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Retail Inventory Control Strategies

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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2016

Abstract

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by

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MBA, Ashford University, 2014

MSM, University of Management and Technology, 2009

BS, University of Phoenix, 2008

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

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Abstract

Despite using computerized merchandise control systems in retail, the rate of stockouts has remained stagnant. The inability to satisfy customer needs has caused a loss of 4% in potential revenue and resulted in dissatisfied customers. The purpose of this qualitative multiple case study was to explore cost-effective inventory control strategies used by discount retail managers. The conceptual framework that grounded the study was chaos theory, which helped identify why some business leaders rely on forecasting techniques or other cost-effective strategies as an attempt to prevent stockouts. The target population was comprised of discount retail managers located throughout northeast Jacksonville, Florida. Purposeful sampling led to selecting 6 retail managers who successfully demonstrated cost-effective inventory control strategies for mitigating stockouts. Data were collected through face-to-face semistructured interviews, company websites, and company documents. Analysis included using nodes to identify similar words and axial-coding to categorize the nodes into themes. Transcript evaluation, member checking, and methodological triangulation strengthened the credibility of the findings. Five themes emerged: (a) internal stockout reduction strategies, (b) external stockout reduction strategies, (c) replenishment system strategies, (d) inventory optimization strategies, and (e) best practices for inventory control. This study may contribute to positive social change by improving inventory management, which may reduce demand fluctuations in the supply chain and reduce logistics costs in the transportation of freight thereby leading to improved customer satisfaction.

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Dedication

I dedicate this study to my family for the unwavering support and sacrifice throughout this research process. First, I would like to dedicate this study to my wife, Pamela as she has provided me the strength to continue through the completion of this doctoral journey. I also owe a debt of gratitude and dedication to my mom, Jan as she has instilled in me the importance of education and hard work from the very beginning. Finally, I would like to express gratefulness by acknowledging and dedicating this study to by brother Adrian, my cousin James, and my grandmother Gracie who have all believed in me and supported all of my life's endeavors.

Acknowledgments

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Section 1: Foundation of the Study

Retail managers have traditionally held more inventory than required in their

stores, which increases holding costs and restricts capital for other business projects

(Martin & Iravo, 2014; Turk, 2012). Applying inventory control strategies in production,

operations, and retail seeks to eliminate such wasteful practices (Guimaraes, de Carvalho,

& Maia, 2013). However, some cost cutting inventory control strategies have caused

unintentional problems in retail supply chains.

Background of the Problem

According to Corsten and Gruen (2003), retailers have historically evaluated their

stock by walking down aisles and ordering products based on intuition. Oftentimes, this

ordering method resulted in running out of stock or ordering more products than required

(Adusei & Awunyo-Vitor, 2014; Eroglu, Williams, & Waller, 2013). Within the last 25

years, retail managers have shifted from traditional merchandise inventory control

methods to computerized merchandise control systems (Bala, 2012). Despite investments

in inventory control strategies and advanced supply chain systems, the rate of out-of-

stock products has seen little improvement (Corsten & Gruen, 2003; Ettouzani, Yates, &

Mena, 2012). Corsten and Gruen showed that the average retail business will lose 4% of

potential revenue due to the 31% of customers who will buy products from another

retailer when items are not immediately available for purchase.

In addition, growth in information technology has led to an era of informed and

persistently demanding shoppers (Mittal & Gupta, 2012). Some retail managers are aware

that customer loyalty and satisfaction maintains a competitive advantage (Bouzaabia, van

Reil, & Semeijn, 2013; Unhanandana & Wattanasupachoke, 2012). But trying to maintain that advantage through inventory control strategies has created a self-induced problem. This new effort toward balance has created out-of-stock products, loss of potential revenue, and disgruntled customers (Ali & Asif, 2012; Ehrenthal & Stölzle, 2013). As a result of these aforementioned issues in retail, the background and problem statement provided explanation as to why this business problem deserved new research.

Problem Statement

Customer satisfaction, customer loyalty, and company profits will continue to plummet as long as retailer stockouts remain unchecked (Helm, Hegenbart, & Endres, 2013). Bala (2012) conducted a longitudinal study on eight retailer managed items and uncovered a *sales failure* rate of 28.77%. The general business problem was that current practices in inventory control increase the risk of stockouts, create lost revenue, and decrease customer loyalty. The specific business problem was that some discount retail managers lack cost-effective inventory control strategies.

Purpose Statement

The purpose of this qualitative multiple case study was to explore cost-effective inventory control strategies used by discount retail managers. The target population consisted of retail managers who used inventory control strategies in discount retail outlets located throughout northeast Jacksonville, Florida. Regional discount retail managers who are susceptible to frequent stockouts may benefit from this study's findings. By changing standardized inventory control practices in the retail supply chain,

social change might include a reduction in the transportation of freight and less consumption of natural resources that could help improve environmental sustainability.

Nature of the Study

The qualitative method was chosen for this study because the study relied on the exploratory approach. Qualitative methods concentrate on a phenomenon that is socially complex, thus requiring extensive and in-depth research (Yin, 2014). Quantitative or mixed-methods would not work because of the exploratory purpose of this study. According to Maxwell (2004), quantitative and mixed-methods are associated with variance theory, which has a close affinity to mathematical models (Maxwell, 2004). On the other hand, qualitative methods are associated with process theory. Since process theory postulates how events or processes work, it is specific to in-depth inquiry. Thus, the qualitative method was best suited for conducting an exploratory study.

A case study design was chosen for this study. This empirical inquiry is used to investigate a real-world event or phenomenon (Yin, 2014). Case studies are descriptive, in-depth studies that explore causation. In contrast, the objective of a phenomenological design is to report the lived-experiences of individuals (Deal & Grassley, 2012). An ethnography design provides empirical data by describing a set of shared behaviors, values, or beliefs of a culture or group of people (Higginbottom, Pillay, & Boadu, 2013). A narrative design involves studying and retelling the story of individuals (Thomas, 2012). Since the purpose of this study was to explore cost-effective inventory control strategies, a case study facilitated exploration of a real-world event and justified the chosen method of study.

Research Question

The research question to guide this study was: What cost-effective inventory control strategies do discount retail managers' use?

Interview Questions

1. What type of inventory control system does your company use?

2. How does your company's inventory control system manage the prevention of out-of-stock products?

3. What benefits are associated with using your company's inventory control system?

4. What negative experiences, if any, have been encountered using your company's inventory control system?

5. What types of internal inventory control strategies does your company use?

6. What types of external inventory control strategies does your company use?

7. How do you use inventory control strategies to reduce stockouts?

8. How do you use inventory control strategies to strike a balance between profitability and stockouts?

9. What else would you like to share about inventory control procedures?

Conceptual Framework

Chaos theory aligned with the objective of this study. This theory was identified by meteorologist, Lorenz in the 1960s while working on a meteorological model for understanding weather patterns and making weather predictions (Stapleton, Hanna, & Ross, 2006). Chaos theory may be defined as a dynamic complex system to explain how

small initial conditions (rounding errors in numerical computation) can yield chaotic behavior that is both dynamically nonlinear and unpredictable (Hashamdar, 2012). Thamizhchelvy and Geetha (2015) explained that chaos theory is a deterministic system; however, initial conditions must be known beforehand in order to have a predictable outcome. Nevertheless, since too many random variables are involved with initial conditions, long-term predictions are practically impossible under chaos theory.

As applied to this study, chaos theory explains how retail supply chains are dynamic, complex, and cannot provide accurate predictions of customer requirements. Oftentimes, chaos in retail supply chains leads to the bullwhip effect, which causes inefficiencies such as excessive inventories, quality control problems, high shipping costs, and amplified demand fluctuations between members in a supply chain (Badar, Sammidi, & Gardner, 2013). Chaos theory explains why some business leaders rely on inventory optimization, forecasting techniques, and other retail strategies as an attempt to prevent stockouts for creating cost-effective inventory controls.

Operational Definitions

The following operational definitions help clarify the logistics and supply chain management terminology used in this study.

Bullwhip effect (Forrester effect): Coined by Procter & Gamble, the bullwhip effect is the byproduct of improper information passage between players in the supply chain (Badar et al., 2013). Specifically, the bullwhip effect creates inefficiencies such as excessive inventories, quality control problems, high shipping costs, and amplified demand fluctuations between members in a supply chain.

Forecasting: A risk reduction model designed to estimate the future demand of one or more products (Aksoy, Ozturk, & Sucky, 2012). The objective of forecasting is to predict product sales, reduce inventory, reduce the bullwhip effect, and reduce stockouts.

Inventory optimization: Taking a holistic view of the supply chain and determining inventory levels both upstream and downstream to the end user. Inventory optimization reduces demand variability by continuously updating safety stock levels throughout all echelons in the supply chain (Davis, 2014; Puurunen, Majava, & Kess, 2014). Specific to this study, inventory optimization involves strategies used to maximize profits through the use of various inventory control techniques.

Inventory pooling (risk pooling): Inventory pooling is a risk reduction and inventory management strategy for consolidating inventory across multiple retail locations (real or virtual). The process increases customer purchase intentions by allowing retailers to satisfy demands, even when a local retailer has an out-of-stock product (Li & Zhang, 2012).

Logistics: Logistics is the transportation piece of the supply chain, which involves the physical movement of products and services between two points. In a broader context, logistics involve planning, implementing, and controlling the forward and reverse flow of products in the supply chain for meeting end-user requirements (Chira, 2014).

Stockout (Stock-out): Products not on the shelf at the time when the end-user wants to secure the item for purchase (Adusei & Awunyo-Vitor, 2014; Ehrenthal & Stölzle, 2013).

Supply chain: A network of entities (manufacturers, suppliers, intermediaries, or individuals) that engage in the transportation, manufacture, warehousing, distribution, and sale of commodities or services (Janvier-James, 2012).

Supply chain management: Supply chain management is concerned with the management of designing, planning, executing, controlling, and monitoring activities within the supply chain. The Supply Chain Forum defines SCM as a culmination of information technology and key business functions that span from raw material suppliers to end-users, adding value for customers while en route through the supply chain (Janvier-James, 2012).

Assumptions, Limitations, and Delimitations

Assumptions

Typically, assumptions are accepted truths or facts, but not verified (Leedy & Ormrod, 2010). The first assumption I had was that all participants would have the requisite knowledge to provide information on the topic. The second assumption I had was that all participants will answer all interview questions truthfully and without company favoritism. The third assumption I had was that participants' answers would yield reliable data for generating effective results. As a researcher, I recognized the preceding assumptions do carry risks and should be treated accordingly.

Limitations

Limitations provide and acknowledge boundaries, reservations, and any exceptions within this study (Leedy & Ormrod, 2010). Other than peer-reviewed references, this case study was limited in its ability for conducting further research on

analyzing customer loyalty and satisfaction. Second, because the interviewee may have relied on past knowledge, having the ability to reliably recall information from memory may be limited. Third, this study was restricted to northeast Jacksonville, Florida. Therefore, any themes or conclusions derived from this study are specific to the region and its transferability may be limited.

Delimitations

The purpose of delimitations is to narrow the scope of a study and list what is not included or what is unintended in a study (Leedy & Ormrod, 2010). Because this case study concentrated on local discount retail managers, other stakeholders such as nonsupervisory employees or customers were not interviewed. Second, e-commerce involving online retailers were not considered in this study. Last, this case study was bounded by time, location, and cost constraints.

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Significance of the Study

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This study is of value because it is imperative for retail managers to understand the value of using cost-effective inventory control strategies and knowing its significance in regard to improving customer relations and loyalty. Assefa (2014) emphasized that the expansion of service organizations essentially relied on the ability of leadership to maintain a large customer base. Efficiency in inventory control, better product placements, reducing stockouts, and improvements in retailer assistance are all key elements for retaining customers, improving customer relations, and improving profits (Helm et al., 2013; Nemoto, de Vasconcellos, & Oishi, 2012).

Contribution to Business Practice

This study may contribute to an effective business practice by leveraging technology and managerial decision-making to improve stock replenishment techniques. The information I gathered from scholarly sources and interviews may aid by helping some retail managers who lack logistics or supply chain management experience. Having an understanding of inventory control strategies should enable local discount retail managers to include this critical element in their decision-making process. The results may lead to a contribution via a new business practice by determining appropriate ordering procedures, forecasting methods, or other inventory control strategies.

Implications for Social Change

Understanding that a business problem and social problem do exist throughout northeast Jacksonville, Florida's local retail sector was the epitome of this study. As discount retail managers begin to recognize the significance of inventory management and learning how to reduce order variability, a social change will inevitably take place. As identified in the purpose statement, by changing standardized inventory control practices in the retail supply chain, social change might include a reduction in transportation and less consumption of natural resources that could help improve environmental sustainability. This implication for social change aligns with Hart and Milstein who developed a sustainable value framework as a way of understanding the global challenges of sustainability and how it links to societies and shareholders (Hart, 2005). Their concept represents sustainability and social change from a business

perspective to identify strategies that will contribute positively to the environment, yet increase shareholder value (Hart, 2005).

A Review of the Professional and Academic Literature

A review of the professional and academic literature on stockouts revealed that retail inventory control strategies have been studied periodically since 1978 (Turk, 2012). Despite advancements in computerized merchandise control systems, scholars reported that the rate of out-of-stock products underwent little improvement (Ettouzani et al., 2012; Gruen, Corsten, & Bharadwaj, 2002). The study of stockouts is deficient in some areas of the supply chain, thus creating losses of potential revenue and disgruntled customers (Ali & Asif, 2012; Ehrenthal & Stölzle, 2013). The intent of this qualitative multiple case study was to focus on what cost-effective inventory control strategies do discount retail managers' use.

Throughout the research process, various research databases were instrumental in forming the foundation of this study. The following databases were instrumental in identifying relevant peer-reviewed articles: ABI/INFORM Complete, ProQuest, Dissertations and Theses at Walden University, Google Scholar, Business Source Complete, SAGE Premier, and Emerald Management. The following search terms were used for locating relevant content in these databases: *consumer, customer, end-user, customer loyalty, customer satisfaction, retailer, stockout, out of stock, on-shelf availability, product availability, shelf management, stock turns, inventory turns, inventory control, inventory management, supply replenishment, stock replenishment,*

inventory replenishment, supply chain, supply chain management, agile supply chain,

forecasting, CPFR, and *RFID.*

As a culmination of the 156 references for this doctoral study, 143 (91.7%) were published within 5 years of expected completion of the study, and 139 (89.1%) were peer-reviewed and published within 5 years of expected completion of the study. The literature review section contains 100 peer-reviewed journal articles, of which 96 (96.0%) were published within 5 years of expected completion of the study. All percentages of these references fall within the 85% requirement for being within 5 years or less of the anticipated doctoral approval date.

The literature review on retail inventory control strategies incorporates four primary sections to include retail conceptual framework, inventory management, replenishment techniques, and customer relationship management. Each primary section contains subsections in which major themes are addressed. The primary section for retail conceptual framework contains the subsection of chaos theory. Following this section, the primary section for inventory management contains three subsections: (a) radio frequency identification, (b) forecasting, and (c) warehousing. Next, the primary section for replenishment techniques contains three subsections: (a) retailer managed inventory, (b) vendor managed inventory, and (c) collaborative planning, forecasting, and replenishment. Finally, the primary section for customer relationship management contains three subsections: (a) customer satisfaction, (b) customer loyalty, and (c) customer satisfaction, loyalty, and stockouts in retail. A diagram of the literature review for primary sections and subsections are illustrated in Figure 1.
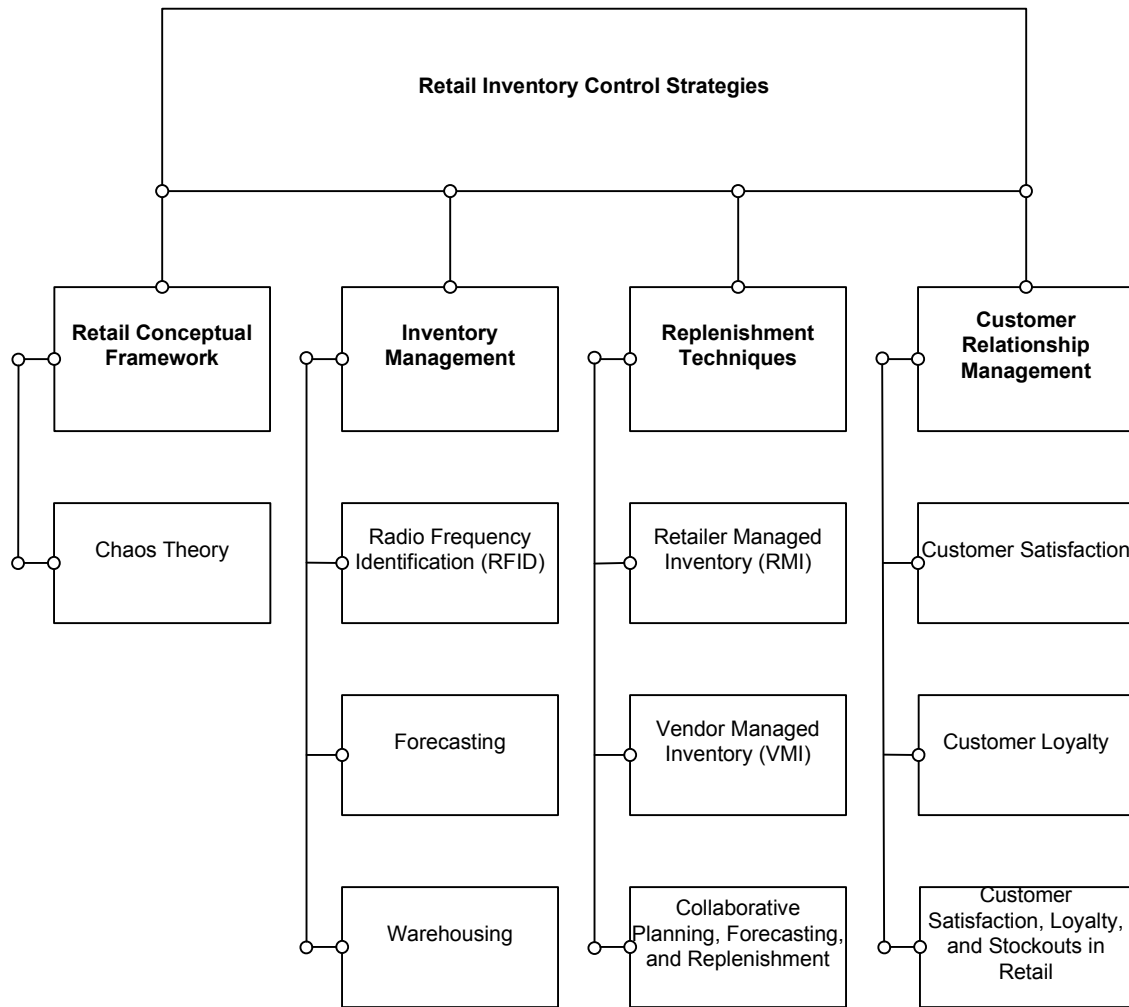
Figure 1. Literature review framework for retail inventory control strategies.

Retail Conceptual Framework

A conceptual framework is a system of interrelated constructs. These interrelated constructs are theories, variables, beliefs, assumptions, or propositions that inform and support explanations of a phenomenon. The conceptual framework illustrates how theories ground research and exemplify how research relates to an existing body of knowledge. In this study, the conceptual framework was chaos theory, which is used to

explain how retail supply chains are dynamic, complex, and cannot accurately predict customer requirements.

Chaos theory. As acknowledged under conceptual framework, chaos theory was identified by meteorologist, Lorenz in the 1960s while working on a meteorological model for understanding weather patterns and making weather predictions (Stapleton et al., 2006). Shakouri, Teimourtash, and Teimourtash (2014) elaborated on this construct by explaining how chaos theory is also rooted in other theories such as complexity theory and the Big Bang theory where systematic natures of the universe were founded on the chaotic acts of God. Chaos theory may be defined as a dynamic complex system that attempts to explain how small initial conditions can yield chaotic behavior that is both dynamically nonlinear and unpredictable (Hashamdar, 2012). Hashamdar posited that chaos theory is dynamic because it changes over time. Thamizhchelvy and Geetha (2015) explained that chaos theory is also a deterministic system; only if initial conditions are known beforehand in order to have a predictable outcome.

Chaos concepts have been applied across a variety of disciplines such as chemistry, mathematics, physics, economics, supply chain management, and even sports (Faggini & Parziale, 2012; Shakouri et al., 2014; Stapleton et al., 2006). This construct helps explain why a prediction may be fairly accurate for a near-term event and less accurate for a long-term event. Again, the reliability of the data is based on initial data, which depends on a number of factors that are probabilistic (Rotshtein, 2012). The problem with chaos theory is that too many random variables are involved with initial conditions, thus making long-term predictions practically impossible.

As described under conceptual framework, chaos theory explains how retail supply chains are dynamic, complex, and cannot provide accurate predictions of customer requirements. Oftentimes, chaos in retail supply chains lead to the bullwhip effect, which causes inefficiencies such as excessive inventories, quality control problems, high shipping costs, and amplified demand fluctuations between members in a supply chain (Badar et al., 2013). Chaos theory explains why some business leaders rely on inventory optimization, forecasting techniques, and other retail strategies as an attempt to prevent stockouts, thus creating cost-effective inventory controls. The following primary section is a presentation of some cost-effective inventory control strategies retail managers may use in order to minimize chaos in the retail supply chain.

Inventory Management

An emphasis in inventory management started with the Industrial Revolution as business leaders interests began to focus on mass production and efficiency (Ali & Asif, 2012). Inventory management involves having a balance between inventory holding costs and costs associated with not having enough inventory on hand (Adusei & Awunyo-Vitor, 2014; Kontus, 2014). Inventory management involves having an optimized inventory strategy such as a plan for lowering costs while improving company profits (Kontus, 2014). Inventory management involves having efficiency as one of its functions is to track products as they move in and out of inventory or through the supply chain (Adusei & Awunyo-Vitor, 2014). Inventory management involves having an understanding of opportunity cost, which involves giving up something of value in exchange for something else (Polley, 2015). The point of emphasis is that inventory

management is not subjected to just one definition or element of the supply chain. Depending on the industry, business leaders may derive at their own biased understanding of inventory management.

In regard to business operations and sustainability, an effective inventory management system involves controlling the inventory in an effort to prevent members of the supply chain from having too much inventory on hand or not having enough (Adusei & Awunyo-Vitor, 2014; Kontus, 2014). Venkata and Ravilochanan (2014) stated that inventory is a company's biggest cost driver and if not managed properly will become the company's biggest cost drain. Inventory management, is therefore, essential to the survivability and sustainability of businesses. Although Gruenwald (2013) acknowledged that investing in logistics software can be relatively expensive, the benefits of an efficient inventory management system outweigh the cost of not having one. One relatively inexpensive inventory management tracking system that retailers may use is a radio frequency identification system. Chen, Huang, Park, Tseng, and Yen (2014) proved radio frequency identification is essential for retail managers who want to enhance their business model.

Radio frequency identification. Radio frequency identification (RFID) devices are wireless systems that use radio waves for the purpose of identifying, tracking, and transmitting information via electromagnetic tags (Shin & Eksioglu, 2014; Yao, Chu, & Li, 2012). The origin of RFID dates back to World War II with the use of the identification friend or foe (IFF) system used by the Royal Air Force (Alabdan, 2014; Nemoto et al., 2012). The IFF radar system enabled friendly aircrafts to identify

themselves. Following the war, primitive versions of RFID were utilized in the 1950s by the U.S. Department of Agriculture to monitor and track the movement of cows, for health considerations (Khan & Valverde, 2014). More recently, in 2003, Wal-Mart executives mandated the use of RFID technology to their top 100 suppliers (Shin & Eksioglu, 2014). Today, advances in technology have bolstered RFID as an emerging technology with the added strategic benefit for business leaders in the supply chain community (Khan & Valverde, 2014).

According to Alabdan (2014), RFID's consist of three basic components: (a) tag, (b) antenna, (c) and a reader. The tag or transponder is the case that houses the antenna, a microchip, and sometimes a battery. Tags fall under four categories to include the following: (a) active, (b) passive, (c) semiactive, (d) or semipassive (Yahia, 2013). Active tags are battery operated while passive tags are not battery operated. Passive tags remain inactive until power from the reader activates the tag. Because of the lack of an internal power source, passive tags work best at short distances (Shaikh, Al-Maymouni, Al-Hamed, & Dardas, 2014). The semiactive tag uses a battery to provide power to the antenna but the microchip relies on power from the reader. In contrast, the semipassive tag uses a battery to power the microchip but the antenna relies on power from the reader. The antenna receives and transmits information from the tag to the reader. Attached to the antenna is the microchip, which provides the capability to store or update data as the device passes through the supply chain (Shaikh et al.). The reader emits a radio signal to the tag's antenna to decode or update data stored on the microchip.

In the supply chain, RFIDs track items such as crates, pallets, boxes, jeans, or other products the distributor or supply chain manager wishes to manage (Trocchia & Ainscough, 2012). Radio frequency identification technology enables the user to obtain automated tracking on data without a straight line of sight between the tag and the reader (Samuel, 2012; Supriya & Djearamane, 2013). Furthermore, Khan and Valverde (2014) noted that RFID can perform other functions. Those functions include having access to real-time data, controlling product shrinkage, improving inventory accuracy, meeting customer demand, providing better supply chain visibility, enhancing collaboration between entities, and reducing stockouts (Bardaki, Kourouthanassis, & Pramatari, 2012; Osyk, Vijayaraman, Srinivasan, & Dey, 2012; Shin & Eksioglu, 2014; Vlachos, 2014). Al-Sakran (2013) stated that RFID also reduce transaction costs, reduce human errors, reduce human interventions, and therefore, increase supply chain efficiency.

In the retail sector, retail managers have been following the lead of Wal-Mart executives by implementing RFID. Al-Sakran (2013) reported that RFID has been growing at a rapid rate all over the world. Retailers such as Tesco, Home Depot, Albertsons, Sears, Best Buy, Marks and Spencer, and government agencies such as the Food and Drug Administration (FDA) and the Department of Defense (DoD) use RFID (Bhattacharya, 2012). Retail managers have noted considerable improvements with the use of RFID in regard to shrinkage errors (Rekik & Sahin, 2012). Shrinkage errors include employee theft, collusion, administrative errors, spoilage, fraud, and shoplifting. Hardgrave, Aloysius, and Goyal (2013) stated that inventory accuracy is essential to

having an effective supply chain and is vital to retail managers store replenishment practices.

Although a number of successes have arisen from the use of RFID, valid concerns exist by some retail and supply chain managers. Samuel (2012) noted there is a lack of global standards, a lack of data privacy, and a lack of conducting cost-benefit analysis in the field. A survey conducted in India with the help of 80 retail executives and managers concluded that RFID involved three additional risks to include: (a) lack of expertise, (b) complexity of technology, and (c) uncertainty of technology (Raj & RajaSekaran, 2013). Azuara, Tornos, and Salazar (2012) found in their study that other risks include cloning and counterfeiting tags. Although concerns do exist in regard to RFID, 56% of 121 members from the Warehouse Education and Research Council (WERC) reported that they will consider implementation or piloting RFID to understand how the technology will fit best in their supply chain (Osyk et al., 2012). Manufacturers and retailers representing WERC also had a strong consensus that retailers would benefit most from the use of RFID technology. However, no conclusive evidence demonstrates how RFID technology increases profits (Shin & Eksioglu, 2014). Table 1 is not an all-inclusive list of RFID perceptions in the supply chain, but it does illustrate a composite view of the potential benefits and risks associated with implementing RFID. Since the purpose of this study is to explore cost-effective inventory control strategies in retail, RFIDs may be a viable solution for retail managers who have not implemented this inventory management strategy. The next subsection expands on the concept of inventory management by focusing on forecasting methods within the supply chain.

Table 1

RFID perceptions in the Supply Chain

Potential Benefits by Implementing RFID
Reduced labor costs
Reduced stockouts
Reduced time to market
Reduced product shrinkage (Theft or Shoplifting)
Improved inventory accuracy
Improved customer service
Improved visibility of order
Improved forecasting
Increase revenue by limiting shortages
Increase efficiency and productivity in the supply chain
Real-time access to data
Provides a greater level of flexibility
Better integration of order and warehouse management
Streamlined transaction processing
Potential Risks by Implementing RFID
High initial set-up costs
Lack of return-on-investment (ROI)
Lack of expertise and cost of employee training
Right to privacy
Immaturity of RFID technology
Lack of well-established standards
Reluctance to new technology
Customer security (RFIDs can be read after leaving the supply chain
Customer security (RFIDs with unique serial numbers can be linked to credit cards i.e., E-ZPass)
Some RFIDs are hidden inside products
Difficulty in Implementing RFID

Forecasting. Forecasting serves as the starting point in major business decisions such as production, finance, marketing, and purchasing. In retail, forecasting is an inventory management and risk reduction tool designed to estimate the future demand of one or more products (Aksoy et al., 2012). The objective of forecasting is to predict product sales, reduce inventory, reduce the bullwhip effect, and reduce stockouts.

Forecasting accuracy is the difference between forecasted demand and actual demand. Rebert, Sexton, and Hignite (2014) asserted that having the ability to accurately predict sales is a major advantage in the business industry. As retail managers continue to face economic uncertainty in a fluctuating competitive market, they have increased their dependence on forecasting models (Aksoy et al., 2012).

There are three basic types of forecasting models: (a) judgment, (b) causal, and (c) time-series. When no historical data is available, the default qualitative method is judgment forecasting. The judgment method may be conducted by customer market surveys, sales force composites, jury of executive opinion, or by using the Delphi method. Because this forecasting method relies on intuition or domain knowledge, its inherent biases cause forecasting errors (Nakano & Oji, 2012). Causal forecasting is a quantitative method that shows cause-and-effect relationships to predict a future outcome. This type of forecasting method relies heavily on the influence of independent variables in order to project the direction (forecast) of dependent variables (response variables). To quantify the relationship between both variables, the preferred method is regression or multiple regression analysis. Managers might use this forecasting method to produce analyses for best, worst, or most likely case scenarios. Because the independent variable has a strong influence on the dependent variable, the causal method is subjected to forecasting errors. However, when historical data is available, the most common quantitative forecasting method is time-series forecasting. Time series forecasting use moving averages such as trends, seasons, or cyclic patterns. This forecasting method relies on the dependence of data or trends over time, so this technique involves computer

software (Mastrangelo, 2012). However, time-series forecasting is subjected to forecasting errors because this method extrapolates historical data into the future without considering underlying variations in trends (Tse & Poon, 2012).

In the retail sector, managers have begun using computerized merchandise control systems to forecast demand for their inventory (Aksoy et al., 2012; Rebert et al., 2014). However, studies have shown that even retail managers who do use forecasting methods may not use the best available method. Bala's (2012) study on a supermarket chain found that time-series forecasting contributed to a 28.77% sales failure rate. The retail manager for the study in question used a 14-day moving average to predict demand, which caused a high rate of stockouts. Bala ended this longitudinal study by concluding that data mining improved the retail manager's forecasting model. Although Bala's study concluded that data mining improved forecasting, Maaß, Spruit, and de Waal (2014) argued that data mining was not the most accurate forecasting method. Maaß et al. analyses showed by combining the results of multiple forecasting methods, it was more accurate. When Maaß et al. used multiple forecasting methods in their study, oversupply was reduced by 2.6%, and undersupply was reduced by 1.6%. However, the researchers did acknowledge that improvements in accuracy start to diminish beyond the use of five multiple forecasting methods.

In the supply chain, Matsumoto and Ikeda (2015) conducted a similar study with an auto parts remanufacturing center. The researchers used quantitative analysis to examine 11 years of data in order to determine the moving average for the next 12 months of shipment. The data sample consisted of 400 remanufactured parts to include

alternators and starters. The researchers chose double exponential smoothing, which is a subset of time-series forecasting since past data was available. Although the purpose of double exponential smoothing is to continuously revise the forecast based on recent data, the method showed a 27.2% average error rate. This error rate is relative to the actual shipments made over the 12-month period. With stable demand, the error rate was 12.7%. However, if demand changed during the forecast period, the error rate rose to 65.0%. If the previous year values were just used, the error rate was 26.2%.

As previously mentioned, time-series forecasting is subjected to forecasting errors because this method extrapolates historical data into the future without considering the underlying variations in trends (Tse & Poon, 2012). Notice that Matsumoto and Ikeda (2015) used 11 years of data in their study to determine the moving average for a auto parts remanufacturing center. Matsumoto and Ikeda had erroneous error rates because they used old data in a dynamic and progressive supply chain environment. As with chaos theory, concrete variables cannot be known upfront, so long-term predictions are practically impossible. The challenge with forecasting in retail is that demand cannot be observed. Only sales are known, and any demand beyond what is available becomes a stockout. The emphasis on inventory management continues in the next subsection as the use of warehousing is heavily relied upon for stock control and accountability.

Warehousing. Warehouses are commercial buildings designed for the temporary storage and distribution of products such as raw materials, goods-in-process, and finished goods (Baskar & Pragadeeswaran, 2013; Faber, de Koster, & Smidts, 2013). Warehouses are required in retail because production and consumption usually never match in the

supply chain, so a majority of warehouses exists to act as a buffer to balance differences in volume. Faber et al. stated that today's warehouses are vital to the success or failure of businesses. Søren, Zachariassen, and Arlbjørn (2012) elaborated by stating warehouses provide a competitive advantage over the competition by serving as a risk management strategy.

Another objective of warehousing is to find a balance between maximizing throughput while meeting customer demand requirements (Albernaz, Maruyama, Maciel, & Correa, 2014; Solyali & Süral, 2012). There are different types of warehouses as each have a specific function in order to add flexibility to the supply chain. For example, production warehouses are located upstream in a supply chain whereas distribution centers are located downstream (Faber et al., 2013). Warehouses may be private, public, multiclient, third-party, centralized, decentralized, or a combination thereof to support different segments in the supply chain.

Since retail managers are located downstream in the supply chain, most are familiar with regional warehouses and distribution centers. These types of warehouses are designed with the intent of maximizing throughput (Albernaz et al., 2014). To facilitate the rapid movement of products through a facility and meet customer needs, a regional warehouse or distribution center is designed to utilize the *pull system* (Albernaz et al.). The pull-system is an inventory control process designed for downstream customers who place orders for goods where products are received just-in-time (JIT, Rossin, 2012). Other than reducing on-hand safety stock, the pull-system also reduce lead-times and system costs (Janvier-James, 2012). As evidenced in a study conducted by Albernaz et al.

(2014) the pull-system clarifies the value associated with adding additional regional warehouses or distribution centers. Albernaz et al. results showed by increasing distribution centers from one to two, freight costs were reduced by 10% per shipment. On time delivery rates increased from 92% to 99% and sales increased by 150% over a 6-month period. Albeit a different study, Solyali and Süral (2012) proved that one distribution center can still operate efficiently enough to support demand requirements as long as cost-effective inventory control strategies are in place. For example, regional warehouses and distribution centers are strategically located in geographical areas to provide maximum logistical functionality. A well-designed supply chain includes transportation infrastructure as well as reliable delivery routes, which effectively lowers safety stock in warehouses and in retail stores (Albernaz et al., 2014).

Information technology has increased in the warehousing sector as business leaders adopt new business models to accommodate for meeting customer demand (Chen et al., 2014). In the supply chain, Chen et al. proposed a model for adapting faster information flow and transfer mechanisms in the supply chain. They stated that past supply chain models were enterprise focused. Specifically, business leaders focused only on their company, which caused information mismatch and poor lead times. Today, supply chain models are partner focused. This type of model incorporates the decisions of multiple partners to yield long-term forecast across multiple entities, and thus, create some stability. However, Chen et al. argued the current system lacks ability in meeting changing market demands. They proposed a supply chain model in their study that offers a direct focus. This model uses a fast information flow mechanism to transfer customer

demand data to the manufacturer. The model helps manufacturers anticipate incoming orders, which decrease lead-times and variability. To achieve these goals, Chen et al. proposed that business leaders should rethink their relationships with suppliers, manufacturers, distributors, retailers, and end users. Ultimately, success in the retail industry depends on the ability to rapidly and cost-effectively collect, organize, analyze, and disseminate data throughout the supply chain. RFIDs, forecasting, and enhanced warehousing distribution offer viable solutions by creating cost-effective strategies and solving complex inventory management issues. This section concludes with cost-effective inventory control strategies for managing inventory while the next primary section covers replenishment techniques.

Replenishment Techniques

Retail managers use different cost-effective inventory control strategies for reducing stockouts. For example, a retail manager may provide end-users the option to use a transshipment strategy. With a transshipment strategy, end-users oftentimes pay shipping fees to have products delivered to their residence. End users also have the option to forgo shipping fees and have products delivered to a local retail chain (if the product is not already available). Discount retail managers who do provide this type of transshipment strategy and service are effectively *inventory pooling* their products to meet and satisfy customer demands. The benefit of inventory pooling is that it allows for fewer warehouses and distribution centers in the retail supply chain; albeit limitations exists for perishable products such as eggs, milk, and fruit. The point of emphasis is to understand what works best for retail managers by exploring viable cost-effective

solutions. For this reason, the management of inventory, replenishment techniques, and the ability to satisfy customer demands differ across retail supply chains. The following subsections provide specific emphasis on replenishment methods currently in-use by some retailers in the supply chain.

   Retailer managed inventory. Under a retailer managed inventory (RMI) system, the retailer owns and has full control of the inventory (Sohel Rana, Osman, & Islam, 2014). Retail managers who use RMI typically use a periodic review policy or a continuous review policy. Retail managers who use a periodic review policy orders and track products only at predefined intervals (Setyaningsih & Basri, 2013). This replenishment strategy is reserved for retail managers who find it inconvenient to frequently review and order products. The advantage of a periodic review policy is to allow business owners or retail managers time to concentrate on other aspects of the business (Setyaningsih & Basri, 2013). The disadvantage of a periodic review policy is inventory inaccuracies and the increased risk of out-of-stock products for high demand items (Setyaningsih & Basri, 2013). In contrast, retail managers who use a continuous review policy, continuously order and track products (Setyaningsih & Basri, 2013). Since this replenishment strategy requires a continuous review of inventory, computer systems track point-of-sale (POS) data and flag products that drop below a predefined inventory level (Çomez & Kiessling, 2012). The advantage of a continuous review policy is that inventory levels can be tracked in real time (Setyaningsih & Basri, 2013). Additionally, forecasting methods such as *time-series* use moving averages in trends, seasons, or cyclic

patterns on products. The disadvantage of having a continuous review policy is implementation costs (Setyaningsih & Basri, 2013).

Since RMI require little cooperation with entities external to the retailer, this replenishment strategy is most apparent with a small retail business (Jasemi, Haji, & Gharibi, 2014). The North American Industry Classification System (NAICS) defines the size of a business by the NAICS code (industry type). For the purpose of this study, Table 2 defines and distinguishes differences between the size of a business. Although RMI is prevalent in small businesses, Jasemi et al. concluded in their study that small retail stores were more expensive to operate using RMI when compared against a vendor managed inventory system. Jasemi et al. expressed that some small retail managers are still comfortable using traditional supply chain methods despite improvements in inventory controls and replenishment strategies. The next section expands on replenishment techniques by providing a presentation on vendor managed inventory.

Table 2

Definition of Business Size

Size	Number of employees
Small	< 250
Medium	< 500
Large	< 1000
Enterprise	> 1000

Vendor managed inventory. Vendor managed inventory (VMI) is an alternative replenishment technique that originated in the 1980s between Wal-Mart and Proctor & Gamble (Kazemi & Zhang, 2013). Vendor managed inventory combines transportation and inventory management with real-time data and inventory visibility (Vonolfen,

Affenzeller, Beham, Lengauer, & Wagner, 2013). Retail managers who partner with vendors grant access to point-of-sale (POS) transactions via an electronic data interchange (EDI). The EDI serves as a link for vendors to capture the true demand of products for determining on-hand inventory and stock replenishment levels (Jasemi et al., 2014; Pepe & Pepe, 2012). Under a VMI system, the vendor decides the appropriate level of inventory (within previously agreed-upon bounds) and the appropriate replenishment cycle (Guimaraes et al., 2013; Vonolfen et al., 2013). Since implementation by Wal-Mart and Proctor & Gamble, the concept of having vendors control on-hand inventory and conduct stock replenishment has grown in popularity (Stanger, 2013).

Vendor managed inventory is not only useful in retail but has been successful in other service industries. For example, Guimaraes et al., (2013) conducted a small-scale study in a hospital's logistics and supply chain department. Their study concluded that the absence of a VMI system created problem distribution routes, delivering errors, lack of stock visibility (internal and external), and high stock levels. When hospital management implemented VMI, the new process led to quicker logistics responses through stock visibility. Vendor managed inventory increased need anticipation, efficiency, product availability, and shortened the turnaround time for shelf-life medical items. Venkata and Ravilochanan (2014) have shown that VMI can be applied even in overseas industries. These researchers conducted a study in India and concluded that retail managers who do not use VMI waste 30% of their fresh produce before going to market. Without VMI, data showed retailer products passed through six to seven intermediaries. The result has led to poor quality products and damaged goods prior to reaching the end user. With the

support of VMI, retailers such as Wal-Mart, Tesco, and Metro have entered the Indian market with an efficient supply chain causing a paradigm shift in the Indian retail and service industry (Venkata & Ravilochanan, 2014).

A number of experts in the logistics and supply chain community agree on the summary of benefits for VMI. However, some retail managers are reluctant to implement VMI due to proprietary information, which allows for opportunistic behavior by the vendor (Guimaraes et al., 2013; Jasemi et al., 2014). Stanger (2013) agreed by emphasizing that outsourcing replenishment processes increase retailer dependence. Braide, Cao, and Zeng (2013) illustrated in their study when demand was price-sensitive, a volume discount (as compared to constant price strategy) scheme will result in greater profits for vendors. Although Braide et al. do not provide evidence concluding that retailer's profits also increase, Yan, Myers, and Wang (2012) was of a different opinion. These authors concluded in their study that the optimal strategy is to engage in information sharing, which provide profit maximization for both entities. The different points of view illustrate although VMI is a formidable tool and may be viable for effectively combating the reduction of stockouts; hesitancy still exists by some retail managers. The next subsection continues with replenishment techniques by providing a presentation on collaborative planning, forecasting, and replenishment.

Collaborative planning, forecasting, and replenishment. More than 70% of out-of-stocks rest with the retailer (Corsten & Gruen, 2003; Pramatari & Miliotis, 2008). As a result, retail managers continue to seek improved replenishment techniques. Thome, Hollmann, and do Carmo (2014) agreed that collaborative planning, forecasting, and

replenishment **(**CPFR**)** is a replenishment method that extends beyond RMI and VMI. Collaborative planning, forecasting, and replenishment began when Wal-Mart's leadership recognized Warner-Lambert products fell below vendor expectations. In 1995, Wal-Mart's and Warner-Lambert's leadership conducted a pilot test on Listerine products under the original idea, collaborative forecasting and replenishment (Kamalapur & Lyth, 2014). With the aid of Benchmarking Partners, Systems Applications and Products (SAP), and Manugistics, CPFR was developed to match vendor *replenishment demand* to retailer *customer demand* (Kamalapur & Lyth, 2014).

Supply chain partners who engage in CPFR track deviations that fall outside of a specified agreement. The deviated exceptions will generate an action for supply chain leaders to collaboratively realign their planning efforts. For example, manufacturers, suppliers, and retail managers who use CPFR can collaboratively synch information to plan and replenish products. Forecasts will also be realigned and collaborated to ensure accuracy in future replenishment orders (Vandeursen & Mello, 2014). Warner-Lambert's lead-time dropped from 21 to 11 days, sales increased by $8.5 million, and vendor stock rose by 11% during the piloting period.

As with the pilot study, industry supply chain leaders agreed that replenishment is improved with CPFR when compared to other replenishment techniques (Kazemi & Zhang, 2013; Thome et al., 2014). Kamalapur and Lyth (2014) conducted a study with the purpose of comparing traditional supply chain (TSC) ordering methods with CPFR. The researchers used 2 years of weekly sales data on 150 products from a major supermarket. To determine performance measures, they conducted 1000 replications by

using a simulation model. The control variables were (a) demand variability, (b), inventory holding costs, (c) backorder penalty costs, and (d) delivery lead times. Using statistical software, *Minitab 16*, the researchers concluded that ordering methods improved for vendors and retailers who used CPFR over other TSC methods. Their research showed as inventory holding costs increased on products, the cost-benefit of CPFR also increased. The increase in information sharing and collaboration in CPFR reduced inventory and backorder costs. Second, when delivery lead-times were high, more safety stock had to be maintained under TSC ordering methods. As with the pilot study, Kamalapur and Lyth study concluded supply chain leaders who forecast with CPFR improved fill-rates, reduced safety stocks, and reduced backorder costs for vendors and retailers.

Kazemi and Zhang (2013) used analytical models and simulation testing in their study to conclude CPFR was more robust to variations in market demand. Kazemi and Zhang summarized stating that under CPFR, the total supply chain has higher profit margins, increased forecasting and scheduling, and less stockouts due to increased information sharing. As with VMI, CPFR is a formidable replenishment technique designed to be a cost-effective inventory control strategy; albeit hesitancy impedes its use by some retail managers (Ganeshan, 2014). This section concludes with discussions on RMI, VMI, and CPFR while the next primary section is a presentation of customer relationship management.

Customer Relationship Management

Customer relationship management (CRM) and its following subsections have a direct impact on cost-effective inventory control strategies as stockouts in retail can influence customer satisfaction and loyalty (Bouzaabia et al., 2013; Ehrenthal & Stölzle, 2013; Unhanandana & Wattanasupachoke, 2012). In fact, the roots of CRM began in marketing and supply chain management (Meadows & Dibb, 2012). Therefore, retail managers should have a positive reception of CRM as the end-goal is to have profitable customer relationships. Srisamran and Ractham (2014) argued that most business people have heard the term CRM, but do not have a clear perception on the concept.

Simmons (2015) asserted that a complete definition of CRM should include (a) the strategic management of customer relationships, (b) technologies, and (c) customer-focused technologies. Wang and Feng (2012) defined CRM as an organizational construct of strategies, technologies, and practices focused on managing interactions and establishing long-term relationships with customers. Vella and Caruana (2012) defined CRM as gaining total customer satisfaction throughout a service or product's life-cycle by incorporating people, processes, and technology. Wei, Lee, Chen, and Wu (2013) defined CRM as incorporating information technology solutions with the functional intent of improving customer loyalty by improving customer relationships. Ruchi (2014) stated that business leaders consider CRM a business strategy enabling managers to (a) know the customer, (b) retain customers through better customer experience, (c) magnetize new customers, (d) win new clients and contracts, (e) boost profitability, and (f) reduce customer management costs. To summarize, CRM is a construct of people and customer

tracking systems designed to provide trust, commitment, and profitable relationships. The literature review herein does not cover all aspects of CRM, but rather expands on two important elements. The first element is customer satisfaction, which business leaders may view as fundamental, but is vital in regard to appreciating the customer's perspective in implementing a successful CRM strategy.

      Customer satisfaction. Customer satisfaction may be defined as a post-choice reflection of how customers feel about a product or service as compared to their perceived expectation (Cheung & To, 2012). Chandel (2014) viewed customer satisfaction as judgments based on cumulative experiences. Helena and Sampaio (2012) analyzed customer satisfaction as a consumption-related fulfillment response and the consequence of the overall experience. Liu, Huang, and Chen (2014) agreed with the previous definitions of customer satisfaction, but explained that customer satisfaction also require a relational benefit. For example, a restaurant manager not only has to serve quality products, but also provide a pleasant atmosphere and offer superior customer service.

      Customer satisfaction may be viewed as four antecedents. The first antecedent includes the customers' perceived expectations prior to purchasing products or services. Perceived customer expectations are a psychological assessment of products or services that has the potential to satisfy implicit or explicit objectives (Ali, Leifu, YasirRafiq, & Hassan, 2015). Perceived expectations can be influenced by a number of factors such as commercials, word-of-mouth, or by promotions (Ali et al.). The second antecedent includes the customer's perceived value, which is a subjective comparison the customer

makes between the overall benefit of the product or service and costs paid (Ryu, Lee, &

Kim, 2012). Because a customer's perceived value is an intrinsic and personal choice, it is

nearly impossible for retail managers to evaluate (Ryu et al.). The third antecedent

includes the customer's perceived service quality or relational benefit. According to Wu,

Huang, and Chou (2014), perceived service quality is concerned with the expectations of

the service provider. It is the difference between customer perceptions and customer

expectations. The last antecedent of customer satisfaction includes store image. A store's

image may be viewed as the customer's overall perception of the store such as company

values and the company's leadership (Thomas, 2013). One objective of store image is to

align store image with the consumer's self-image (Thomas, 2013). The association with

aligning store and self-image together helps organizational leaders build rapport, and

thus, create company favoritism over competitors. Helena and Sampaio (2012) suggested

that once customer satisfaction is established, it has a positive impact on customer

repurchase intentions. The second element of CRM is a transition from customer

satisfaction to customer loyalty. Customer loyalty is another central element to having a

successful CRM strategy.

Customer loyalty. Customer loyalty describes a customer's behavior towards a

product, brand, or service which indicates an allegiance beyond self-interest (Liu et al.,

2014). Similar to customer satisfaction, customer loyalty is an observable behavior by

consumers who make repeat purchases with a company, a brand, or a product (Kanta,

Murali, & Srivalli, 2014). For example, Apple Inc. has a loyal customer base who

believes in the perceived value and benefit of Apple products (Wang, Chan, & Yang,

2013). Ene and Özkaya (2014) stated that one way to possess brand loyalty and a strong store image is to meet customer expectations in regard to the perceived value for the product or service. Chung-Yu and Li-Wei (2012) agreed by stating that customers remain loyal to companies perceived as offering superior value over competitors. Business leaders who keep their own customers are even more profitable, as compared to gaining new customers (Ene & Özkaya, 2014). The final subsection concludes the literature review with a presentation of customer satisfaction and customer loyalty with an emphasis on stockouts in retail.

Customer satisfaction, loyalty, and stockouts in retail. Customer satisfaction is key to having long-term growth in revenue and in customer loyalty (Dinh, 2014). Keiningham, Gupta, Aksoy, and Buoye (2014) stated that business leaders have used customer satisfaction as a metric to measure and manage customer loyalty. Retail managers who have a thorough understanding of customer satisfaction might achieve higher levels of sustainability, competitive advantages, and loyal customers. Dinh (2014) conducted a phenomenological study in northeast Florida to describe customers' experiences for increasing sales and sustainability in retail. Dinh's study indicated five themes: (a) customer satisfaction, (b) customer value, (c) customer loyalty, (d) factors impacting sales, and (e) ways to improve customer service. Likewise, Martin and Iravo (2014) concluded in their study 55% of respondents were of the view that customer experiences and perceptions was a major concern in retail. Therefore, retail business leaders should possess a strong store image by keeping customers loyal and by keeping them satisfied (Ene & Özkaya, 2014). Thomas (2013) validated through the use of

structural equation modeling (SEM) that a shared link exists between store image, customer satisfaction, and brand loyalty. Pizzi and Scarpi (2013) study suggested that one of the best ways to manage store image and customer experiences is accepting accountability instead of passing blame on other entities. Bouzaabia, R., Bouzaabia, O., and Capatina (2013) argued if customers' needs go unmet, the shared link found in Thomas (2013) study quickly degrades once a rival competitor fulfills and satisfies those needs.

In regard to satisfying customer needs', retail items should be on the shelf or readily available, otherwise the customer will not experience any utility or benefit from the product. Scholars widely agree that over time, frequent stockouts will decrease customer satisfaction and customer loyalty (Chin, Li, & Tsai, 2012; Ehrenthal & Stölzle, 2013). Previous research has also shown that disgruntled customers who experience stockouts have negatively impacted company revenue (Corsten & Gruen, 2003; O'Sullivan & McCallig, 2012). Osarenkhoe and Komunda (2013) mentioned in their study that 5 out of 10 customers complained about their negative experiences to other customers. What Osarenkhoe and Komunda found even more discerning is that some customers do not express their concerns to retail managers due to the held belief that complaints may not be sufficiently resolved.

Customer satisfaction, customer loyalty, and stockouts are becoming a major problem in the retail industry, and the challenge is to meet customer expectations (Che, Chen, X., & Chen, Y, 2012). Thus, customer satisfaction or dissatisfaction can be a combination of expectations and performance (Osarenkhoe & Komunda, 2013). As

mentioned under CPFR, more than 70% of out-of-stocks rest with the retailer. Corsten and Gruen (2003) research provides a worldview on the extent of stockouts. Their research concluded that 34% of stockouts are from inaccurate forecasts and 25% are from poor shelf-replenishment practices. Corsten and Gruen posited that when stockouts do occur, consumers make one of five choices: (a) buy product from another retailer, (b) delay purchase, (c) substitute with the same brand, (d) substitute with a different brand, or (e) do not purchase the product. Consumer surveys revealed that stockouts impede store staff resources, disrupt the shopping experience, and is said to be the most common annoyance amongst shoppers (Ehrenthal & Stölzle, 2013). As a result, 31% of customers buy products from other retailers when items are not immediately available for purchase (Corsten & Gruen, 2003). Corsten and Gruen concluded by emphasizing stockouts penetrate through the entire supply chain.

As applied to this study, creating customer satisfaction and loyalty starts with having products readily available or on-the-shelf when desired by the customer. Yin, Pei, and Ranchhod (2013) conducted a qualitative ethnographic study on the shopping experiences of senior citizens in the United Kingdom. Their study concluded that not only is product availability an issue, but other variables may influence whether a customer decides to shop at certain retailers. Other retailer variables included product feasibility such as location, shelf height, store design, and even store temperature. Yin et al. expressed that some senior citizens had difficulty finding products because signs were not clear. For this particular study, an assumption can be made that customer's will (a) continue to look for the product, (b) ask for help (if available), or (c) give up. In any of

the three likely scenarios, the negative experience will ultimately lower customer satisfaction, customer loyalty, and decrease the desire to continue shopping at the retailer. Again, if a retail manager's desire is to maintain a high level of customer satisfaction and loyalty, effective inventory controls and other supply strategies must be paramount.

As stated at the beginning of the literature review, the rate of out-of-stock products underwent little improvement (Ettouzani et al., 2012; Gruen et al., 2002). The purpose of this qualitative multiple case study was to explore cost-effective inventory control strategies and possibly improve some inventory management or replenishment techniques. One objective of this study was to explore *best practices* currently in-use by discount retail managers for minimizing chaos in the retail supply chain. The review of professional and academic literature covered inventory management and replenishment techniques currently in-use by retailers.

Transition

In Section 1, I described the foundation of this study by presenting the problem, the background, and the purpose for conducting the study, the nature of the study, the research question, and interview questions. I concluded Section 1 by elaborating on the conceptual framework, operational definitions, assumptions, limitations, delimitations, significance of the study, and a review of the professional and academic literature. In Section 2, I explain the role of the researcher, participants, data collection instruments, research method, design, population, and sampling. I continue by explaining ethical research, data collection instruments, data collection techniques, data organization

techniques, data analysis, reliability, and validity. In Section 3, I organize and interpret

themes from the data collection as a presentation of the findings.

Section 2: The Project

As outlined in Section 1, the objective of this study was to explore retail inventory control strategies. In Section 2, I provide emphasis and instructions as to how the study was carried out. I start by recapturing the purpose statement, followed by discussing the role of the researcher, participants, research method, design, population, sampling, and ethical research. I end Section 2 by discussing data collection instruments, data collection techniques, data analysis, reliability, and validity.

Purpose Statement

The purpose of this qualitative multiple case study was to explore cost-effective inventory control strategies used by discount retail managers. The target population consisted of retail managers who used inventory control strategies in discount retail outlets located throughout northeast Jacksonville, Florida. Regional discount retail managers who are susceptible to frequent stockouts may benefit from this study's findings. By changing standardized inventory control practices in the retail supply chain, social change might include a reduction in the transportation of freight and less consumption of natural resources that could help improve environmental sustainability.

Role of the Researcher

The researcher's role extends beyond the concept of collecting data and providing a voice for those who participated in the study (Xu & Storr, 2012). In qualitative studies, researchers are the data collection instrument and need to interrogate the data and present the results in an unbiased manner (Camfield & Palmer-Jones, 2013; Xu & Storr, 2012). Chan, Fung, and Chien (2013) stated that during the data collection process, bracketing

should be used. It requires the researcher to deliberately put aside any personal biases, judgments, beliefs, or personal knowledge prior to and throughout the research process. As a logistics professional in the military, I have a diverse background in logistics and supply chain management processes. I mitigated my personal biases by not offering personal opinions or information that might influence the interview process. In order to maintain data validity and reliability, I did not interview any participants who I had previously known or whom I had professional affiliations. As explained in the following sections, I used interview protocols (see Appendix B) and conducted member checking with each participant. The rationale for taking these precautions was to further mitigate personal bias during data collection. Another role of the researcher is to protect the anonymity of participants and adhere to all laws and policies governed by the United States Department of Health and Human Services (DHHS).

The United States Department of Health and Human Services is a government organization that provides the Belmont Report as guidance on ethical principles when research involves human subjects (U.S. DHHS, 2015). This report features three underlying principles, which include respect for persons, beneficence, and justice. This report also covers three primary areas of application, which are informed consent, assessment of risks and benefits, and the selection of subjects. Institutional Review Boards (IRBs) and researchers use this report to ensure ethical standards are maintained at all times for all human subjects. Since human subjects were part of my case study, I adhered to its guidance. I also followed any additional protocols and regulations set forth by Walden University.

Participants

With IRB approval, the participants derived from a population of discount retail managers located throughout northeast Jacksonville, Florida. To be eligible to participate in this multiple case study, the participant must have been at least 18 years of age, had at least 1 year of retail management experience, and the company must have been listed as a top retailer by the National Retail Federation (NRF, see Appendix D). The participant must also have been responsible for at least one of the following: (a) retail stock replenishment, (b) demand forecasting, (c) inventory management, (d) inventory optimization, or (e) other cost-effective inventory control strategies. This purposeful sampling approach and eligibility criteria ensured the right participants were selected for providing an information-rich interview (Suri, 2011).

Rather than making impersonal phone calls, I traveled across northeast Jacksonville, Florida and personally asked eligible candidates for interviews as a way of establishing a professional relationship (Ratislavová & Ratislav, 2014). Meeting potential interviewees' in-person may eliminate some negative connotations one may have in regard to speaking with strangers over the phone. As identified by Tuckman (1965), asking for interviews in-person provides opportunities to build rapport and eliminate barriers that may exist during the storming stage of building a professional relationship. Chikweche and Fletcher (2012) agreed by acknowledging that building professional relationships gains access and secures trust. Once the professional relationship was established with the eligible candidate, I proceeded by inviting the candidate to

participate in the study. The next section explains the research method and design used for the study.

Research Method and Design

Research Method

Because the fundamental nature of the proposed research question focuses on the aspect of a *what* question, the qualitative method was best suited as an exploratory means for answering the research question (Yin, 2014). The qualitative method enables the researcher to gain a multitude of perspectives through the varying experiences of others (Birchall, 2014). As previously mentioned, qualitative methods provide a means to focus on a phenomenon that is socially complex, thus requiring extensive and in-depth research (Yin, 2014). Yilmaz (2013) agreed by stating that qualitative methods follow the epistemological assumption that social phenomena are complicated, interwoven, and cannot be reduced, deduced, or segregated by variables. Since other methods such as quantitative or mixed-methods draws upon the strength of using variables, these methods will not work for answering the proposed research question (Fetters, Curry, & Creswell, 2013). A qualitative research method was best suited for this study. The next subsection discusses research design.

Research Design

I chose case study for the purposes of research design because a case study is appropriate for exploring real-world events, phenomenon's, or investigations as identified by Yin (2014). Case studies are descriptive in-depth studies designed to explore causations in order to find any underlying principles for a given situation. In contrast, the

purpose of a phenomenological design is to report the lived-experiences of multiple individuals (Deal & Grassley, 2012). Therefore, a phenomenological design is useful for obtaining individuals' perceptions about particular phenomena (Tomkins & Eatough, 2013). Researchers who use this research design attempt to identify a universal reason for shared experiences among individuals' vice real-world events. Ethnographies provide empirical data by describing the shared behaviors, values, or beliefs of a culture or group of people (Higginbottom et al., 2013). Researchers who use this research design seek to understand humans, societies, or cultures. Therefore, ethnographies are beyond the scope of this study and was unsuitable for exploring the proposed research question. Another research design is narrative research, which involves studying and retelling the story of individuals (Thomas, 2012). Researchers who use narrative research seeks to make sense of the world by constructing narratives and interpreting results through the investigation of life stories. Researchers investigate what happened, how it was told, whom it was shared with, and report any significant meanings from those experiences. However, the focus of this study did not involve retelling the story of individuals, seeking understandings, or reporting lived experiences. The purpose of this study was to explore cost-effective inventory control strategies. The qualitative method facilitates exploring the proposed research question and a case study design was appropriate for investigating real-world events, which justified the chosen method and design of this study. The next section discusses population and sampling.

Population and Sampling

Population

The term *population*, in a research study generally refers to a large collection of individuals or items used for scientific inquiry. The population for this case study consisted of individuals who are discount retail managers located throughout northeast Jacksonville, Florida. A subset of this population was chosen through purposeful sampling. Curry, Nembhard, and Bradley (2009) stated that purposeful sampling means the inquirer purposefully selects individuals with experience or detailed knowledge necessary for providing relevant information specific to gaining an in-depth understanding of the research problem. As such, the purposeful sampling method fits the objective of this study by narrowing the size of the population; and thus, targeting specific individuals (Suri, 2011). The participants were a derivative of the population, which consist of retail managers who work for top discount retailers as identified by the NRF (Schulz, 2015).

Sampling

Qualitative research usually involves a small sample of participants whereas quantitative research normally involves a larger sample (Watson, 2013). For qualitative research, Linden (2015) suggested that caution should be taken when using too large of a sample. Kaplan, Chambers, and Glasgow (2014) agreed by stating commentaries oftentimes argue that larger samples are more reliable; however, larger samples are prone to more errors in data such as (a) samplings, (b) comparisons, (c) measurements, and (d)

aggregations. Kerr (2010) posited that set sample sizes are not evidenced based, and therefore, cannot be determined in advance.

Rowley (2012) opinioned that case study sample sizes should be between one and 10 participants. Yin (2014) asserted that two or three cases are sufficient as long as the theory is forthright and the issue has a low degree of uncertainty. Ehrenthal and Stölzle (2013) used five cases in their study for exploring the causes of retailer stockouts. Since Ehrenthal and Stölzle's study has a great deal of similarities to this case study, my initial sample size was the same they have established. I originally conducted interviews with five discount retail managers; however, I increased the sample size to six to ensure data saturation was reached. Dworkin (2012) defined saturation as the point at which continued data collection processes will no longer offer any new information. Suri (2011) summarized by stating data sufficiency is not determined by prescribing to a specific number, but rather by logic and saturation that constitutes sufficient evidence for the study.

Ethical Research

As a researcher, I have an obligation to demonstrate trustworthiness with data and to ensure all ethical measures are taken before, during, and after data collection. Before data collection began, I was required to successfully complete a certificate, certified by the National Institutes of Health (NIH) Office of Extramural Research. This course provided web-based training on human rights, dignity, and protecting human research participants. Furthermore, and as explained under role of the researcher, the United States DHHS is a government organization that provides the Belmont Report as guidance on

ethical principles when research involves human subjects (U.S. DHHS, 2015). In addition, this proposal was approved by Walden University's Institutional Review Board (IRB) before data collection began, which ensures adherence to all ethical standards, laws, institutional regulations, and professional conduct (Beskow, Grady, Itlis, Sadler & Wilfond, 2009).

A Walden IRB approval number was provided after gaining approval from the IRB committee. Discount retail managers who chose to participate were sent a letter of invitation and all appropriate consent forms through regular mail or by e-mail. The consent form explained the objective of the study, participant confidentiality, and the right to withdraw from the study at any time. The consent form also explained participation requirements such as choosing not to answer any, some, or all the interview questions. E-mail information was provided should the participant elected to withdraw from the study. Furthermore, the consent form had contact information for the participant should any questions or concerns arose before the interview.

Before starting the interview, I ensured each participant met the minimum criteria set forth in the participant's section. Next, I provided verbal guidance and ensured each participant clearly understood the consent form (Ridden et al., 2012). I ensured each participant was aware of the consenting process, rights of participants, confidentiality rules, length of the interview, and secondary data collection. I explained that I will not include participant names or any other identifying information in any section of the study. Instead, I used pseudonyms to protect participant identification for remaining confidential. I verbally explained participation requirements and procedures for

withdrawing from the study. I ensured each participant was aware of the intent of the study and to acknowledge by responding via e-mail with the words "I Consent," or by signing the consent form (see Appendix C). Each participant was made aware that all data will be retained by either preserving hardcopy's or by keeping electronic information on a password-protected flash drive. All research is stored in a safe accessible only by me. After 5 years, all hardcopy's will be shredded and all flash-drive files will be permanently deleted and physically destroyed. No incentives were provided to participants for this study. The next section explains the data collection process.

Data Collection Instruments

For this qualitative multiple case study, I was the primary data collection instrument (Camfield & Palmer-Jones, 2013). To collect data for this study, I conducted Skype or face-to-face semistructured interviews. Researchers such as Ehrenthal and Stölzle (2013) used semistructured interviews to understand how retailers make improvements in coordinating store deliveries and reducing stockouts. Likewise, Yin et al. (2013) conducted semistructured interviews to understand the shopping experiences of senior citizens in the United Kingdom. Trautrims, Grant, Cunliffe, and Wong (2012) conducted semistructured interviews to explore how perceptions and human behaviors influence the operations and effectiveness of logistical processes. As these three authors have delineated through their studies, a semistructured interview offers researchers a two-way medium of communication for collecting and gaining in-depth data on social concerns or other conceptual issues (Rubin & Rubin, 2012). For qualitative studies,

interviews are the most common method of collecting data (Janghorban, Roudsari, &

Taghipour, 2014).

Other data collection instruments included a interview questionnaire (see

Appendix A), two audio recording devices, and NVivo v.11 software. The purpose for all

data collection instruments used in this study is to enhance reliability and validity during

data analysis through accurate transcriptions, member-checking, and coding. Rimando et

al. (2015) recommended having the correct data collection instruments from the onset to

minimize unanticipated challenges during data collection. The next section addresses data

collection techniques used for this study.

Data Collection Technique

The method of collecting data came from conducting Skype or face-to-face

semistructured interviews with open-ended questions. Once the participant agreed to an

interview, I collected data by searching the company's website for supporting documents

and policies. All participants were contacted the day before their scheduled appointment

to confirm the interview (Williams, 2015). Interview protocols consisted of the

following: (a) private space chosen by the participant, (b) consent form, (c) interview

questionnaire, (d) interview protocol form, (e) two voice recorders, (f) watch, (g)

notepad, and (h) writing utensils. I used the interview protocol form (see Appendix B)

and consent form as guides to ensure all procedures are adhered too. The participant had

the opportunity to ask questions at any time. Once the participant's questions were

answered and upon completing both forms, the interview began with audio recording,

followed by asking interview questions. At the end of the interview, I asked each

participant for secondary data such as supporting documentation, policies, or articles.

After the interview, I made arrangements to contact each participant to conduct member

checking. Andraski, Chandler, Powell, Humes, and Wakefield (2014) acknowledged in

their study that member checking provides subsequent feedback and captures data that

may have been missed during the initial interview.

Because the above researchers acknowledge data may be missed, I understood

that no one data collection method is infallible. I collected data by conducting Skype or

face-to-face semistructured interviews. The advantage of collecting data by using Skype

or face-to-face interviews is that it is in real-time and the receiver sees nonverbal cues

such as body language or vocal inflections, which cannot be shown by other ways of

communication (Opdenakker, 2006). The disadvantage of Skype interviews is that it

requires the participant to have access to a personal computer and a webcam. The

disadvantage of face-to-face interviews is costs constraints. Opdenakker acknowledged

and elaborated by stating face-to-face interviews involves leisure time and travel costs,

especially when both parties are distant. The disadvantage of Skype and face-to-face

interviews is that some participants may show reluctance when directly confronted with

questions.

Phone interviews are also in real-time and the interviewer is not limited by

restricted areas, travel costs, or distance (Block & Erskine, 2012). The prominent

disadvantage of phone interviews is the lack of cues such as body language, facial

expressions, or vocal inflections, which increases the quality of the receiver interpreting

the message correctly. Phone interviews were not used in this study. Having an

appreciation of data collection methods and understanding the advantages and disadvantages is imperative, especially for researchers who wish to conduct similar studies. The next section addresses data organization techniques.

Data Organization Technique

By using the interview protocol form, I organized data by recording the interviewees name, organization, date, time, location, and by assigning a pseudonym. Although pseudonyms were assigned, I ensured that all data is stored in a safe accessible only by me. After 5 years, all data will be permanently deleted and physically destroyed. Every interview was recorded with two audio recording devices and substituted with other supporting documents (Houghton, Casey, Shaw, & Murphy, 2013). All recorded interviews were transcribed and member checked. Upon transcription, I conducted edits as suggested by Williams (2015) by removing all personal identifiers and organizing the data by assigned pseudonyms.

As indicated under data collection instruments, I used NVivo v.11 to load all transcriptions to code, organize, and identify themes. Gläser and Laudel (2013) indicated that coding has become the recommended technique for qualitative data analysis. The basic function of coding is to index raw data. Gläser and Laudel also explained that codes are tags or labels that one may use to identify meaning. These codes provide descriptive information in the form of keywords, phrases, or numbers that signal an occurrence. NVivo v.11 was the main software application for organizing all data. Once all data were organized, data analysis began.

Data Analysis

Researchers use data analysis to ensure credibility in research, which is achievable through consistent, valid, and reliable data (Turk, 2012). Triangulation in qualitative research has been found to be beneficial in confirming findings with the added benefit of increased validity and an understanding of the phenomena (Bekhet & Zauszniewski, 2012). Yin (2014) agreed and elaborated by explaining how triangulation involves having multiple sources of evidence. For this study, I used methodological triangulation as this technique involves multiple methods to explore a phenomenon (Bekhet & Zauszniewski, 2012). The methodological triangulation consisted of semistructured interviews with open-ended questions and supporting documents gathered through organizational websites and participants. Again, all data was compared to check for consistent, valid, and reliable data.

As previously mentioned under data organization technique, I conducted edits as suggested by Williams (2015) by removing all personal identifiers and organizing the data by assigned pseudonyms. The next objective was to load all transcript reviews into NVivo v.11 and develop a list of codes for data that signals an occurrence. I started by using nodes to identify similar words and phrases located throughout the transcripts and labeled them accordingly. Once complete, I assembled the node list into themes. Desper (2013) explained that many challenges exists during the data analysis stage. Therefore, I hired a professional NVivo v.11 software consultant to assist with the aforementioned coding process and to aid in data analysis. I included all key themes and significant findings in Section 3. The presentation of findings from Section 3 may provide local

discount retail managers a better understanding of the value associated with using cost-effective inventory control strategies. Furthermore, the data was scrutinized against the related literature to confirm, disconfirm, or extend other related studies.

Reliability and Validity

Reliability

Reliability refers to conducting measured consistent applications and reaching the same outcome (Goffin, Raja, Claes, Szwejczewski, & Martinez, 2013; Yin, 2014). Since this study was bounded by multiple components such as time, location, limited sample size, and individual's knowledge, other researchers may derive at different conclusions. Therefore, in qualitative studies, reliability is analogous with dependability (Goffin et al., 2013; Houghton et al., 2013). Dependability is an assumption of replicability. Therefore, I ensured that an exact copy of the consent form, interview protocol form, interview questions, and other data collection instruments and software were used in the exact manner with all participants. The objective was to ensure uniformity throughout the entire research process.

Validity

Validity refers to an accurate interpretation of the data for correctness (Desper, 2013). In order to establish validity, no secondary sources were used throughout this research study. In addition, purposeful sampling was used to narrow the size of the population; and thus, target specific individuals (Suri, 2011). Researchers use purposeful sampling to select individuals with experience and knowledge necessary for providing relevant information that is specific to gaining an in-depth understanding of the research

problem (Curry et al., 2009). Interviews continued until data saturation could be determined. Dworkin (2012) defined saturation as the point at which continued data collection processes will no longer offer any new information. Similarly, data analysis continued until no new data, coding, or themes emerged.

Creditability refers to believability in the findings (Houghton et al., 2013). As mentioned under data analysis, I used methodological triangulation, which consisted of semistructured interviews with open-ended questions and supporting documents gathered through organizational websites and participants. To participate in this study, the participant must have met the minimum criteria set forth in Appendix B. Furthermore, I transcribed, interpreted, and conducted member checking with each participant to ensure my analysis of the responses were accurate. I also hired a professional NVivo v.11 software consultant to assist with coding for ensuring an accurate analysis. The goal was to capture the true essence of the participants' meanings, thus removing researcher bias or erroneous interpretations (Williams, 2015).

Transferability refers to whether or not findings can be transferred to other settings or similar situations (Goffin et al., 2013). As mentioned under limitations, this study was region specific and may be limited in providing transferability throughout the United States or other countries. Transferability is also analogous with providing thick descriptions of context, to include research methods so judgments can be made (Houghton et al., 2013). By providing detailed descriptions other scholars can better understand the context and determine if alternative interpretations might exist. Although limitations do exist within this study, an additional objective was to enhance

transferability in similar regions and in similar research by thoroughly describing all research concepts (Williams, 2015).

Confirmability refers to having an audit trail that may be corroborated by others (Houghton et al., 2013). The audit trail allows for independent objectivity of the data. I ensured confirmability and objectivity by using multiple sources of data to validate through methodological triangulation. The triangulation process includes semistructured interviews, supporting documents, a peer-review process, and by maintaining a chain of evidence (Bowman, 2015). Walden University IRB requires students to preserve all data in a safe place for 5 years after completion of the study. This requirement is to ensure original documents are intact if a need exists from the university to conduct a data audit. To meet confirmability chain of evidence requirements, I will maintain all documents in a safe for 5 years after the completion of the study and destroy thereafter.

Transition and Summary

As outlined herein, Section 2 is a presentation of key research concepts. In Section 2, I explained the role of the researcher, participants, data collection instruments, research method, design, population, and sampling. I continued by explaining ethical research, data collection instruments, data collection techniques, data organization techniques, data analysis, reliability, and validity. In Section 3, I analyze and code the data to provide a presentation of the findings. Other subsections in Section 3 include application to a professional practice, implications for social change, and recommendations for future research.

Section 3: Application to Professional Practice and Implications for Change

The purpose of this qualitative multiple case study was to explore cost-effective inventory control strategies used by discount retail managers. The data came from manager interviews, company websites, and company documentation at six discount retail outlets located throughout northeast Jacksonville, Florida. With the assistance of a professional NVivo v.11 software consultant, the results were organized and analyzed by using nodes to identify similar words and phrases in the transcripts. Once completed, I used axial-coding to categorize the nodes into themes. I list themes in the presentation of findings section as key components in addressing the specific business problem. A brief summary of the five themes from the findings of the study include:

1. Internal Stockout Reduction Strategies

2. External Stockout Reduction Strategies

3. Replenishment System Strategies

4. Inventory Optimization Strategies

5. Best Practices for Inventory Control

Furthermore, this section presents an application to professional practice, implications for social change, recommendations for action, and recommendations for further research. Finally, it includes reflections along with a summary and study conclusions.

Presentation of the Findings

The research question to guide this study was: What cost-effective inventory control strategies do discount retail managers' use? This section includes emerging themes and participants' responses. The section concludes with findings to confirm,

disconfirm, or extend knowledge, findings to conceptual framework, and findings to existing literature. These areas helped address the research question in this study.

Theme 1: Internal Stockout Reduction Strategies

The first emergent theme, based on Interview Questions 2, 5, and 7 pertained to internal inventory control strategies and stockout reduction. Typically, the participants whose system worked well described using several different internal control methods as part of a working system for optimizing store inventory. Most frequently cited were the use of RFID scanning devices for continuous review of backroom inventory and top-stock (stock in overhead shelves) to ensure the lower shelves remained at capacity. Participants described different methods for carrying out these strategies. For example, some employees were responsible for scanning *holes* (stockouts) in shelves and for checking backroom inventory for stock. Under this reduction strategy, all participants assigned responsibility to their department managers or to specific associates for maintaining assigned aisles and shelves at capacity. Another internal stockout reduction strategy included having a customer availability program (CAP). Using this strategy, department managers scan *shelf availability* (low or out-of-stock items) with RFID scanning devices to generate electronic inventory reports. The CAP team unloads trucks, receives reports, retrieves stored merchandise, and replenishes the department manager's shelves. In other instances, some participants described down-stocking (moving stock in overhead shelves to lower shelves) at night to relieve pressure on daytime associates who work with customers, while others down-stocked continuously. Regardless of the internal stock reduction method, strategies were in place to help avoid stockouts and save

customer wait-time for retrieving products. Some of the discount retail managers' (DRM) responses were the following:

- DRM 1 stated every morning, we go through the store before the store opens, and we shoot every empty hole in the store. As we shoot it, we know which aisle we are on so it knows what department it falls under. I have a total of 19 different departments here in the store. As it's shot, it knows how many on-hand quantities we have through our system. It will generate a report and then if there is an out-of-stock, it will have a zero on it.

- DRM 1 stated as the department manager… knows when she works that she needs to make sure throughout the day that she's down-stocking her top stock. It's not necessarily for outs. We want to fill the shelf completely with everything so she's supposed to pull down everything in the top-stock, fill the shelf and put what's remaining back up. That should cure the outs and cure the lows.

- DRM 2 stated the employees on the floor are controlling inventory because they're correcting the counts.

- DRM 3 stated I think that would be the personnel performing the cycle counts to try to keep the integrity, our inventory integrity, where we like it to be.

Table 3 represents a node list from NVivo v. 11 software to identify similar words and phrases throughout the transcripts. I assembled the node list into Theme 1.

Table 3

Theme 1: Internal Stockout Reduction Strategies

Strategy used	*n* of DRMs using strategy	%
Continuously scan for stockouts (retail outs, empty holes, outs, true outs)	6	100
Cycle counts on fast-moving items (typically weekly)	5	83
Down stocking to keep shelves at capacity	5	83
Managers view inventory reports for on-hand top-stock, order and shipment information	3	50
Cashiers scan every item to ensure correct quantity and price matches	3	50
Adjust (or request adjustment of) automatic replenishment order to reduce dead inventory	2	33
Annual inventory of all store items (internal)	1	17

Theme 2: External Stockout Reduction Strategies

The second emergent theme, based on Interview Questions 3 and 6 pertained to external inventory control strategies. Since this type of inventory control strategy is external to the store, the participants exerted minimum influence in the decision-making process. For example, the participants of the five largest retailers interviewed reported they cannot perform adjustments to replenishment orders regardless of the volume of sales or inventory turns. Not only does corporate leadership set replenishment targets, but they also use external agencies to perform annual store inventory audits. Some of the discount retail managers' (DRM) responses were the following:

- DRM 2 stated we have analysts up in our home office that's in charge of every category. Let's say nails or fasteners or caulk or paint. We have analysts and they

look at that. We can send things to them and say, hey, can you look at this

category and adjust our targets. That's the external….

- DRM 5 stated we have vendors that come in. You know, vendors come in and

  they check out levels on certain things and see where we are and see how we're

  selling. They don't necessarily order for us but they may put a word in and say,

  hey, this is really moving over here, this is moving over there, or this is not

  moving over there. I have seen shipments increase on things that have been very

  popular in certain locations.

- DRM 6 stated we have a company that comes and do yearly inventories for us.

Table 4 represents a node list from NVivo v. 11 software to identify similar words and

phrases throughout the transcripts. I assembled the node list into Theme 2.

Table 4

Theme 2: External Stockout Reduction Strategies

Strategy Used	*n* of DRMs using strategy	%
Annual inventory of all store items (external)	5	83
External market studies or observations to determine demand for certain products in the area	2	33
Vendor adjusts replenishment levels according to store demand	1	17

Theme 3: Replenishment System Strategies

The third emergent theme, based on Interview Questions 1 and 3 pertained to the

benefits of the company's inventory control system. All participants were required to

maintain a set stock reorder point by utilizing predefined inventory levels. All

participants utilized RFID technology and time-series forecasting as part of their inventory control and replenishment strategy. One participant even reported having authority to *freeze* (flag demand usage) products when forecasting was not warranted, such as discontinued or discounted sale items. Further, all participants agreed the automated inventory control system is efficient, reduce human errors, and saves on personnel time management. The participants of the four largest retailers used a CPFR replenishment system while the other two used a RMI system. Some of the discount retail managers' (DRM) responses were the following:

- DRM 2 stated the inventory control system looks at replenishment orders twice. Once as a pending order and while in route. The computer looks to see what our sales are. It may take some pending orders from another store and move it to another store. Pending orders and confirmed orders are different.

- DRM 2 stated the way we use to order is we'd order from a vendor. The store would have to make a pack to make a quantity of a minimum. Let's say it's a six pack. We used to order from that vendor, so we may get four more than we don't need. Our new system, our company places orders. The computer will look at the whole region that they order for. They'll say, all right this store needs four, this store needs four, this store needs ten. They order one truck load from [vendor]. Now it goes to our DC and they break it down. The old way, you'd have to make minimums. Now we have no minimums.

- DRM 3 stated the system does the majority of the work ahead of time, whereas we don't have to sit there and generate orders from the beginning.

- DRM 4 stated we've got a 24-hour turnaround on most of our items. We can order it, if we order something now it will be here by tomorrow. That's really one of the best benefits, it's a quick turnaround getting our items.

- DRM 5 stated our replenishment is just something that's a major benefit. You have some where you're working with almost 100,000 SKUs something that's almost impossible to keep up with. I mean the benefit is you actually have a tracking system. You have reports to printout what you're running low on, what's low, what's out. Everything's mapped, everything's tracked for you.

Table 5 represents a node list from NVivo v. 11 software to identify similar words and phrases throughout the transcripts. I assembled the node list into Theme 3.

Table 5

Theme 3: Replenishment System Strategies

Strategy Used	*n* of DRMs using strategy	%
Predefined reorder replenishment targets	6	100
Forecasting based on previous sales, demand, or turn plans	6	100
Inventory tracked at POS, orders automatically submitted	4	67
Implements CPFR (vendor and retailer managed inventory)	4	67
Retailer managed inventory only	2	33
Good faith receiving from external vendors (retailer receives but does not verify inventory count)	1	17

Theme 4: Inventory Optimization Strategies

The fourth emergent theme, based on Interview Questions 3, 5, and 7 pertained to the benefits of the company's inventory control system and various inventory control techniques. Throughout the interviews, the participants highlighted their efforts in how

they utilize inventory optimization. All participants acknowledged that minimizing stockouts is an ongoing effort. As such, all participants have their employees use RFID scanning devices for conducting cycle counts (inventorying stock) on a routine schedule. Some participants conducted cycle counts on their least busy days while others conducted cycle counts daily. Other inventory optimization strategies included the company's inventory control system and the participants understanding of their local demographics. Ultimately, the participants' objective of inventory optimization was to maintain an accurate inventory that maximized sales in a dynamic and constantly changing environment. Some of the discount retail managers' (DRM) responses were the following:

- DRM 1 stated as a company, we're trying to reduce our amount of product in the stores just to have a little more profitability and make our stocks rise. It used to be, when I started with [company], our top-stock was full. You had product everywhere but now you can look out and see that a lot of our top-stock is not empty but it's not as much as we used to carry.

- DRM 2 stated we do what we call a smart list. Certain items have to be looked at. There's probably about 20 of them per department a week. They have to look at certain items and correct the counts.

- DRM 5 stated we can do research and see where items move faster, where they move more. Like I said, we can stock balance. If something moves better in the store in St. Augustine than it does here, or moves better in a store in Savanna than it does here, we can always stock balance between two stores.

Table 6 represents a node list from NVivo v. 11 software to identify similar words and

phrases throughout the transcripts. I assembled the node list into Theme 4.

Table 6

Theme 4: Inventory Optimization Strategies

Strategy used	*n* of DRMs using strategy	%
Inventory counts to reconcile inventory control system with products in stock	6	100
Inventory pooling / Stock balance	3	50
Routine stock replenishments	2	33

Theme 5: Best Practices for Inventory Control

The fifth emergent theme, based on Interview Questions 5, 7, and 9 pertained to

best practices for inventory control. One objective of this study was to explore *best*

practices currently in-use by discount retail managers for minimizing chaos in the retail

supply chain. As this was a multiple case study, best practices differed slightly due to

interviewing participants from different companies. However, generalities were evident

as the participants discussed similarities in scheduled inventories, RFID technology,

various stock control reports, keeping shelves at capacity, conducting store recoveries,

and utilizing the company's automated replenishment system. Some of the discount retail

managers' (DRM) responses were the following:

- DRM 1 stated if you don't have a down-stocking routine in your store, the

  inventory replenishment process (IRP) can be overwhelming to your associates. It

  can be overwhelming to the morning associates when they get four and five

  reports of nothing but outs.

- DRM 2 stated different SKUs look alike. Make sure you're using the correct SKU for that particular product, that way the inventory will be accurate, plus the price too. We have some items in electrical like plugs or sockets. One might be three dollars and one might be 19 dollars and they might look alike. If you don't scan them correctly, two things, you've screwed your inventory up and you lost revenue.

- DRM 2 stated most of your out-of-stocks are in the overhead, so if the associates are not working their aisles, that's the biggest thing. They have to work their aisles to make sure they're down stocked. Again, if they cannot find it, their job is to change it to zero. It may be in the building somewhere out of place, but it's only a perpetual count when you change it. It doesn't affect your inventory. If they don't change it to zero, it will never be ordered. If it says 12 and you don't have it on the shelf, the computer doesn't know to order it, because it's a computer. You have to set it to zero for the computer to order it. The employees are the biggest strategy to control out of stocks.

- DRM 5 stated sometimes you may find someone may grab a pack of CDs and they get over to binders and decided they don't want the CDs anymore, and they've stuffed the CDs behind the file folders or something, but that was the last pack that was over there. Now you're looking for CDs for another customer and you can't locate it. You go back during recovery that same night and you see that CD is there, you see that was the only pack. Usually what will happen is someone

is going to cycle it back in, you want to see if it's cycled back in. If they don't

cycle it back in, and it gets sold it's going to pop up as a negative item sold.

- DRM 5 stated it's mostly about employees and actual recovery of the store. If you

    have a well recovered store, things are going to be in the right place and you

    would be able to zone in on what's there and what's not there.

Table 7 represents a node list from NVivo v. 11 software to identify similar words and

phrases throughout the transcripts. I assembled the node list into Theme 5.

Table 7

Theme 5: Best Practices for Inventory Control

Strategy used	*n* of DRMs using strategy	%
Combination of internal control strategies to avoid stockouts (continuous scanning of shelf inventory, backroom inventory, and down stocking)	6	100
Strategies to ensure accurate inventory counts (cycle counts of fast-moving items, scanning all individual items at POS)	6	100
Automatic replenishment of inventory	4	67
Strategies to optimize inventory (inventory pooling, routine stock replenishments)	4	67

Findings to Confirm, Disconfirm, or Extend Knowledge

Dwivedi, Kumar, and Kothiyal (2012) stated the objective of inventory

management and reducing stockouts is to understand how much to order, when to order,

and having an understanding of safety levels. Although not perfect, computerized

merchandise control systems have been integral in combating the need anticipation

requirements of customers. However, findings do disconfirm Ehrenthal, Gruen, and

Hofstetter's (2014) argument stating one out of 13 items are out of stock. The participants

for this study had an average of 85,000 stock keeping units (SKUs), of which 3,000 to 4,000 items were out-of-stock on their busiest days. Using the same principal, the retail managers would average 6,500 out of stocks. The reason why Ehrenthal, Gruen, and Hofstetter's findings were disconfirmed with this study was because all participants were purposefully selected based on a set of requirements located in Appendix B.

In contrast, the findings do confirm Corsten and Gruen (2003) whose research shows that more than 70% of out-of-stocks rest with the retailer. Albeit, table 7 shows an itemized list of best practices, all participants agreed that a *human factor* still exists, which led to most of their stockouts. Ku, Kuo, Fang, and Yu (2014) stated that successful retailing depends on the ability to satisfy actual and potential customer's needs. Therefore, retail managers should be committed to the continual effort in conceptualizing all cost-effective inventory control strategies related to stockouts.

Findings to Conceptual Framework

The findings were consistent with the conceptual framework of chaos theory. The conceptual framework illustrates why retail managers continue to have stockouts and forego potential profits within their stores. During the interview, DRM 6 summarized by stating "one of the biggest negatives is the department managers don't buy into it." The discount retail manager was referring to his department managers' disbelief in their inventory control system. Likewise, DRM 1 and DRM 5 admitted to having employees who oftentimes misplace stock, thus causing shrink for the company and loss of potential revenue. Jablanovic (2013) stated that chaos theory is nonlinear, emphasizing that cause and effect relationships are not proportional. Therefore, when some department managers

do not believe in their inventory control system or when some employees oftentimes misplace stock, the effects can lead to unpredictability in a retail environment. Again, chaos theory explains how small initial conditions can yield chaotic behavior (Hashamdar, 2012).

Findings to Existing Literature

All participants indicated a need for inventory management and a need for replenishment techniques. Under inventory management, all participants engaged in the use of RFID technology, forecasting, and warehousing strategies as indicated in the literature. Under replenishment techniques, participants engaged in using CPFR or RMI strategies as indicated in the literature. No participants relied solely on VMI as a replenishment technique. As acknowledged in the literature section, some retail managers are reluctant to implement VMI due to proprietary information, which allows for opportunistic behavior by the vendor (Guimaraes et al., 2013; Jasemi et al., 2014). Moreover, Stanger (2013) emphasized that outsourcing replenishment processes increase retailer dependence. No participants were asked questions in regard to CRM strategies as this was not the primary purpose of this study.

Applications to Professional Practice

Discount retail managers throughout northeast Jacksonville, Florida who are succumbed by frequent stockouts may benefit from findings within this study. The outcomes from this study may aid in the decision-making process when searching for creative ways to combat stockouts. The five themes identified were internal stockout reduction strategies, external stockout reduction strategies, replenishment system

strategies, inventory optimization strategies, and best practices for inventory control. This section includes an itemized list of findings relevant to improved business practices, which other retail managers can use to gain insight on their competitors' strategies. Based on the results of this study, I recommend the following:

1. Have designated personnel responsible for keeping shelves at capacity.

2. Conduct daily store recoveries.

3. Have a routine cycle count or *smart list* by department, especially for fast moving and highly pilferable items.

4. Whenever possible, conduct individual scans at the register as some products may look identical.

5. Use computerized merchandise control systems and RFID technology to manage inventory.

6. If stock cannot be located, immediately zero the balance to allow the inventory control system to reorder the product.

7. If possible, stock balance non-perishable products between stores to keep inventory turns high on slower moving products.

8. If possible, inventory pool non-perishable products between stores to satisfy customers who experience an out of stock.

9. For backroom or top-stock, ensure each item has a designated stowage location to prevent shrink.

10. Use available forecasting techniques to understand stock replenishment estimates and for making possible order adjustments.

Implications for Social Change

Understanding that a business problem and social problem do exist throughout northeast Jacksonville, Florida's local retail sector was the epitome of this study. One objective of identifying stockout quandaries in the retail sector is to increase customer satisfaction, increase customer loyalty, and increase company profits. Another objective of identifying these dilemmas is to highlight implications for social change. When stockouts occur downstream in the supply chain, a bullwhip effect ensues by creating amplified demand fluctuations between members in the supply chain (Badar et al., 2013; Buchmeister, Friscic, & Palcic, 2013). These fluctuations can lead to an increase in logistics costs and an increase on the consumption of natural resources. Therefore, implications for social change could help improve environmental sustainability and the potential to improve good business practices in retailing. This implication for social change aligns with Hart and Milstein who developed a sustainable value framework as a way of understanding the global challenges of sustainability and how it links to societies and shareholders (Hart, 2005). Their concept represents sustainability and social change from a business perspective to identify strategies that will contribute positively to the environment, yet increase shareholder value (Hart, 2005).

Recommendations for Action

The purpose of this study was to identify cost-effective inventory control strategies so local discount retail managers could reduce stockouts. The findings from this study may be distributed for use in comparable regions or disseminated in business organizations to train personnel who deal with efficiency or other process improvement

techniques. Personnel might include operations managers, retail managers, or supply

chain managers. I will disseminate a summary of the results to all participants and any

retail manager who may be interested in improving their inventory management

processes. Given the participants' extensive experience and knowledge of retail, each

made a recommendation:

1. DRM 1 recommended having nightshift employees perform down-stocking

    for shelf replenishment. As such, the dayshift employees will be in a better

    position to take care of customers during the day.

2. DRM 2 recommended being mindful of safety levels as lead-times for product

    replenishments vary. Additionally, DRM 2 recommended working with

    corporate analysts to make adjustments for dead inventory not meeting

    inventory turns.

3. DRM 3 recommended having inventory accuracy and integrity as a top

    priority. The participant was stating that both of these elements are tied to the

    profitability and survivability of companies.

4. DRM 4 recommended encouraging department managers to use available

    resources such as inventory reports to understand daily usage, weekly usage,

    and monthly usage for stocked items to anticipate unplanned events or other

    abnormalities.

5. DRM 5 recommended never letting a customer walk away simply because the

    item may be sold out. The job of all associates is to satisfy the customer, so

    offer alternative solutions.

6. DRM 6 recommended getting *buy-in* from associates by providing stock management training to help understand the importance of inventory management, replenishment strategies, and CRM.

Recommendations for Further Research

Based on the results of this study, I recommend further research on the following topics:

1. I recommend conducting a replicated study in different regions, which may expand transferability.

2. I recommend conducting a future research study with retail customers to understand how stockouts might affect customer loyalty and customer satisfaction.

3. I recommend conducting a future research study with e-commerce retailers to understand their strategies for reducing out of stocks.

4. I recommend conducting a future research study with analysts of retail companies to compare forecasting methods and algorithms for determining retail replenishment strategies.

5. I recommend conducting a future research study with corporate supply chain managers of retail stores to understand their processes for reducing out of stocks.

6. I recommend conducting a future research study to address consumer concerns that have arisen from using RFID technology. For example, RFID tags may be hidden inside products such as T.Vs.

7. I recommend conducting a future research study to determine if there is a return-on-investment using RFID. To my knowledge, no recent literature proves cost-benefits associated with using RFID technology.

8. I recommend conducting a future research study with vendors who fill stock replenishment orders for retailers with distribution centers. The study may distinguish differences in lead-times using VMI and lead-times using RMI for stock replenishment orders.

Reflections

Having a military logistics background, I had no preconceptions regarding retail inventory control strategies. Therefore, the research on this topic has led to reading over 250 scholarly articles. The research has expanded my breath of knowledge to a great extent on the subject of retail logistics and supply chain management. The research has increased my desire to learn more about the field and to become a contributing member in the supply chain community.

The research experience has been invaluable as well. I discovered the value of research and how to integrate processes. As such, I have learned research designs, sampling methods, data instruments, data collection techniques, data organization, data analysis, reliability, validity, and ethical standards in research. I also learned how to interview, transcribe, member-check, and code data. During interviews, I refrained from personal bias by not offering an opinion or any information that might influence the interview. I believe the experiences from this research study have better prepared me for future research challenges.

Summary and Study Conclusions

The purpose of this study was to explore cost-effective inventory control strategies used by discount retail managers. Retail managers traditionally carried more inventory than required until adopting inventory control strategies (Guimaraes et al., 2013; Martin & Iravo, 2014; Turk, 2012). Some cost cutting strategies caused unintentional problems in retail supply chains, which increased the risk of stockouts, decreased revenue, and decreased customer loyalty (Adusei & Awunyo-Vitor, 2014; Chin et al., 2012; Pizzi & Scarpi, 2013).

The research question to guide this study was: What cost-effective inventory control strategies do discount retail managers' use? In this study, I analyzed data from six participants located throughout northeast Jacksonville, Florida. Five themes emerged from the data: (a) internal stockout reduction strategies, (b) external stockout reduction strategies, (c) replenishment system strategies, (d) inventory optimization strategies, and (e) best practices for inventory control.

The responses from participants, documents collected from participants, and data from company websites led me to conclude that discount retail managers can successfully employ cost-effective inventory control strategies. However, a strong commitment to inventory control practices is required at all levels of leadership, to include nonsupervisory associates to have a well implemented strategy. The findings from this study could assist local discount retail managers who may be susceptible to frequent stockouts.

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Appendix A: Interview Questionnaire

1. What type of inventory control system does your company use?

2. How does your company's inventory control system manage the prevention of out-of-stock products?

3. What benefits are associated with using your company's inventory control system?

4. What negative experiences, if any, have been encountered using your company's inventory control system?

5. What types of internal inventory control strategies does your company use?

6. What types of external inventory control strategies does your company use?

7. How do you use inventory control strategies to reduce stockouts?

8. How do you use inventory control strategies to strike a balance between profitability and stockouts?

9. What else would you like to share about inventory control procedures?

Appendix B: Interview Protocol Form

Name: _____   Date: _____

Organization: _____   Time: _____

Pseudonym: _____   Location: _____

In order to participate in this study, the participant must meet the following requirements:

1. Be at least 18 years of age.

2. Have been a discount retail manager for at least 1 year.

3. Retailer is identified by the National Retail Federation as a top retailer.

In order to participate in this study, the participant must be responsible for one of the following:

(a) retail stock replenishment, (b) demand forecasting, (c) inventory management, (d) inventory optimization, or (e) other cost-effective inventory control strategies.

Researcher

☐ Private space chosen by the participant where other people will not be present during the interview.

☐ Introduce yourself and smile - make the participant feel comfortable.

☐ Length of interview: 40 minutes.

☐ Discuss the intent and purpose of the study.

☐ Provide structure of the interview (audio recording, taking notes, and use of pseudonyms).

☐ Explain that participants' name and organization will not be included in any section of the study.

☐ Explain participation requirements and how the participant can withdraw from the study.

☐ Explain how data will be preserved in a safe for 5 years and destroyed thereafter.

☐ Secondary public data collection (i.e., supporting documentation, policies, articles).

☐ Explain that no compensation will be provided to participants.

☐ Ensure the participant sign the informed consent form or consent in a reply via e-mail.

☐ Ask if the participant have any questions. ☐ Start audio recording.

Appendix C: Invitation to Participate and Informed Consent Form

Dear Retail Manager,

Invitation to Participate:
As a business leader and manager, you are being asked to participate in a doctoral study regarding retail inventory control strategies. You were chosen for this study because of your unique position as a discount retail manager and because your organization was identified by the National Retail Federation (NRF) as one of the top 100 retailers. This form is part of a process called "informed consent" to allow you to understand the study before deciding whether to take part. Please read this form and ask any questions you may have concerning the study prior to agreeing and participating in the doctoral study.

Background Information:
This study is being conducted by a researcher named Mackie Johnson, who is a Doctor of Business Administration student at Walden University. The purpose of this study is to explore what cost-effective inventory control strategies do discount retail managers' use.

Procedures:
If you agree to participate in this study, you will participate in a Skype or face-to-face interview in which you will be asked nine open-ended questions that directly pertain to the purpose of the study as mentioned above. The interview will be audio-recorded to ensure accurate transcription and analysis of the responses. After the interview, the researcher will request secondary public data such as supporting documentations, policies, or articles. After transcription, you will be contacted via phone or e-mail to member check my analysis of your responses and clarify statements where necessary. The maximum time for completing the interview is 40 minutes. Extra time will be allowed, as needed, to ensure participants have enough time to respond to all questions. In addition, the estimated time to review response summaries (member checking) is 40 minutes.

Volunteer Nature of the Study:
Your participation in this study is voluntary. This means that everyone will respect your decision of whether or not you want to participate in this study. If you decide to join the study now, you can still change your mind during the study. Withdrawal of participation is allowed at any time before publishing. Participants will not be required to complete anything in relation to the study upon their decision to withdraw from the study. Simply e-mail the researcher of your intentions should you decide to withdraw from the study. Again, your decision to participate in this study is voluntary and will remain confidential.

Risk and Benefits of Being in the Study:
There is minimal risk associated with this study. If you feel stressed during the study, you may stop at any time. You may also skip any questions that you feel are too personal. This study does not involve any physical risk and it is highly unlikely that you will be psychologically affected. The benefit of this study may include a greater understanding of retail inventory control strategies.

Compensation:
There is no compensation associated with participating in this doctoral study. However, a summary of findings will be provided upon completion of the study.

Confidentiality:
Any information that you provide will be kept confidential and used solely for the purposes of this doctoral study. The researcher will not use your personal information for any purpose outside of this research project. Also, the researcher will not include your name or any other identifying information in any reports of the study. I will use pseudonyms to protect your identification within the doctoral study. All data will be retained by either preserving hardcopy's or by keeping electronic information on a password-protected flash-drive. All research data will be stored in a safe accessible only by me. After 5 years, all hardcopy data will be shredded and all flash-drive files will be permanently deleted and physically destroyed, as required by Walden University.

Contacts and Questions:
You may ask any questions that you have now. Should you have questions later, you may contact the researcher via telephone at xxx-xxx-xxxx or xxxxxxxxxxxx@waldenu.edu. If you wish to discuss your rights as a participant privately, you may call xxxxxxxxxxxx, a Walden University representative. Her phone number is x-xxx-xxx-xxxx, extension xxxxxxx. Walden University's approval number for this study is 08-24-16-0484530 and it expires on 23 August, 2017. The researcher will provide you a copy of this form.

Statement of Consent:

I have read the above information, and I feel that I understand the study well enough to make a decision about my involvement. By responding via e-mail with the words "I Consent," or by signing below you are agreeing to the terms described above.

Printed Name of Participant   _____

Date of consent   _____

Participant's Signature   _____

Researcher's Signature   _____

Thank you for participating in the doctoral study.

Sincerely,

Mackie Johnson
Walden University, School of Management and Technology
DBA Candidate, Specialization: Global Supply Chain Management

Appendix D: National Retail Federation (NRF) - Top 100 Retailers Chart

1	Wal-Mart Stores	35	J.C. Penny Co.	69	PetSmart
2	The Kroger Co.	36	Aldi	70	QVC
3	Costco	37	Bed Bath & Beyond	71	Chick-fil-A
4	The Home Depot	38	SUPERVALU	72	WinCo Foods
5	Walgreen	39	7-Eleven	73	Tractor Supply Co.
6	Target	40	Ross Stores	74	Barnes & Noble
7	CVS Caremark	41	Verizon Wireless	75	A&P
8	Lowe's Companies	42	Starbucks	76	AVB Brandsource
9	Amazon.com	43	Family Dollar Stores	77	Signet Jewelers
10	Safeway	44	Bi-Lo	78	Foot Locker
11	Best Buy	45	L Brands	79	Big Lots
12	McDonald's	46	Menard	80	Hudson's Bay
13	Publix Super Markets	47	Trader Joe's	81	Alimentation Couche-Tard
14	Apple Store / iTunes	48	Wendy's	82	Defense Commissary Agency
15	Macy's	49	Burger King Worldwide	83	Neiman Marcus
16	Rite Aid	50	Dollar Tree	84	Jack in the Box
17	Royal Ahold / Ahold USA	51	Hy-Vee	85	Ascena Retail Group
18	Sears Holdings	52	Army / Air Force Exchange	86	Burlington Coat Factory
19	TJX	53	Dunkin' Brands Group	87	Ikea North America Services
20	H-E-B Grocery	54	Health Mart Systems	88	Williams-Sonoma
21	YUM! Brands	55	AutoZone	89	Save Mart Supermarkets
22	Albertsons	56	Toys "R" Us	90	Panera Bread Company
23	Kohl's	57	Wegmans Food Market	91	Advance Auto Parts
24	Dollar General	58	O'Reilly Automotive	92	Michaels Stores
25	Delhaize America	59	DineEquity	93	True Value Co.
26	Meijer	60	Giant Eagle	94	Domino's Pizza
27	WakeFern / ShopRite	61	Sherwin-Williams	95	Belk
28	Ace Hardware	62	Dick's Sporting Googs	96	Chipotle Mexican Grill
29	BJ's Wholesale Club	63	Staples	97	Sonic
30	Whole Foods Market	64	Office Depot	98	Stater Bros. Holdings
31	Doctor's Assoc. / Subway	65	Dillard's	99	Price Chopper Supermarkets
32	Nordstrom	66	Good Neighbor Pharmacy	100	Dell
33	Gap	67	Darden Restaurants		
34	AT&T Wireless	68	GameStop		