-point Likert-type response scale including seven questions. Prieto and Revilla (2006) provided a nonfinancial performance scale, which contains the five-point Likert-type response choices, and I treated each response as ordinal data. The financial knowledge scale consists of four multiple-choice questions with one correct answer out of four; a score of 5 points is given for a correct answer and 0 for an incorrect answer. Shields and Young created the cost-knowledge scale questions to indicate the respondents' degree of agreement; a respondent with a mostly favorable attitude toward the knowledge received the highest score. Prieto and Revilla created the nonfinancial performance questions to indicate the respondents' degree of performance; a respondent with higher rated competencies toward the performance received the highest score.

The financial knowledge scale is an ordinal scale created to indicate the respondents' degree of knowledge; a respondent with the rated competencies toward the knowledge will acquire the highest score. I coded the Likert scale responses accordingly: 1 = Nothing, 2 = very little, 3 = some, 4 = a fair amount, 5 = very high extent. A score of 5 indicates the lowest level of financial knowledge, and a score of 25 represents the highest level. The nonfinancial performance scale is an ordinal scale created to indicate the respondents' degree of performance; a respondent with the rated competencies toward

the performance will acquire the highest score. I coded the Likert scale responses accordingly: 1 = poor, 2 = weak, 3 = average, 4 = above average, 5 = very high extent. A score of 5 indicates the lowest level of nonfinancial performance, and a score of 25 represents the highest level. The cost knowledge scale is an ordinal scale created to indicate the respondents' degree of agreement; a respondent with a mostly favorable attitude toward the knowledge received the highest score. I coded the Likert scale responses accordingly: strongly agree = 5, agree = 4, neither = 3, disagree = 2, strongly disagree = 1. A score of 5 indicates the lowest level of cost knowledge, and a score of 35 represents the highest level.

I adopted self-assessed financial knowledge because it is significantly and positively correlated ( $r= 0.3570$ ;  $p < 0.0001$ ) with objective financial knowledge (Perry & Ards, 2002). Researchers have used the financial knowledge scale in multiple studies, for which they were reliable and valid (Aertsens, Mondelaers, Verbeke, Buysse, & Guido, 2011; Flynn & Goldsmith, 1999; Perry & Ards, 2002). The correlations of the financial knowledge scale were in the statistically significant and expected direction (Flynn & Goldsmith, 1999; Perry & Ards, 2002). The scale Cronbach's alpha was 0.91 (Prawitz, A. 2011). Researchers used knowledge of the cost scale in several studies, and they were reliable and valid (Santos et al., 2014). Researchers have used the nonfinancial performance scale in various studies, for which they were reliable and valid (Chen, Hsu, & Tzeng, 2011; Goh et al., Quon, 2012).

To maintain integrity, all information concerning the participants will remain classified and confidential. I stored the data in a file cabinet in my home for five years

away from public access where the researcher is the only person with access, and I will terminate it after that. I will shred the paper records, and delete the stored data. The data will be available to others only by request. The raw study data include demographic information, financial knowledge evaluation; business cost knowledge assessment, and nonfinancial performance assessment. The summary data includes four variables as follows:

- The financial knowledge variable (Fin-k) represented the degree of an owner-operator financial knowledge.
- The cost knowledge variable (Cost-k) represented the extent of understanding of the business operation cost by the owner-operator.
- The financial performance variable (Fin-p) represented the net profit margin ratio; I will use this to calculate owner-operator business profitability.
- Finally, the nonfinancial performance variable (Nfin-p) represented the level of nonfinancial performance by the owner-operator.

I compiled sufficient data to address threats toward the cogency of the study to verify appropriate and correct interpretation, which I made from the sample, and I generalized the results to the total population. I adopted a Cronbach's alpha to draw validity. I discussed Cronbach's alpha in Section 3. I attached permission to use the financial knowledge scale and cost management knowledge scale in Appendix C. The authors of the nonfinancial knowledge scale do not require permission for non-commercial research (Prieto & Revilla, 2006). I used the financial knowledge scale from

the 1999 Freddie Mac Consumer Credit Survey, which does not require permission for non-commercial research (Prawitz, A. 201).

### **Data Collection Technique**

I employed two different techniques of survey data collection, paper-based and web-based surveys to increase the percent of owner-operators who are willing to respond (Leedy & Ormrod, 2013). For the first technique, I distributed the web-based survey through the owner-operator independent association website (OOIDA.com), and owner-operator Facebook included a link to the survey from www.Surveymonkey.com. For the scanned technique, I handed the paper-based survey to the owner-operators who came across truck stops in the northeast United States, visiting more than ten truck stops in Delaware, Maryland, New Jersey, and Pennsylvania. I worked on obtaining the adequate number of responses, by ensuring that the minimum target sample was achievable, and there were enough entire survey responses to meet the study requirement. The minimum target sample was 43 participants. To analyze the survey, I exported the collected data through an online platform SurveyMonkey™ to SPSS analysis software. Some potential benefits of using web-based surveys compared to paper-based surveys include low costs, automation, real-time access, less time, convenience for respondents, and design flexibility (Words et al., 2014). Web-based disadvantages include difficulty in sample selection and variations of the instruments' reliability (Words et al., 2014).

### **Data Organization Techniques**

I collected the data using two methods paper-based and web-based surveys, converting the paper-based survey data to the Excel spreadsheet, and importing an Excel

file into SPSS to interpret the results. I used the online platform SurveyMonkey™ to create data report from a web-based survey importing to SPSS. I stored the survey paper in a file cabinet in my home for five years away from public access where the researcher was the only person with access, and I will destroy it after that. I stored all electronic data in the researcher's computer, and it was password protected.

### **Data Analysis Technique**

I addressed the following research questions to determine to what extent a lack of financial knowledge relates to owner-operator performance (Bergman, 2011; Ellis-Jacobs, 2011; Leedy & Ormrod, 2013).

Q1: To what extent is there a relationship between the financial and operational costs knowledge of trucking owner-operators, and financial performance?

Q2: To what extent is there a relationship between the financial and operational costs knowledge of trucking owner-operators and nonfinancial performance?

The hypotheses of the study are as follows:

$H_o1$ : There is no statistically significant relationship between the trucking owner-operator financial knowledge, operational costs knowledge, and financial performance.

$H_a1$ : There is a statistically significant relationship between the trucking owner-operator financial knowledge, operational costs knowledge, and financial performance.

$H_o2$ : There is no statistically significant relationship between the trucking owner-operator financial knowledge, operational costs knowledge, and nonfinancial performance.

*H<sub>a</sub>2:* There is a statistically significant relationship between the trucking owner-operator financial knowledge, operational costs knowledge, and nonfinancial performance.

I connected the data analysis technique with the problem, purpose, and research questions through examining the extent, if any, to which the influence of the lack of financial knowledge relates to business performance. To analyze the survey, I imported the collected data through an online platform Survey Monkey™ to SPSS analysis software. The data analysis was a result in a total score of the OFKP survey (see Appendix B). The financial knowledge scale represents the financial knowledge variable; the nonfinancial performance scale represents the nonfinancial performance variable; the cost management scale represents the cost knowledge variable; and the net profit margin represents the financial performance variable.

I used the SPSS software version 21 to analyze the data, which enabled me to discuss a variety of data, test hypotheses, examine variances, and explain exceptional values. SPSS software has a great advantage to produce high-level statistical analysis and charts (Leedy & Ormrod, 2013). The Pearson Product-Moment Correlation reflects the strength and direction of the relationship that exists between two variables (Ellis-Jacobs, 2011; Fritz, Morris, & Richler, 2012). Researchers use multiple linear regression statistical test models to assess the relationship between two or more independent variables and the dependent variable (Jadhav & Kashid, 2012; Smith, Ganesh, & Liu, 2013). Pearson Product-Moment Correlation is not applicable to my study because I have more than two variables. I computed the multiple linear regression between the owner-

operator financial knowledge, operation costs knowledge, and company performance. To measure the reliability of the estimates of the regression models, I conducted an analysis of variance ANOVA (Elsayed, 2012). Researchers repeatedly use a measure of analysis of variance ANOVA to assess discriminant validity (Kumar et al., 2011). To support the results of the final regression test, I conducted the linear regression assumption testing. Testing the assumptions of linear regression includes multicollinearity, normality, homoscedasticity, linearity, and independence (Green & Salkind, 2014).

The purpose in testing the null hypotheses is to determine if a linear relationship existed between the dependent variable (business performance), and the independent variables (financial knowledge, business cost knowledge). To test the null hypotheses, I used the test for significance of regression (Stang & Poole, 2013). The criterion for rejection of the null hypothesis is the *p*-value called  $\alpha$ , the significance level. The *p*-value is a numerical value between 0 and 1, which details how much evidence exists to reject or accept the null hypothesis (Lijffijt, Papapetrou, & Puolamäki, 2014). A small *p*-value ( $\alpha \leq 0.05$ ) indicates strong evidence to reject the null hypothesis while a large *p*-value ( $\alpha > 0.05$ ) indicates insufficient evidence existed to reject the null hypotheses.

Coding is essential to analyze data and to transform raw data into significant information (Leedy & Ormrod, 2013). As Krippendorff (2013) suggested, I will arrange the data in rows and columns to represent the units of analysis and the variables. Nominal scales represent demographic questions. The financial knowledge scale is an ordinal scale created to indicate the respondents' degree of knowledge; a respondent with the rated competencies toward the knowledge acquired the highest score (Flynn & Goldsmith,

1999). I coded the Likert scale responses accordingly: 1 = Nothing, 2 = very little, 3 = some, 4 = a fair amount, 5 = very high extent. A score of 5 indicates the lowest level of financial knowledge, and a score of 25 represents the highest level. The non-financial performance and cost knowledge scale is ordinal, which indicates that some subjects are higher, or better. Shields and Young (1994) created the cost knowledge scale to indicate the respondents' degree of agreement; a respondent with a mostly favorable attitude toward the knowledge received the highest score. Shields and Young coded the Likert scale responses accordingly: strongly agree = 5, agree = 4, neither = 3, disagree = 2, strongly disagree = 1. Prieto and Revilla (2006) created the nonfinancial performance questions to indicate the respondents' degree of performance; a respondent with higher rated competencies toward the performance received the highest score. Prieto and Revilla coded the Likert scale responses accordingly: 1 = poor, 2 = weak, 3 = average, 4 = above average, 5 = very high. Finally, the financial performance is a ratio scale.

The data analysis plan includes research questions and null hypotheses; data elements and theoretical framework are included in Table 2.

Table 2

*Research Questions, Theoretical Framework, and Data Analysis Plan for the Study*

Research question	Theoretical framework	Related null	Data elements	Statistical approach
Q1: What is the relationship between owner-operator financial knowledge and financial performance in the trucking industry?	RBV	There is no significant effect of the lack of financial knowledge in relation to the owner-operator profitability.	OFPK survey: financial knowledge scale & NPM ratio	Descriptive statistics Cronbach's alpha multiple regression
Q2: What is the relationship between owner-operator operation cost knowledge and financial performance in the trucking industry?	RBV	There is no significant effect of the lack of operation cost knowledge in relation to the owner-operator profitability.	OFPK survey: cost management knowledge scale & NPM ratio	Descriptive statistics Cronbach's alpha multiple regression
Q3: What is the relationship between owner-operator financial knowledge and nonfinancial performance in the trucking industry?	RBV	There is no significant effect of the lack of financial knowledge in relation to the owner operator nonfinancial performance.	OFPK survey: cost management knowledge scale &, nonfinancial performance scale	Descriptive statistics Cronbach's alpha multiple regression
Q4: What is the relationship between owner-operator operation cost knowledge and nonfinancial performance in the trucking industry?	RBV	There is no significant effect of the lack of operation cost knowledge in relation to the owner operator nonfinancial performance.	OFPK survey: cost management knowledge scale &, nonfinancial performance scale	Descriptive statistics Cronbach's alpha multiple regression

## **Reliability and Validity**

### **Reliability**

A reliable instrument expresses the actual scores of the items evaluated on specific dimensions that enhance and strengthen the study and provide stable and consistent results (Leedy & Ormrod, 2013). Previous research has revealed that the financial knowledge scale, the knowledge of the cost scale, and the nonfinancial performance scale are reliable instruments ( $p < .05$ ), which provided significant results (Aertsens et al., 2011; Flynn & Goldsmith, 1999; Goh et al., 2012; Guenther, & Gaebler, 2014; Perry & Ards, 2002; Santos et al., 2014). I used the Cronbach's alpha to determine a measure of internal consistency reliability, which expresses how highly the items in the survey are interrelated (Tavakol & Dennick, 2011). The acceptable values of alpha should be at least 0.70 or higher to keep the item in sufficient scale (Tavakol & Dennick, 2011).

### **Validity**

The study validity includes two distinct types, internal and external. Internal validity refers to verifying the validity of the results of the study using the population of the study, while external validity concerns the possibility of expanding the research results to include populations outside the scope of the study (Rendón et al., 2011). The new information gleaned from the study could have an effect on owner-operators, showing them that enhancing their knowledge about operating costs and developing financial management skills can improve their chances of success. The study might guide leaders' strategies to improve the business performance policies, leading to outcomes that

are more beneficial for truck owner-operators. Hubley and Zumbo (2011) considered that potential threats surrounding the internal and external validity exist in any study. Threats to both internal and external validity might occur in the research design, data collection, data analysis, and data interpretation (Small, 2011). Non-probability convenience sampling could affect the dependent variable and produce paradoxical results. Validity is also threatened by survey design since it also depends on asking questions, and whether we measure what we intend to measure (Small, 2011).

I mitigated the threat of internal validity as related to sampling by using two data collection techniques. Knoll and Houts (2012) used the item response theory (IRT) to evaluate the validity of the financial knowledge scale. The correlations of financial knowledge scale variables were in the expected direction and statistically significant (Knoll & Houts, 2012). In the same way, the cost knowledge scale showed acceptable levels of convergent and discriminate validity (Santos et al., 2014). According to Yin (2013), the external validity is the ability of the study to generalize to the larger population and duplicate coding and analysis techniques in the several cases. The owner-operator falls within the role of entrepreneurship and small business, which indicates the possibility of expanding the study results to include populations outside the scope of the study, which achieves the external validity.

### **Transition and Summary**

In section 2, I presented and discussed the research method and design approaches used in this study. I described the role of the ethical researcher, population, sampling, data collection methods, instruments, and design analysis to ensure the reliability and

validity of the results. In section 3, I presented the analysis results of the collected data and the study findings. I offered reflections on the results, recommendations for action, and suggestions for future research.

### Section 3: Application to Professional Practice and Implications for Change

#### **Introduction**

The purpose of the quantitative correlational study was to examine the relationship between the financial and operational costs knowledge of trucking owner-operators and business performance. I sought to determine if a relationship existed between independent variables (financial and operational costs knowledge) and a dependent variable (business performance). I collected, analyzed, and interpreted the data relevant to the study and addressed the fundamental research question. The fundamental research question was, to what extent is there a relationship between the financial and operational costs knowledge of trucking owner-operators and business performance? The following null hypotheses reflected the research question:

$H_o1$ : There is no statistically significant relationship between the trucking owner-operator financial knowledge, operational costs knowledge, and financial performance.

$H_o2$ : There is no statistically significant relationship between the trucking owner-operator financial knowledge, operational costs knowledge, and nonfinancial performance.

In a brief summary of the findings, there is a statistically significant relationship between financial and operational costs knowledge of trucking owner-operators and business performance. The findings from the multiple linear regression analysis led to the rejection of both null hypotheses and the acceptance of both alternative hypotheses as the  $p$ -values were less than .05.

## Presentation of the Findings

This part of the study presents the conclusions from the findings of this study that answer the research questions and address the hypotheses. The data collected from the survey answered by the participants provided the results findings as well as the relationship between the two independent variables (Fin-k; Cost-k) and dependent variable (Fin-p). The target population for this study was 74 owner-operators in the United States. I collected participant responses using two methods, paper-based and web-based surveys, and with 81 participants initiating the survey representing 31 states. I rejected three responses because of incomplete answers. The response rate was 17% for web-based and 83 % for paper-based surveys.

I exported the collected survey responses by SurveyMonkey™ as an Excel file and entered the paper-based responses into the same spreadsheet as numeric data (codes) to use them with SPSS analysis software. I conducted multiple linear regressions to address the study research questions. I employed 2000 samples for bootstrapping and provided appropriate confidence intervals where applicable. The bootstrap method is a very general resampling procedure for estimating the population distribution using independent observations (Green & Salkind, 2014). I performed bootstrapping on the data to combat the influence of assumption violations (Green & Salkind, 2014).

## Descriptive Statistics

Data analysis proceeded with 78 owner-operator participants. The majority of these participants were male (72, 92%). Thirty-two (37%) participants were between 41 and 55 years of age. Most of the participants had some college or an associate's degree

(33, 42%). Over 38% of owner-operators made business revenue (net sales) last year over \$141,000 and more than 39% of them made a profit between 20k and 41k. Table 3 includes the descriptive population frequencies and percentages of the demographic information from the respondents.

Table 3  
*Population Frequencies*

Category	N	%
<u>Gender</u>		92.31
Female	5	6.41
Male	72	92.31
Unknown	1	1.28
<u>Age</u>		
25 or under	1	1.28
26-40	16	20.51
41-55	32	41.03
56 or older	29	37.18
<u>Education</u>		
Did not complete high school	9	11.54
High school diploma or equivalent	28	35.90
Some college or an associate's degree	33	42.31
Bachelor's degree or higher	8	10.26
<u>Revenue</u>		
Less than \$50,999	2	2.56
\$51,000 – \$81,999	10	12.82
\$81,000 – \$110,999	20	25.64
\$111,000 – \$140,999	16	20.51
Over than \$141,000	30	38.46
<u>Profit</u>		
a. Loss	8	10.26
b. Zero	5	6.41
c. 19,999 or less	9	11.54
d. 20,000 – 40,999	31	39.74
e. Over than 41,000	25	32.05

*Note.* N = 78.

I used Cronbach's alpha reliability testing for the scale and subscales to assess the internal reliability of the sample (George & Mallery, 2014). The Cronbach's alpha for the OFKP scale is (.84), which indicates good reliability. Table 4 presents Cronbach's alpha reliability statistics and descriptive statistics for the OFKP subscales.

Table 4

*Cronbach's Alpha Reliability for Subscales*

Subscale	$\alpha$	No. of items	$M$	$SD$
Financial Knowledge	0.82	5	18.64	3.47
Cost Management				
Knowledge	0.81	7	26.59	3.99
Nonfinancial performance	0.89	5	20.27	3.93

### **Statistical Model Assumption Testing**

Multicollinearity: I employed the Variance Inflation Factors (VIF) test to indicate for multicollinearity, using the correlation coefficients among the independent variables. When no violation of the assumption of multicollinearity is present, the tolerance should be  $> 0.1$  and  $VIF < 10$  for all variables (Green & Salkind, 2014). From Table 5, both tolerance and VIF values were within the acceptable parameters, showing no multicollinearity of financial knowledge and cost knowledge.

Table 5

*Correlation Coefficients and VIFs Among Study Predictor Variables*

Model	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics		
	B	Std. Error	Beta	t	Sig.	Toleranc e	VIF
1 (Constant)	.264	.533		.496	.62		
Fink	.053	.018	.338	2.87	.00	.959	1.04
Costk	-.005	.018	-.034	-.293	.77	.959	1.04

*Note. Dependent Variable: Finp*

Independence: I used the Durbin-Watson test in SPSS to check the independence of errors assumption. The value of the Durbin-Watson statistic ranges from 0 to 4 with a midpoint of 2 (Edwards, 2015). From Table 6, the result of the Durbin-Watson test for both hypothesizes are (1.24, 2.02) were acceptable.

Table 6

*Model Summary and Durbin-Watson Among Study Predictor Variables*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin- Watson
1	.343 <sup>a</sup>	.118	.094	.576	1.239
2	.253 <sup>a</sup>	.064	.039	3.8555	2.023

*Note. Predictors: (Constant), Costk, Fink; Dependent Variable: Finp (model 1)  
Dependent Variable: Nfinp (model 2)*

Outliers: I assessed multivariate outliers by examining the Mahalanobis distance. Statisticians apply the Mahalanobis distance to a set of data to clarify the multiple outlier detection procedures in multiple linear regression models (Kannan & Manoj, 2015). I

identified two extreme outlier values in univariate data using Mahalanobis distance methods, excluding the outlier values from the calculation.

Homoscedasticity is the assumption that the points spread around the regression line are the same for all values of an independent variable (Green & Salkind, 2014). I used scatterplot in Figures 3 and 4 to test for homoscedasticity for financial knowledge and operational costs in business performance (financial and nonfinancial performance) respectively. From Figure 3, it seems reasonable to conclude that the residuals are homoscedastic. Figure 4 shows data that meet the assumptions of homoscedasticity.

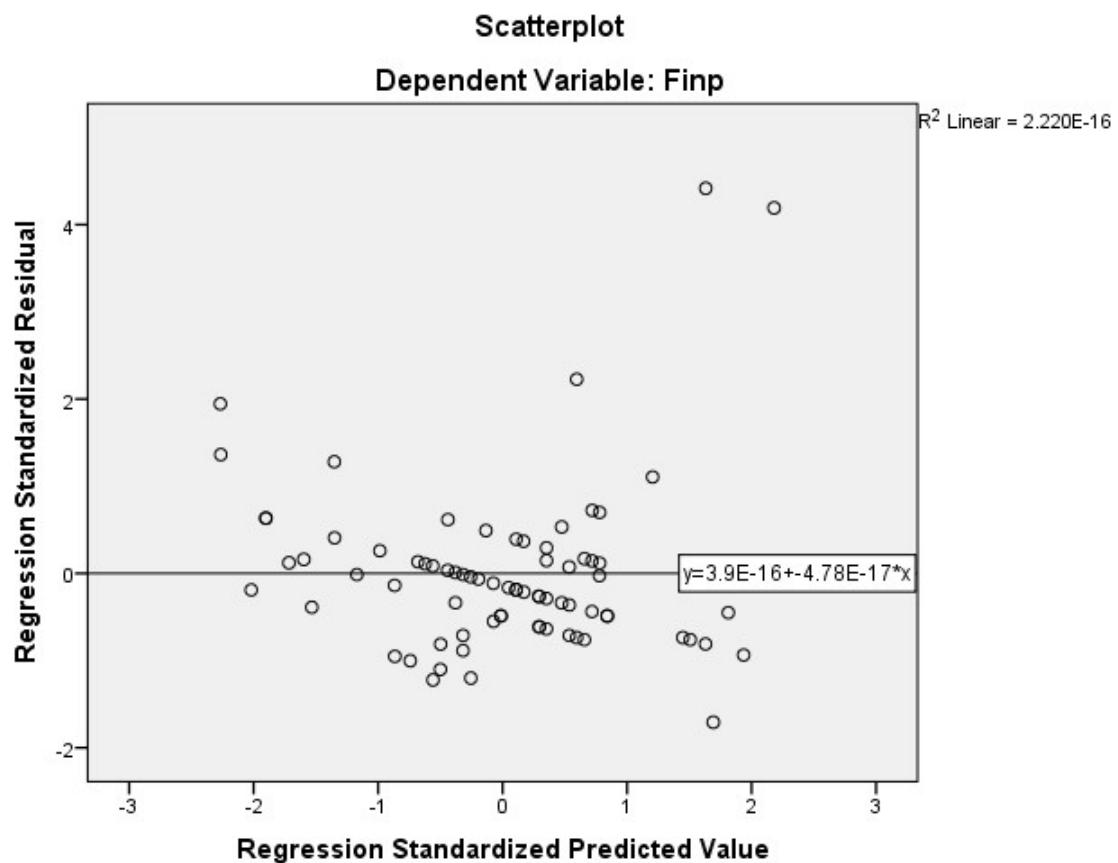


Figure 3. Residuals scatterplot for homoscedasticity for Fin-k, Cost-k related to Fin-p

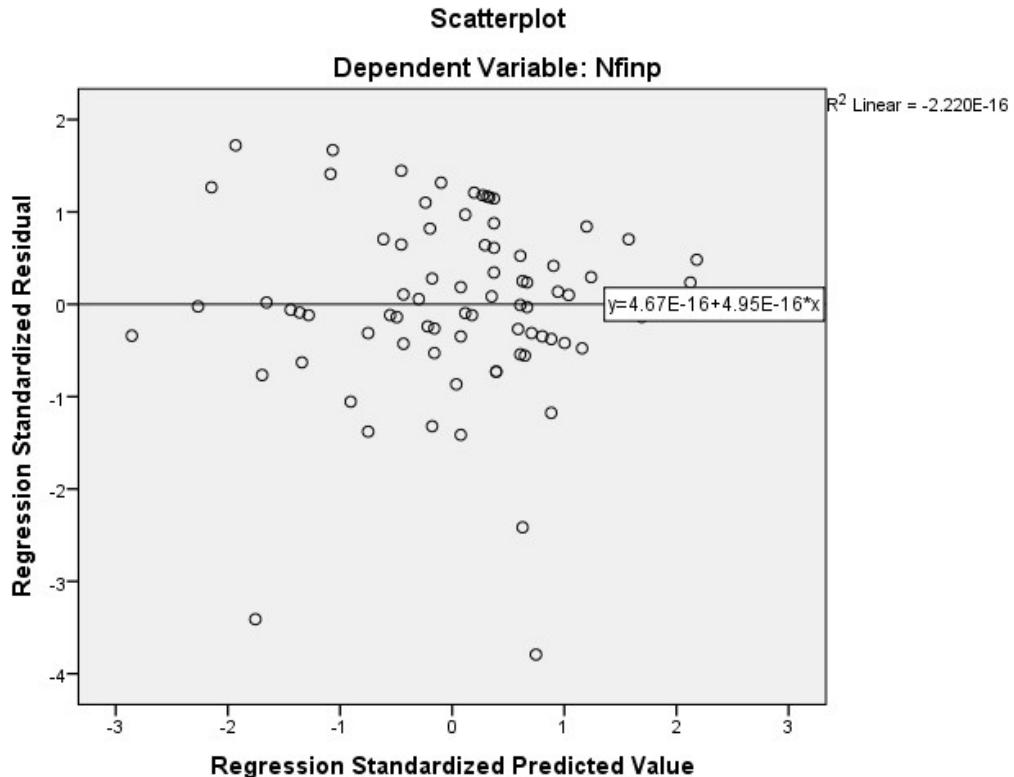


Figure 4. Residuals scatterplot for homoscedasticity for Fink, Costk related to Nfinp

Linearity: the assumption that the points spread around the regression line is about the same on either side (Green & Salkind, 2014). Linearity is the basic assumption. From Figures 3 and 4, points spread around the regression line met linearity assumption.

Normality is the assumption that the residuals and error terms follow a normal distribution (Green & Salkind, 2014). The histogram fits approximately into a perfect bell-shaped curve, representing normally distributed variables. Figures 5 and 6 show both curves represent the normal distribution. In the P-P plot of regression test for normality, the plotted points should follow a straight line. Figures 7 and 8 show the P-P plot of regression test for normality of financial and nonfinancial performance; both P-P plots represent the points cluster around a straight line.

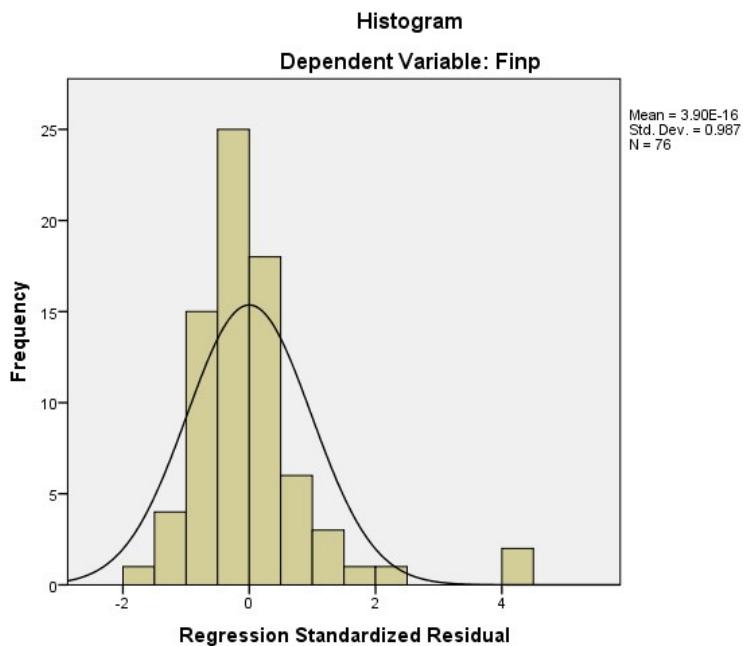


Figure 5. Histogram of the normality of the data. Finp dependant variable

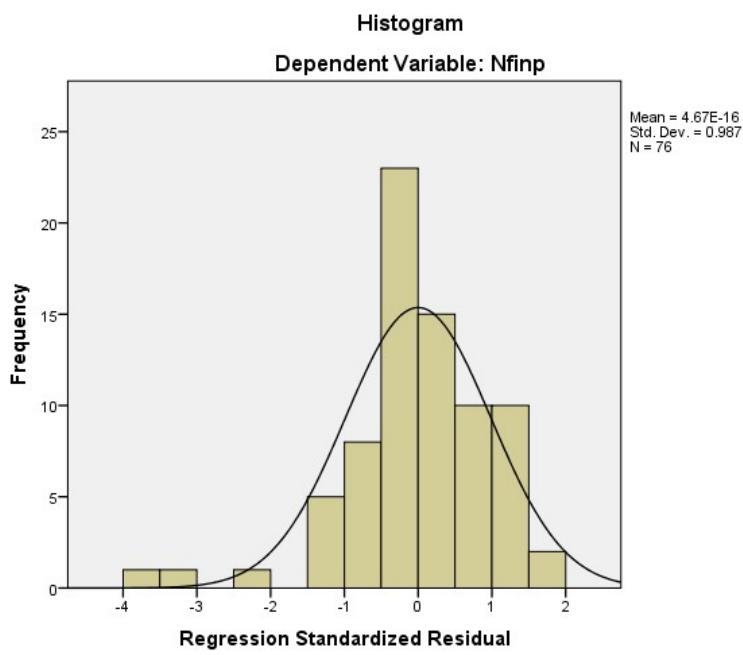


Figure 6. Histogram of the normality of the data. Nfinp dependant variable

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Finp

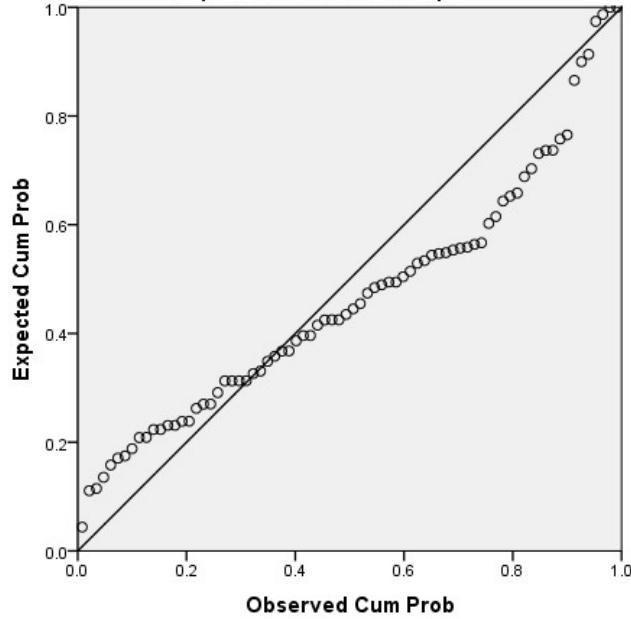


Figure 7. P-P plot for normality for Fin-p

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Nfinp

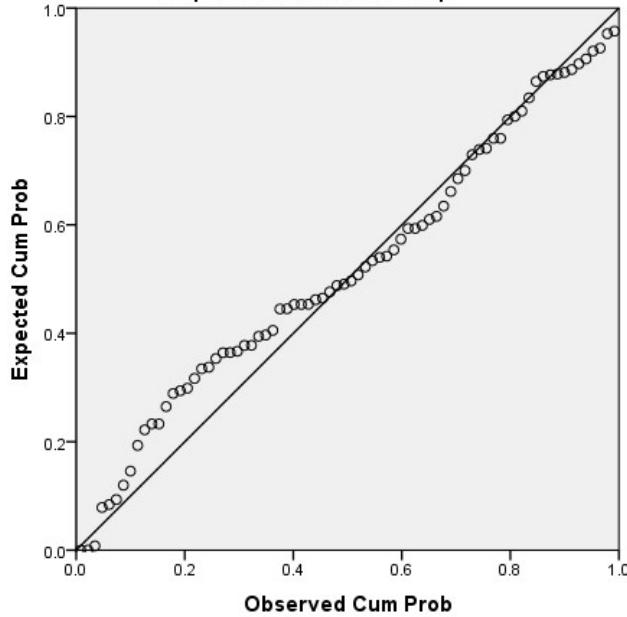


Figure 8. P-P plot for normality for Nfin-p

## Inferential Statistics

I computed a multiple linear regression to examine the relationship between the financial and operational costs knowledge of trucking owner-operators and business performance. I addressed two sub-questions.

Q1: To what extent is there a relationship between the financial and operational costs knowledge of trucking owner-operators, and financial performance?

Q2: To what extent is there a relationship between the financial and operational costs knowledge of trucking owner-operators and nonfinancial performance?

### **Question 1**

$H_o$ : There is no statistically significant relationship between the trucking owner-operator financial knowledge, operational costs knowledge, and financial performance.

$H_a$ : There is a statistically significant relationship between the trucking owner-operator financial knowledge, operational costs knowledge, and financial performance.

The independent variables were financial knowledge (Fin-k) and operational costs knowledge (Cost-k). The dependent variable was financial performance (Fin-p). The alternative hypothesis was that there is a statistically significant relationship between the trucking owner-operator financial knowledge, operational costs knowledge, and financial performance.

The result of the multiple linear regression models showed a statistically significant relationship. The result of the model of financial performance was  $F(2, 73) = 6.27, p = 0.003 < .05, R^2 = 0.15$ , which suggested that financial knowledge, operational costs knowledge significantly predicted financial performance (Table 7). I rejected the

null hypothesis and accepted the alternative hypothesis, based on the results of the statistical analysis in this study. The  $R^2$  (0.15) value indicated that the approximately 15% of variations in owner-operator financial performance is accounted for by the linear combination of the predictor variables (financial knowledge, operational costs knowledge). Table 8 depicts the regression analysis summary. The predictive equation is Finp = .14 + .071 Fink -- .014 Costk.

Table 7  
*Analysis of Variance Table ANOVAs (Fin-k)*

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	4.131	2	2.066	6.273	.003 <sup>b</sup>
Residual	24.038	73	.329		
Total	28.169	75			

*Note.* Dependent Variable: Fin-p. Predictors: (Constant), Cost-k, Fin-k

Table 8

*Regression Analysis Summary for Predictor Variables Fin-k & Cost-k related to Fin-p*

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
1 (Constant)	.139	.533			.260	.796
Fink	.071	.021	.408		3.462	.001
Costk	-.014	.021	-.083		-.700	.486

*Note.* Dependent Variable: Fin-p

## Question 2

$H_o2$ : There is no statistically significant relationship between the trucking owner-operator financial knowledge, operational costs knowledge, and nonfinancial performance.

$H_a2$ : There is a statistically significant relationship between the trucking owner-operator financial knowledge, operational costs knowledge, and nonfinancial performance.

The independent variables were financial knowledge (Fin-k) and operational costs knowledge (Cost-k). The dependent variable was financial performance (Nfin-P). The alternative hypothesis was that there is a statistically significant relationship between the trucking owner-operator financial knowledge, operational costs knowledge, and non-financial performance.

The result of the multiple linear regression models showed a statistically significant relationship. The result of the model of financial performance was  $F(2, 73) = 5.02, p = 0.009 < 0.05, R^2 = 0.12$ , which suggested that financial knowledge and operational costs knowledge significantly predicted non-financial performance (Table 9). I rejected the null hypothesis and accepted the alternative hypothesis, based on the results of the statistical analysis in this study. The  $R^2 (.12)$  value indicated that the approximately 12 % of variations in owner-operator financial performance is accounted for by the linear combination of the predictor variables (financial knowledge, operational costs knowledge). Table10 depicts the regression analysis summary. The predictive equation is  $\text{Finp} = 9.58 + .027 \text{ Fink} + .378 \text{ Costk}$ .

Table 9

*Analysis of Variance Table ANOVAs (Nfin-k)*

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	141.253	2	70.627	5.021	.009 <sup>b</sup>
Residual	1026.786	73	14.066		
Total	1168.039	75			

*Note.* N=76. Dependent Variable: Nfin-p. Predictors: (Constant), Cost-k, Fin-k

Table 10

*Regression Analysis Summary for Predictor Variables Fin-k & Cost-k related to Nfin-p*

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	9.578	3.486		2.747	.008
Fink	.027	.135	.024	.203	.840
Costk	.378	.134	.337	2.817	.006

*Note.* Dependent Variable: Nfin-p

**Analysis Summary**

The purpose of this quantitative correlational study was to examine the relationship between the financial and operational costs knowledge of trucking owner-operators and business performance. I used standard multiple linear regression to study how the trucking owner-operator financial knowledge and operation costs knowledge relates to business performance. I noted no serious violations of the assumptions surrounding the multiple regression. The tow regression model as a whole was significantly predictive of business performance. First model was  $F(2, 73) = 6.27, p =$

$0.003 < .05$ ,  $R^2 = 0.15$ . Second model is  $F(2, 73) = 5.02$ ,  $p$ ,  $R^2 = 0.12$ . Both financial knowledge and operation costs knowledge predicted information about the business performance.

### Theoretical Framework Analysis

The primary theory for this study was the resource-based view (RBV), which emphasizes knowledge as a type of asset that gives a competitive advantage and the ability for sustained performance (West, & Noel, 2009). Entrepreneurs' knowledge has a noticeable positive effect on profitability and business performance (Omerzel & Antoncic, 2008). This theory was optimal to explain the relationship between the financial and operational costs knowledge of trucking owner-operators and business performance. The application of RBV to my research yielded a deeper understanding of the patterns of the interrelationships between the study variables. The RBV explained the study findings; both financial and operational costs knowledge had a noticeable positive effect on business performance as an approach to achieving competitive advantage.

The knowledge gap theory is primarily concerned with information and knowledge. The theory emphasizes that knowledge is not distributed equally throughout society. The theory assumes the better-educated person has prior knowledge that makes him or her able to manage communication and any related social contacts efficiently (Tichenor et al., 1970). According to the knowledge gap theory, there is a significant knowledge gap between the owner-operators with and without business backgrounds or education.

According to the RBV and the knowledge gap theory, the owner-operators with a basic business education are better able to handle the business aspects of an operation. Misunderstanding can range from misinterpretations of the business enterprise to certain aspects of the job, which causes knowledge gaps between the workers (Clarke, 2009). The specific business problem was that some trucking owner-operators have limited information about the relationship between the financial and operational costs knowledge and business performance. The dispute or lack of knowledge of operating costs will create a knowledge gap with other owner-operators. A lack of knowledge will put the company at risk. The theory assumed that providing the other group with some basic business education could narrow knowledge gaps. A primary education in finance and management skills will help the owner-operator business survive.

### **Applications to Professional Practice**

The results of this study provide the owner-operator with information on how both financial and operational costs knowledge can affect business performance. The specific business problem was that some trucking owner-operators have limited information about the relationship between the financial and operational costs knowledge and business performance. The results of this study may add to the body of knowledge concerning the relationship between financial and operational costs knowledge of trucking owner-operators and business performance.

Owner-operators have one of the lowest survival rates over the first five years of their existence as compared to other transportation companies. I confirmed that the financial and operational costs knowledge was a more significant predictor of business

performance. Owner-operators should invest more in education in finance and management skills as the means of business survival. Verifying the degree of understanding financial knowledge and operation costs related to business performance by the owner-operator will help increase the stability of the trucking industry. The benefits of management and the pool of scholarly resources included analyzing the core of the problem.

### **Implications for Social Change**

The implications for positive social change will occur if the failure rate of small trucking businesses declines and the opportunities for sustainable businesses increase. The owner-operator is directly affected, as are those who are looking forward to starting new businesses. The results of this study could provide inherent benefits to the transportation industry, small businesses, the self-employed, and entrepreneurs, including investigations of the perceptions that contribute to the success or failure within the group of owner-operators. The findings from this study may provide small business owners and entrepreneurs with insight into the reasons for their successes and failures.

The findings from this study may enhance owner-operator knowledge about operating costs and developing financial management skills could improve their chances of success. The positive effects could extend to the general population, as the success of small business boosts the economy. Improving the performance of the transportation sector may reflect on the quality of the service provided to the society. The results provide an introductory staging from which further research may evolve. The results of

this study might fill the gap between success and failure of owner-operators by providing insights necessary to increase opportunities for sustainable businesses.

### **Recommendations for Action**

The purpose of this quantitative correlational study was to examine the relationship between the financial and operational costs knowledge of trucking owner-operators, and business performance. Several recommendations for owner-operator in the United States flowed from the results of this study. Based on findings from this study, financial and operating costs knowledge had a significant positive influence on business performance. Financial management skills are essential to the survival of owner-operators; a lack of financial literacy and business operation costs could be primary factors of business failure. An excellent truck driver does not necessarily become a successful owner-operator if she or he does not have basic financial management skills and knowledge. Minimizing the truck operating costs has been an important element in the survival and growth of the trucking industry. An owner-operator should be especially attentive to all expenses, including marginal costs and evaluate the business outcomes. The owner-operator might want to consider obtaining some basic business education. Business owners with more education could easily reach the financial and operational costs knowledge. Providing the appropriate training and education to the owner-operator would increase their business knowledge and skills, which could lead to the reduction of the number of business failures.

### **Recommendations for Further Study**

I used the cost knowledge 5-point Likert-type scale to indicate respondents' degree of agreement, which do not reflect owner-operators degree of knowledge. I recommend modified questions to indicate the respondents' degree of costs knowledge. I recommended using a mixed-methods study, which generates a synergy and guides the researcher to a deeper understanding. Adopting mixed-methods will validate findings using quantitative and qualitative data sources, use qualitative data to explore quantitative findings, and to augment a quantitative outcomes study. Using focus groups to explore people's knowledge, experiences, and findings from instrument data could lead to understanding better how the owner-operator financial knowledge matches up to the instrument results. The owner-operator self-reported financial status, which may be misreported; using combinations of qualitative and quantitative data collection methods might reduce misreporting.

### **Reflections**

After I conducted this study, I gained a better understanding of the complexity of planning, collecting, analyzing, and interpreting survey data from participants. I found that the resource-based view (RBV), as applied to owner-operator profitability is a major factor contributing to the relative stability of owner-operator business performance. This study has taught me patience, defying the odds, and that surrender is not acceptable. The experience from this research not only provided positive things in my life, but also strengthened and enhanced my skills, behavior, and knowledge on small business management. There was no financial compensation for participation in this study. The

primary assumption of this quantitative correlational study was that respondents were honest, had integrity, were accurate in their responses, and would not have preferences influencing their choice of information shared with the researcher as socially efficient outcomes for their business. The second assumption of the study was that responses would not be subject to bias or tendencies that would affect the participant answering the questions.

### **Summary and Study Conclusions**

The purpose of this quantitative correlational study was to examine the relationship between the financial and operational costs knowledge of trucking owner-operators and business performance. A review of the literature defined the owner-operator and discussed the lack of financial knowledge of the owner-operator. The review of the literature also considered the reason that most owner-operators fail was a lack of understanding of the business operation costs. The authors' perspective in much of the existing body of literature agreed that the better-educated person has prior knowledge, which makes him or her able to succeed more easily.

The resource-based theory provided owner-operators with valuable resources. The theory highlighted the resources as a core element of the exceptional performance of the business that prepares the owner-operator to achieve and maintain a competitive advantage. The knowledge gap theory attempted to explain the reasons for the knowledge variation or lack of knowledge among people and attributed this to the socioeconomic status in a particular level of education.

The participants in this study consisted of 78 independent owner-operators in long-haul service in the United States, using two different techniques of survey data collection, paper-based and web-based surveys. I used multiple linear regression to analyze the relationship between financial and operational costs knowledge of trucking owner-operators and business performance. The results of the data analysis led to the rejection of both null hypotheses and acceptance of both alternative hypotheses.

Based on findings from this study, financial and operating costs knowledge had a significant positive influence on business performance. Financial management skills are essential to the survival of owner-operator; a lack of financial literacy and business operation costs could be primary factors of business failure. The owner- operator, like any small-business owner, might want to consider obtaining some basic business education. Small business owners with more education can easily reach knowledge; providing the appropriate training and education to the owner-operator would increase their knowledge and skills, which reduces the number of business failures.

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## Appendix A: IRB Approval

Dear Mr. Alqatawni,

This email is to notify you that the Institutional Review Board (IRB) has approved your application for the study entitled, "Relationship between Financial Knowledge and Business Performance for Truck Owner-Operator."

Your approval # is 09-16-15-0335044. You will need to reference this number in your dissertation and in any future funding or publication submissions. Also attached to this e-mail is the IRB approved consent form. Please note, if this is already in an on-line format, you will need to update that consent document to include the IRB approval number and expiration date.

Your IRB approval expires on September 15, 2016. One month before this expiration date, you will be sent a Continuing Review Form, which must be submitted if you wish to collect data beyond the approval expiration date.

Your IRB approval is contingent upon your adherence to the exact procedures described in the final version of the IRB application document that has been submitted as of this date. This includes maintaining your current status with the university. Your IRB approval is only valid while you are an actively enrolled student at Walden University. If you need to take a leave of absence or are otherwise unable to remain actively enrolled, your IRB approval is suspended. Absolutely NO participant recruitment or data collection may occur while a student is not actively enrolled.

If you need to make any changes to your research staff or procedures, you must obtain IRB approval by submitting the IRB Request for Change in Procedures Form. You will receive confirmation with a status update of the request within 1 week of submitting the change request form and are not permitted to implement changes prior to receiving approval. Please note that Walden University does not accept responsibility or liability for research activities conducted without the IRB's approval, and the University will not accept or grant credit for student work that fails to comply with the policies and procedures related to ethical standards in research.

When you submitted your IRB application, you made a commitment to communicate both discrete adverse events and general problems to the IRB within 1 week of their occurrence/realization. Failure to do so may result in invalidation of data, loss of academic credit, and/or loss of legal protections otherwise available to the researcher.

Both the Adverse Event Reporting form and Request for Change in Procedures form can be obtained at the IRB section of the Walden website: <http://academicguides.waldenu.edu/researchcenter/orec>

Researchers are expected to keep detailed records of their research activities (i.e., participant log sheets, completed consent forms, etc.) for the same period of time they retain the original data. If, in the future, you require copies of the originally submitted IRB materials, you may request them from Institutional Review Board.

Both students and faculty are invited to provide feedback on this IRB experience at the link below:

[http://www.surveymonkey.com/s.aspx?sm=qHBJzkJMUX43pZegKlmdiQ\\_3d\\_3d](http://www.surveymonkey.com/s.aspx?sm=qHBJzkJMUX43pZegKlmdiQ_3d_3d)

Sincerely,  
Research Ethics Support Specialist  
Office of Research Ethics and Compliance  
Email: irb@waldenu.edu  
Office address for Walden University:  
100 Washington Avenue South, Suite 900  
Minneapolis, MN 55401

Information about the Walden University Institutional Review Board, including instructions for application, may be found at this link:<http://academicguides.waldenu.edu/researchcenter/orec>

## Appendix B: OFKP Survey

### Demographic Questions

Gender: Male \_\_\_\_\_ Female \_\_\_\_\_

What is your home state? -----

Please answer the following questions to the best of your knowledge and circle your response.

1. What was your business revenue (net sale) last year?

- a. Less than \$50,999
- b. \$51,000 – \$80,999
- c. \$81,000 – \$110,999
- d. \$111,000 – \$140,999
- e. Over than \$141,000

2. What was your business profit (net income after taxes) from the previous year?

- a. Loss
- b. Zero
- c. 19,999 or less
- d. 20,000 – 40,999
- e. Over than 41,000

3. Please, indicate your education level

- a. Did not complete high school
- b. High school diploma or equivalent

- c. Some college or an associate's degree
  - d. Bachelor's degree or higher
4. What is your age?
- a. 25 or under
  - b. 26-40
  - c. 41-55
  - d. 56 or older

### **Financial Knowledge**

How do you perceive your financial knowledge, how much do you know about the following?

- 1. Interest rates, finance charges, and credit term  
Nothing,      Very little,      Some,      A fair amount,      very high extent
- 2. Credit ratings and credit files  
Nothing,      Very little,      Some,      A fair amount,      very high extent
- 3. Managing finances  
Nothing,      Very little,      Some,      A fair amount,      very high extent
- 4. Investing money  
Nothing,      Very little,      Some,      A fair amount,      very high extent
- 5. What is on your credit report income  
Nothing,      Very little,      Some,      A fair amount,      very high extent

## Cost Management Knowledge

To what extent do you agree or disagree with the following statement?

1. My job experience includes assignments in which I have had formal responsibility for managing profits.

Strongly agree   Agree   Neither   Disagree   Strongly disagree

2. I have always worked in units in which the primary measure of performance was profits.

Strongly agree   Agree   Neither   Disagree   Strongly disagree

3. I have very high extent of experience managing costs.

Strongly agree   Agree   Neither   Disagree   Strongly disagree

4. I manage costs by comparing the amounts spent on various items against the amount for each of those items in the budget.

Strongly agree   Agree   Neither   Disagree   Strongly disagree

5. I manage costs by examining whether the total amount spent on several items has yielded a good outcome.

Strongly agree   Agree   Neither   Disagree   Strongly disagree

6. My style of managing costs is to watch each line item of the budget very carefully.

Strongly agree   Agree   Neither   Disagree   Strongly disagree

7. I evaluate the outcomes of my work and the costs involved.

Strongly agree   Agree   Neither   Disagree   Strongly disagree

**Nonfinancial performance**

How do you perceive your business non- financial performance (1 = relatively weak, 3=average, 4= above average, 5 = very high extent).

1- Customers' satisfaction	1	2	3	4	5
2- Growth of number of customers	1	2	3	4	5
3- Self-satisfactions as driver	1	2	3	4	5
4- Quality in services	1	2	3	4	5
5- Business reputation	1	2	3	4	5

### Appendix C: Permission to Use the Survey of Cost Management Knowledge

Young, Mark

Feb 17

Hi Tahsen,

Yes, you have my approval to use the instrument.

Best wishes,

Professor S. Mark Young

**From:** tahsen alqatawni

**Sent:** Monday, February 17, 2014 6:26 PM

**To:** Young, Mark

**Subject:** request permission to use survey

Dear Dr. Mark Young

I am writing to request permission to use part of Cost management knowledge from Survey of Managing Innovation Costs study in my doctoral study examining the effect of the lack of financial knowledge in relation to the business performance. This study is part of a doctorate in business administration program at Walden University. I would appreciate using your data collection instrument.

My chair, Dr. Ann Nelson, with Walden University, supervises my research. If this request meets your approval, please electronically sign, date and return this letter to me at the email address below.

Thank you for your help and prompt attention to my request.

Sincerely,  
Tahsen alqatawni

## Appendix D: Sample size via G\*Power analysis

[1] -- Sunday, July 05, 2015 -- 23:05:23

**t tests** - Linear multiple regression: Fixed model, single regression coefficient

**Analysis:** A priori: Compute required sample size

<b>Input:</b>	Tail(s)	= One
	Effect size $f^2$	= 0.15
	$\alpha$ err prob	= 0.05
	Power (1- $\beta$ err prob)	= .8
	Number of predictors	= 2
<b>Output:</b>	Noncentrality parameter $\delta$	= 2.5396850
	Critical t	= 1.6838510
	Df	= 40
	Total sample size	= 43
	Actual power	= 0.8027523

[2] -- Sunday, July 05, 2015 -- 23:06:22

**t tests** - Linear multiple regression: Fixed model, single regression coefficient

**Analysis:** A priori: Compute required sample size

<b>Input:</b>	Tail(s)	= One
	Effect size $f^2$	= 0.15
	$\alpha$ err prob	= 0.05
	Power (1- $\beta$ err prob)	= .95
	Number of predictors	= 2
<b>Output:</b>	Noncentrality parameter $\delta$	= 3.3316662
	Critical t	= 1.6665997
	Df	= 71
	Total sample size	= 74
	Actual power	= 0.9510185