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Pharmacy Manager System Implementation Strategies to Mitigate the Cost of Prescription Errors

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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,
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Walden University
2023

Abstract

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by

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MS, Texas Woman's University, 2010

BS, Texas Southern University, 2007

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

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Abstract

One of the most frequent medical errors in contemporary medicine is incorrect prescriptions, and the profits from retail pharmacy operations are adversely impacted by the costs associated with prescription errors. Independent pharmacy managers are interested in finding workable strategies to mitigate the cost of prescription errors and increase profit. Using the resource-based theory of competitive advantage (RBTCA), the purpose of this qualitative multiple-case study was to explore strategies some independent pharmacy managers in Texas use to mitigate the cost of pharmacy employee prescription errors and increase profitability. The participants were five independent pharmacy managers who implemented strategies to mitigate the cost of prescription errors. Data were collected using semistructured, face-to-face interviews, a review of company documents, and site observation notes. Through thematic analysis, four themes emerged: (a) cost of prescription quality check and errors reduction strategy, (b) increased profitability strategy through error cost mitigation, (c) positive utilization of organization resources strategy, and (d) technology system implementation strategy to reduce prescription errors. A key recommendation is for independent pharmacy managers to involve pharmacy staff in developing the pharmacy system to promote user acceptance, which will assist in reducing prescription errors and raising profit. The implications for positive social change include the potential to mitigate the cost of prescription errors, prevent hospitalization and fatalities caused by medication errors, enhance patients' quality of life, and boost the economy and employment opportunities in their communities.

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Dedication

I dedicate this doctoral study to God in gratitude for the gift of my life and good health to continue to serve Him and to love all people. Also, I thank Him to enabled me to go through this challenging but worthwhile experience. I also dedicate this work to my beautiful wife, Dr. Mojisola Cardozo. She has given me a great deal of domestic support, unmatched understanding, and reassurance when needed. I further dedicate this research to my two daughters, AyoOluwa (my baby) and Oluwatomisin (Wowo), and my son Oluwakorede (Omo Iya mi) for their understanding in allowing me to use some of our family time for study, and sometimes studying alongside with me. Finally, to my late father, Navy CDR Oliver Shotayo Cardozo (retd), and my mother, Theresa Aduke Cardozo, who both worked tirelessly to steer my siblings and me in the right direction and kept our focus on the benefits of a good education.

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Section 1: Foundation of the Study

Background of the Problem

The purpose of this study was to learn about the strategies used by pharmacy managers to mitigate the cost of prescription errors and boost profits. The pharmacy manager system, such as Computerized physician order entry (CPOE) implementation within healthcare facilities, has improved medication safety, reducing medication errors and wrong-time administration errors (York et al., 2019). The health information exchange (HIE) method is a reliable mechanism for nurses, doctors, patients, and pharmacists to share electronic health information among health care organizations (Hutton et al., 2021). Health information exchange (HIE) allows patients' records to be kept in the same area as patients.

Independent pharmacy managers can improve their business practices' overall effectiveness by implementing new technology forms. Leaders make adoption decisions based on perceived ease of use effectiveness and decreased risk while also considering the cost-cutting benefits of technology (Ma, 2021). According to Zheng et al. (2016), HIE practices improved healthcare safety efficiency, resulting in revenues from healthcare organizations. Independent pharmacy managers are continuously looking to embrace strategies with a track record of success to lower the cost of prescription errors because of the significant expense of preventable medical and pharmaceutical errors.

Effective dispensing and communication between pharmacists and patients are essential. Pharmacy employees' dispensing incorrect prescriptions to customers exposes the pharmacy business to legal and regulatory risks, unsatisfied customers, and reduced

profitability (Singh et al., 2020). CPOE systems and the difficulty of sharing information among healthcare facilities are major contributors to medical errors that cause over 7,000 to 9,000 deaths annually (Chien et al., 2021; Hutton et al., 2021). The system implementation strategies' effect can extend the positive benefits to patient outcomes following technology implementation.

Problem and Purpose

The specific business problem was that some pharmacy managers lack strategies to mitigate the costs of prescription errors and increase profitability. The purpose of this proposed qualitative multiple case study was to explore strategies some pharmacy managers in Texas use to mitigate the cost of pharmacy employee prescription errors and increase profitability.

Population and Sampling

I used a purposive technique in this study. The target population was pharmacy managers from five pharmacies in Texas who have successfully implemented strategies to increase pharmacy profits by mitigating prescription errors of pharmacy employees. I collected data through face-to-face interviews using a semistructured interview process designed to elicit their lived experience addressing the employee prescription errors and reviewing company documents and records for relevant information and observing the onsite workstation process.

Nature of the Study

I conducted this study using the qualitative research method. Qualitative, quantitative, and mixed-method research are the three types of research (Yin, 2018).

Researchers agree that using a qualitative technique to explore the human experience from respondents' viewpoints and obtain a more excellent knowledge of the participants' ideas, observations, and expertise on a topic of interest in their natural context is an effective strategy (Prasasti et al., 2021). A quantitative technique was not appropriate for acquiring thorough and rich information on this complex problem due to the exploratory nature of this research question. A quantitative approach demonstrates statistical correlations between variables rather than an in-depth examination of the topic (Maxwell, 2021). Dzwigol (2020) asserted that a mixed-method study that combines quantitative and qualitative methodologies is complicated. Due to the exploratory nature of this research question, integrating quantitative and qualitative approaches in a mixed-method strategy was inappropriate for gathering comprehensive and rich information on this problem.

I considered four designs for this qualitative study: case study, phenomenology, ethnography, and narrative inquiry. Phenomenologists investigate a phenomenon by delving into the meanings of people's or groups' lived experiences (Ataro, 2020). Because I did not collect data on participants' actual experiences, I did not employ a phenomenological design. Second, ethnographers focus their research on a particular cultural topic (Baskerville & Myers, 2015; Collins et al., 2020). I did not use an ethnographic design because I was not focused on a specific cultural phenomenon. Third, narrative inquiry researchers concentrate on the participants' life stories (Challinor et al., 2021). I did not employ a narrative inquiry design because I did not engage in the participants' personal stories. Finally, researchers use a multiple case study design to

collect data from various case units to delve further into complex phenomena (Yin, 2018; Fearon, 2021). Because I gathered data from multiple pharmacies to investigate the complicated phenomena of a prescription error, the multiple case study methodology was the best fit for my research.

Research Question

The research question for this study was: What strategies do some pharmacy managers use to mitigate the cost of prescription errors and increase profitability?

Interview Questions

1. What are key strategies used in your organization to reduce prescription errors?
2. How is implementing computerized physician order entry (CPOE) beneficial?
3. What strategies do you use to overcome the barriers to medication error reduction?
4. What strategies do you use to increase profit by mitigating prescription errors?
5. How did pharmacy employee training and development complement or affect your strategies to reduce prescription errors?
6. How did the employees react to your implemented strategies?
7. What specific actions hinder the proper usage of health information exchange (HIE) for technological inputs to reduce medical errors?
8. What additional information can you share to help me understand your strategies to mitigate the cost of prescription errors and increase profitability?

Conceptual Framework

The concept that I used to ground this study was the resource-based theory of competitive advantage (RBTCA). According to a growing corpus of studies, evidence-based pharmacy practice changes are proving to be effective (Wang et al., 2021). Pharmacy managers must be able to demonstrate the effectiveness of changes to their practices. Innovations in pharmacy practice must be adopted, scaled, and sustained (Livet et al., 2018). Barney (1991) proposed the resource-based theory of competitive advantage (RBTCA), which is considered one of the well-grounded theories of strategic management that continue to evolve in the literature, making it valuable to add more insight to the body of knowledge (Worlu et al., 2016). One theory cannot account for every issue but expanding the body of knowledge is a positive step.

The RBTCA is a useful framework for describing the long-term viability of any business innovation (for example, a pharmacy service;) (Barney, 2001; Holdford, 2018). Barney stated that innovations attain long-term competitive advantage by amassing and exploiting resources under challenging ways to replace or mimic. Barney further claimed that successful inventions are determined by factors other than the innovation itself (Holdford, 2018). The RBTCA's critical construct for pharmacy service sustainability is: (a) the firm's internal resources, (b) the firm's capabilities in utilizing those resources, (c) the competitive advantage of its resources and capabilities to the firm, (d) the attractiveness of the market in which it competes, and (e) the contribution of innovation to the firm's financial performance (Holdford, 2018; Pontinha et al., 2021). Holdford and Pontinha et al. (2021) stated that RBTCA offers a prism through which pharmacy

managers promote utilization of resources and mitigate the cost of prescription errors. Therefore, a pharmacy's positive resource use is likely to foster pharmacy managers to mitigate the cost of prescription errors. Because competition is such an essential part of pharmacy practice, the RBTCA can be used to study internal resources and capabilities in using those resources such as medication and medication errors, and the firm's financial advantage, pharmacy profitability (Pontinha et al., 2021). The theory has been thoroughly researched, and it can be used by researchers to comprehend and explain what works, where it works, and why it works.

Operational Definitions

Adverse drug event: An adverse drug event, often known as a harmful side effect, is an injury induced by the administration of medication rather than the underlying condition (Falconer et al., 2018; Fan et al., 2020).

Computerized physician/provider order entry (CPOE): Computerized physician/provider order entry is the process of a medical professional entering orders for medication or other physician instructions electronically instead of using paper charts, fax, or telephone (Ash et al., 2003; HealthIT, 2021).

Computerized physician order entry (CPOE) implementation: The process of executing a strategy, techniques, specification, standard, or policy of CPOE in health care organizations (Romanow et al., 2018).

Electronic health records (EHR): An electronic version of a patient's medical history, diagnoses, medication, treatment plans, immunization, allergies, radiology report, and laboratory results which is maintained by the provider over time, including

all key administrative clinical data for each patient. The EHR strengthens the relationship between clinicians and patients (HealthIT, 2021; Xiao et al., 2018).

Electronic prescribing: Health care providers can enter prescription information into a computer device – such as a tablet, laptop, or desktop computer – and securely transmit the prescription to pharmacies using a unique software program and connectivity to a transmission network with electronic prescribing, or "e-Prescribing." When a pharmacy receives a request, it can immediately fill the prescription (HealthIT, 2021; Williams et al., 2022).

Health information exchange (HIE): The electronic exchange of health-related data between entities in accordance with nationally accepted norms (Akhlaq et al., 2017).

Medication error: A medication error is an avoidable, preventable occurrence that can result in inappropriate pharmaceutical use or injury to a patient while the medication is in the control of a healthcare provider, a patient, or a consumer (Assiri et al., 2018).

Patient safety: Patient safety is the prevention of adverse effects and errors for patients associated with health care. Healthcare has become more effective and becomes more complex with the greater use of medicines, treatments, and new technologies (Lee et al., 2019).

Prescription errors: Prescription errors are usually the result of slips, lapses, or blunders. For example, writing a dose that is orders of magnitude larger or lower than the right one due to erroneous computation or wrong prescription due to identical drug brand names or pharmaceutical names. (Arenas-Villafranca et al., 2018).

Sound-alike, look-alike drugs: Sound-alike, look-alike drugs are medications that look alike in appearance, with similar-sounding names (Weingart et al., 2018).

Assumptions, Limitations, and Delimitations

Assumptions, limitations, and delimitations are part of a thorough and systematic research process. A researcher can improve the transparency, trustworthiness, and objectivity of a study by identifying assumptions, limitations, and delimitations specific to the phenomenon of the study (Theofanidis & Fountouki, 2019).

Assumptions

Assumptions are ideas that researchers accept to be true despite the absence of verifiable proof with the available evidence and identify the knowledge gap regarding using a philosophical assumption to address their research topic (Almasri & McDonald, 2021). My first assumption was that the independent pharmacy managers I interviewed provide honest and accurate answers to all questions and possessed the needed knowledge to provide relevant information regarding what strategies pharmacy managers use to mitigate the cost of prescription errors and increase profitability. My second assumption was that the company's prescription error records and documents were accurate and complete.

Limitations

Limitations are the constraints and other factors that the researcher has no control over that can affect the study design and findings, and thus they need to be identified (Ross & Zaidi, 2019). A potential barrier when collecting primary data includes the financial statement, difficulty recruiting participants for interviews, and resistance to

sharing prescription errors by participants. Another constraint of this qualitative study was that the accuracy and reliability of the interview data I collected was dependent on the subjective experiences and judgments of five independent pharmaceutical store managers. The participants' opinions may not have reflected the views of the entire community pharmacy leadership.

Delimitations

Delimitations are criteria established by the researcher to define the study's boundaries to ensure that the research objectives may be met (Theofanidis & Fountouki, 2019). Identifying subjects with knowledge of successful strategies used by some pharmacy managers to reduce the cost of prescription errors and boost profitability was a primary delimitation of this study. I used the geographic region of Texas and the sample population limitation of five experienced managers in the retail and pharmaceutical industries to address this delimitation. The study's scope will be limited by the inclusion criteria of leaders or managers who had successfully implemented strategies to increase profitability by reducing prescription errors.

Significance of the Study

This study is significant because independent pharmacy managers operate in a highly competitive and essential setting. To sustain organizational competitive advantage and increase profitability, they must search out unique solutions. The importance of this study is that company leaders in the independent pharmacy industry can acquire a competitive advantage over their competitors. Pharmaceutical executives may obtain access to contemporary and relevant strategies for improving the implementation of the

pharmacy system, such as CPOE, HIE process, mitigating prescription errors, and increasing corporate profit.

Contribution to Business Practice

Pharmacy managers can learn about current and relevant strategies for mitigating prescription errors, reducing costs, and ultimately contributing to the organization's competitive advantage. Pharmacy managers can also employ strategies that have helped other executives minimize the cost of prescription errors, hence increasing corporate profitability. Because of the findings, reduced prescription errors and pharmacy prescription turnaround times may favorably impact pharmacies' performance. According to Ghattas and Al-Abdallah (2020), pharmacy managers may discover newer, more proven strategies for providing excellent customer experiences by exceeding clients' expectations for quality products and services. Pharmacy managers may learn how to fulfill consumer expectations, enhance profits, and train personnel on pharmacy systems, such as CPOE and HIE process implementations to prevent prescription errors and the costs that come with them. The outcomes of this research could be useful in various pharmacy practice contexts, such as retail or independent pharmacies.

Implications for Social Change

The findings of this study could: (a) be useful in various pharmacy practice settings, such as in retail or independent pharmacies, (b) foster social change by catalyzing economic growth, and job opportunities, and (c) enhance societal wellness such as adult well-being, positive youth development, and community development (McMichael & Weber, 2020). Pharmacy leaders may use the study's findings to improve

patient health and the efficiency of healthcare technology. Pharmacy leaders who learn how to train personnel to prevent prescription errors and the costs that come with them, may foster positive social change through patient prescription error reduction, positively impacting individual patient health and the overall well-being of families and communities, resulting in healthier communities. The most often asked questions while researching customer loyalty in the pharmacy sector, according to Wongleedee (2020), concern customer interactions with the company's staff. As a result, training pharmacy staff members is crucial to ensuring quality client care.

Because of this social transformation, customers may suffer fewer unnecessary health related setbacks from inaccurate prescriptions, quicker recovery periods while sick, fewer hospitalizations, and even fewer fatalities due to taking the proper medication. According to Mariotto et al. (2020), eliminating pharmacy prescription errors saves healthcare costs and improves patient safety. Customers who heal more quickly from their illnesses due to accurate prescriptions may have more time to assist in the community. Such patients could help the community by volunteering at community health centers, churches, and firefighters or peace officers at the local police stations.

A Review of the Professional and Academic Literature

The purpose of this qualitative multiple-case study was to explore the business strategies some pharmacy managers use to mitigate the costs of prescription errors and increase profitability. Professional and academic literature was relevant in establishing the foundation for this study. In compliance with Walden University doctoral study requirements, I have used 224 sources for the entire study. Out of the total sources, 204,

which is 91%, were published less than 5 years from 2023, which is my anticipated year of graduation. Of the total sources, 198 are peer-reviewed, which is 88% of the total sources. I used 98 sources were used in this literature review. 84 sources, which are 86%, were published less than 5 years from 2023, which is my anticipated year of graduation. Out of the 98 sources, 89 sources are peer-review, which is 92% of the total used for literature review. I used peer-review scholarly articles using the following Walden University Library databases: BioMedCentral, CINAHL & MEDLINE, EBSCOhost, Free Medical, ProQuest, SAGE, Thoreau, and World Health Organization. The following keywords were used to search the different databases for relevant journal articles: *pharmacy managers*, *pharmacy owners, pharmacy, prescription errors, medication errors*, *pharmacy and errors, pharmacy and litigation*, *profitability, independent pharmacy, HIE*, *EHR,* and *patient safety*. The literature review is organized by theme and will be divided into the following ten sections: resource-based theory of competitive advantage, failure mode and effects analysis (FMEA), CPOE implementation, process and procedure, barriers/government policy, medication errors, patient safety, and profitability.

Resource-Based Theory of Competitive Advantage

The purpose of this study was to explore the strategies pharmacy managers use to mitigate the cost of prescription errors and increase profit. The conceptual framework for this multiple case study was the resource-based theory of competitive advantage (RBTCA). Barney (1991) proposed the resource-based theory of the firm, which is considered one of the well-grounded theories of strategic management that continue to

evolve in the literature, making it valuable to add more insight to the body of knowledge (Worlu et al., 2016). The RBTCA serves as a framework for describing the long-term viability of any business innovation such as a pharmacy service (Barney, 2001; Holdford, 2018). This is so because the sources of competitive advantage in resource-based theory will help sustain the organization in the long run.

Far too many practice innovations fail to survive past the initial implementation and study phase. According to Holdford (2018), the RBTCA demonstrates that innovations achieve long-term competitive advantage through collecting and using resources in challenging to replace or replicate ways. That is, the organization expects to survive and sustain its initial innovation implementation if its resources are used in challenging to replicate ways.

The effectiveness of evidence-based pharmacy practice strategies for mitigating information technology discrepancies in pharmacy organizations was relevant to my study. According to Barney et al. (2021), a growing body of research demonstrates the effectiveness of evidence-based pharmacy practice. According to Holdford (2018), the RBTCA is a framework for describing, understanding, and predicting the adoption and dissemination of pharmacy service innovations into routine practice. Barney et al. (2021) agreed with Holdford (2018) that the sustainability of any business innovation (e.g., pharmacy service) is based upon (a) the internal resources of the firm offering it, (b) the firm's capabilities in using those resources, (c) the competitive advantage to the firm of its resources and capabilities, (d) the attractiveness of the market in which it competes, and (e) the innovation's contribution to the financial performance of the firm. Schauerte

(2021) acknowledged that firms can synergistically pursue resource-based theory strategic diversification options to transform their traditional business. Holdford (2018) noted that the RBTCA provides a foundation for comparing findings from different research frameworks and studies relating to innovations in services, service processes, and service business models. Barney et al. (2021) supported Holford's number of research questions related to the theory that can be used to further the literature about pharmacy practice innovations. Intangible resources, such as digital technology, assist organizations in creating competitive relational capacities, according to Chaudhuri et al. (2022). Finally, Holdford (2018) argued that competition is a fundamental aspect of pharmacy practice. The RBTCA can serve as a general theory for studying innovations in pharmacy practice and the social and administrative sciences. The resource-based theory related to my specific study regarding strategies for mitigating information technology discrepancies in pharmacy organizations because the firm's internal resources and capabilities in using those resources model, included in this theory, focus on outcomes management and quality improvement.

The RBTCA was the conceptual framework for this study. Holdford (2018) identified the following four stages of the RBTCA theory model of pharmaceutical innovation based on numerous writers' work (Barney, 1991; Eloranta & Turunen, 2015; Hunt, 2013): (a) firm resources, (b) firm capability, (c) competitive advantage, and (d) financial performance. According to the framework, the ability of innovation (such as a pharmacy service) to add to the firm's competitive advantage and financial performance

in the market setting in which it is introduced determines its long-term viability (Alam et al., 2018; Pontinha et al., 2021).

Firm Resources

Utilizing company resources and competencies to get a competitive edge in a potential market is essential. Barney (1991) defined resources as assets, capabilities, organizational processes, firm attributes, information, knowledge, and other things a firm holds that enable it to conceive of and implement plans that improve its efficiency and effectiveness. According to Fang et al. (2022), different endowments in organizational resources affect business performance as assessed by survival status and sales growth. These resources interact with and influence strategic input supply, demand response, liquidity management, and innovation responses (Fang et al., 2022). In the case of this study pharmacy systems, such as CPOE and HIE are the resources to be explored to see how they are used to mitigate the cost of prescription errors. Resources include: (a) financial (e.g., cash, access to credit) (b) physical (e.g., building, fixtures, equipment), (c) legal (e.g., patents, trademarks), (d) human (e.g., clinical, managerial, and interpersonal skills), (e) organizational (e.g., culture, institutional knowledge, policies), (f) informational (e.g., proprietary knowledge about operations and market), and (g) relational (e.g., relationships with suppliers and customers).

There are two types of resources: tangible and intangible. Buildings, fixtures, land, machines, people, and technology are examples of tangible resources. While institutional knowledge, proprietary information, brand recognition, management skills, financial assets, and organizational culture are intangible resources.

Firms that amass the necessary tangible and intangible resources can gain a competitive advantage over their competitors if those resources enable them to deliver better and more difficult-to-copy service innovations. Intangible resources, in general, provide higher long-term competitive advantages because they are difficult to duplicate. Drive-through services, patient counseling areas, and touch-screen interactive kiosks are tangible innovations that offer a competitive advantage for a limited time because competitors can readily imitate or acquire them. Intangible variables such as a pharmacist's experience servicing patients at the drive-through and counseling sections, as well as proprietary software incorporated within the kiosk, are more challenging to replicate. The pharmaceutical literature has identified a wide range of resources linked to competitive advantage (Holdford, 2018; Pontinha et al., 2021). Although various resources supporting innovative pharmaceutical services have been investigated in the literature, the studies are unconnected from any overall framework, resulting in a partial knowledge of their roles in competitive advantage.

Firms Capabilities

Capabilities indicate a company's ability to successfully employ its resources to meet the needs of its customers and stakeholders. The study of how firms use capabilities to gain a competitive advantage and improve performance has gotten much scholarly attention (Irwin et al., 2022). When properly used and under favorable conditions, businesses can use both ordinary and dynamic capabilities to achieve improved performance (Irwin et al., 2022). For example, during the COVID-19 pandemic, Li et al. (2022) identified three characteristics of the crucial importance of

knowledge management capabilities in a firm's strategic emergency response: Before the crisis, businesses should improve their knowledge acquisition, sharing, and integration so that they can better monitor unknown risks; during the crisis, businesses should improve knowledge transmission, transformation, and diffusion to improve emergency cooperation; and after the crisis, businesses should improve knowledge evaluation, creation, and application to enhance "immunity" in future crises.

Organizational skills refer to a company's capacity to complete a sequence of coordinated tasks while utilizing organizational resources to achieve a specific goal. Organizational and dynamic skills can be separated (Den Hertog et al., 2010). Dynamic capabilities refer to a company's ability to adapt to and thrive in quickly changing settings by combining physical, human, and organizational resources (Holdford, 2018). Dynamic capabilities describe a company's ability to adjust to change, whereas organizational capabilities represent its ability to manage orders. The former is referred to as *management ability*, while the latter is referred to as *leadership capacity* by Kotter (2009). Essential managerial and leadership competencies in the company's managerial, marketing, financial, and technological components can be divided into four categories.

In a market, organizational core competencies are essential. The term *core competence* was used by Hamel and Prahalad (1990) to characterize a company's distinguishing qualities. They defined core competencies as a coordinated set of resources and talents that help a company stand out in the marketplace. For a firm to be competitive, core competencies need to, (a) allow access to a wide variety of markets, (b)

make a significant contribution to the perceived customer benefits of the product, and (c) be difficult to imitate by competitors. In the literature, core pharmacy practice competencies of individuals and organizations linked to competitive advantage have been described (Hajj et al., 2021). Firm resources and capabilities are the strengths and weaknesses section of a SWOT analysis, which explains a company's aspects that are most likely to represent a competitive advantage or a market vulnerability.

Sustained Competitive Advantage

Creating a sustained competitive advantage in a world of severe environmental unpredictability is difficult. The rise of digital database marketing and technology helped businesses better monitor client information, transforming the buyer-seller relationship (Denga et al., 2022). Internal pharmacy resources and capabilities used by pharmacy managers aid in the creation of competitive advantage. The speed with which the firm successfully answers external issues by altering internal resources and capabilities works to its benefit, resulting in organizational performance. In resource-based theory, resources and capabilities are the sources of competitive advantage (Barney, 1991). When a company uses its resources and capabilities to provide something unique and valuable that sets it apart from competitors, it gains a competitive advantage. In this new terrain, intangible assets like reputation and legitimacy, according to Miotto et al. (2020), are essential variables for establishing a lasting competitive advantage. Only determinant traits that determine the choice between competitors can give you a competitive advantage. A competitive advantage can be gained by an innovation that is deemed to have a clear benefit on determinant attributes (Pontinha et al., 2021). For example, an

independent pharmacy's individualized services may provide a competitive advantage for customers who value personalized treatment. As a result, positioning seeks to uncover determining aspects regarding innovation and emphasize their competitive advantages (Holdford, 2018). The positioning of a pharmacy practice innovation concerning competitors determines its competitive advantage. Customers' perceptions of innovation are described by position. The positioning also refers to innovation characteristics (for example, convenience and personalization) that set it apart from competitors (Holdford, 2018; Pontinha et al., 2021). A clear, unique, and appreciated image in customers' minds provides a competitive edge.

The term *sustainability* refers to an innovation that provides a competitive advantage that can be maintained for a long time in a market. Despite the existence of an imitation strategy (Ali, 2021), firms will be successful if they use resources and capabilities in ways that are difficult to imitate, as stated above and fend off competitors' attempts to reduce their competitive advantage. Competition is a never-ending battle amongst businesses to present a clear and distinct value proposition (Holdford, 2018). For financial benefits to exist, competitive advantage must be maintained over time. Organizations with a competitive advantage must invest in resources and build competencies continuously. Firms with a wide variety of distinctive competencies across several market segments may be able to outperform firms with a limited set of competencies (Palacios-Marques et al., 2019). According to Hamel and Prahalad (1990), a firm can leverage a portfolio of core competencies to establish a sustained competitive

advantage through inventing new markets and exploiting emerging opportunities. Managerial core competence is vital in a marketplace to maximize opportunities.

Overall, competitive advantage is a never-ending transition process with no end in sight. Various researcher has explored a competitive advantage in pharmacy practice, according to Pontinha et al. (2018). Some researchers have focused on determining the factors that influence pharmacy patronage (Patterson et al., 2019) and patient preferences for pharmacy services (Policarpo et al., 2019). Others have looked at service sustainability, implementation science (Patterson & Holdford, 2017), different competencies, and intellectual capital (ADLE & Akdemir, 2019). The study outcomes show that competitive advantage in pharmacy practice is situational and dependent on the markets in which it is practiced.

Market Attractiveness

Market attractiveness refers to the management's use of a market's ability to contribute to a company's success. Because mass-market inventions are uncommon in any business, *market* refers to segments rather than the overall market. For innovation to thrive, competitive advantage must reflect the potential of specific market segments (Lestari et al., 2020). The ability to harness market potential stems from a company's ability to quickly react to changing market circumstances by combining internal and external talents and resources (Eloranta & Turunen, 2015). The idea is to align competitive advantage with the appropriate market segments (Lestari et al., 2020). An innovation may be successful in one market segment but not in another. Porter's five forces are a prominent framework for evaluating a market's attractiveness (Isabelle et al.,

2020). Five industry forces determine the intensity of competition in a market, according to this framework: barriers to entry for competitors, rivalry among industry incumbents, the threat of substitutes for what a firm offers, buyer bargaining power for the firm's outputs, and supplier bargaining power for the firm's inputs. An unappealing market creates a solid and costly battle for clients (Holdford, 2018). According to Porter's framework, firms must grasp the forces that are most relevant to their market segments. Consequently, the variables influencing the financial performance of pharmaceutical innovation in one market may differ from those affecting the financial performance of a pharmacy innovation in another. However, some fundamental forces influence competition (Holdford, 2018). An appealing market is one in which a competitive advantage may be built and maintained profitably.

Barriers to Entry

In the United States, prescription drug prices continue to climb uninterrupted, owing to a system that allows brand-name drugmakers to charge whatever the market will bear. Drugs that require a drug delivery system for appropriate administration are among the most expensive medications in the United States, both in terms of price and overall expenditure (Sinha, 2022). Respiratory inhalers, immunologic medications, opioid overdose reversal drugs, chronic pain patches, emergency anaphylaxis treatments, and insulin products are examples (Sinha, 2022). Profitable markets entice new businesses to enter the market. New rivals will boost supply and lower prices, reducing profitability for all companies in the industry. The ease with which these new competitors can enter a

market is determined by market entry barriers (Holdford, 2018). In pharmacy markets, there are numerous obstacles to overcome.

Various municipal, state, and federal bodies control pharmacy practice, making it one of the most regulated professions. Any newcomer to the market must clear several regulatory hurdles. Large pharmacy chains, which account for a considerable portion of the prescription drug market, benefit from economies of scale (Scott & Walker, 2018). Larger enterprises with comprehensive geographic coverage for covered patients have preferential access to those health insurance markets.

Pharmaceutical benefit managers (PBMs) encourage pharmacies to join limited networks that provide network pharmacies with exclusive access to insured patients. Larger companies can easily accept low-profit margins on prescription medicine sales, making the industry less appealing to newcomers (Grubb & Newbery, 2018). Due to the impact of (PBMs), which function as mediators between pharmacies and healthcare insurance, switching costs are another impediment (Holdford, 2018). Outside the network, pharmacists are barred from obtaining reimbursement for insured patients, while inside the network, pharmacies must accept tight terms of service and endure contentious auditing procedures (Holdford, 2018). Leaving those networks has high switching costs since it cuts pharmacies off from large markets of insured people. However, pharmacies with distinct value propositions may still enter the market (Holdford, 2018; Yarahmadi et al., 2022). For example, the online pharmacy PillPack, which Amazon.com recently acquired for around USD1 billion, carved out a niche by providing a consumer-friendly

full-service pharmacy that fills prescriptions and distributes pills in pre-sorted doses to manage various medications easier (Holdford, 2018).

Industry Rivalry

A single road crossing may have two or three community pharmacies in some areas. In the United States, competition is fierce, with over 90% of people living within 5 miles of a pharmacy (Adunlin et al., 2020). Prescription medicines can be purchased from independent or chain pharmacies, grocery stores, major discount stores, pharmacy benefit managers, and various other locations (Fittler et al., 2018; Holdford, 2018). Patients can purchase prescription pharmaceuticals via omnichannel retail strategies such as the internet, smartphone apps, drive-through, drone delivery, and even face-to-face contact with a pharmacist 24 hours a day, 7 days a week (Holdford, 2018; Weinstein, 2018). This illustrates how challenging it is to break into and gain market share.

Despite the fierce competition for drug sales, there are still prospects for pharmacy innovation. Many areas are far from a pharmacy or have populations neglected by pharmacy services (Qato, 2017). Another possibility is for pharmacists to transition from dispensing to primary care duties (Prasad et al., 2020), as evidenced by new business models such as the pharmacy hub. In the hub model, the local pharmacy is a source of primary care, prescriptions, point-of-care diagnostics, insurance, financing, and advice on how to get and remain healthy (McMillan et al., 2013). The hubs system's concept promotes wellness among the population that big-chain pharmaceutical companies have largely ignored.

The Threat of Substitutes

A replacement for a service bundle is distinct, yet it satisfies similar customer needs and desires. In dispensing duties, pharmacy personnel and technology such as robots can take the place of pharmacists. Physicians, nurses, nurse practitioners, physician's assistants, and other health care providers can fill in for pharmacists in primary care. Each healthcare provider provides a distinct primary care approach to patients with similar requirements (Holdford, 2018; Pontinha et al., 2021). Primary care replacements are a genuine danger, and pharmacists must use all their resources and competencies to compete. One clear benefit is that pharmacists are readily available in the community.

Every pharmacy visit provides an opportunity to build a therapeutic relationship with a patient. Pharmacists must successfully sell themselves to take advantage of these prospects (Mirzaei et al., 2018). A pharmacist's knowledge of drugs and drug-related issues is another benefit. This can be applied to increasing drug adherence, immunizations, health promotion, and the use of non-prescription medications, among other things.

Bargaining Power of Buyers

Their negotiating power describes the sensitivity of purchasers to price changes in what is being supplied. Buyers with bargaining power might pressure pharmacies to accept lower pricing for their output (Moses et al., 2013). Buyers of pharmacist services in the United States have tremendous bargaining power over sellers. The pharmacy benefit managers (PBM) business, where three organizations manage nearly 85 percent of all prescription claims: Express Scripts, CVS Caremark, and OptumRx, is one of the most

critical pharmacist buyers' services (Royce, 2019). The US government is another powerful buyer, forcing pharmacies to innovate through pay-for-performance and value-based purchasing strategies.

The federal government can acknowledge pharmacists as providers and set more excellent standards for the scope and quality of pharmacy services. Consolidation (pharmacies buying other pharmacies) and vertical integration (Barlas, 2018) has been used by large pharmacy chains to adapt (pharmacies merging with healthcare insurers and wholesalers). Private market buyers often follow Federal guidelines, allowing the government to push pharmacies to provide more primary care services. Rather than hoping for the best, pharmacists try to operate within the business structures that various payers have developed (Holdford, 2018). Pharmacists operating within the payer's structure maintain stability and sustainability.

Bargaining Power of Suppliers

Supplier bargaining strength refers to the extent to which suppliers can compel businesses to pay more for supplies. Drug producers, distributors, labor, services, and other inputs are examples of suppliers to pharmacy service providers (Holdford, 2018). Supplier bargaining strength is usually determined by the number of input providers or the availability of substitute suppliers. In extreme circumstances of supplier power, businesses have few options other than to accept the terms their supplier demand.

Pharmaceutical corporations and the pharmacist labor pool in pharmacy practice are the primary providers. Pharmaceutical corporations have a lot of control over the price of single-source drugs, but not so much over multisource drugs (Hernandez et al.,

2020). According to anecdotal evidence, the lower cost of pharmacist labor due to overstocking may reduce the cost of labor-intensive pharmacist innovations (Holdford, 2018). Because of the excess of pharmacists in some areas, the pharmacist labor pool has lost a lot of bargaining power with employers.

Supporting and Alternative Theory

Failure mode and effects analysis (FMEA)

The Institute for Healthcare Improvement defines failure mode and effects analysis (FMEA) as "a systematic, proactive method for evaluating a process to identify where and how it might fail and to assess the relative impact of different failures, to identify the parts of the process that are most in need of change. FMEA includes review of the following: steps in the process, failure modes (what could go wrong?), failure causes (why would the failure happen?), and failure effects (what would be the consequences of each failure?)" FMEA originated in industrial design where it has been an important tool for many decades, but it has only recently been used by health care organizations (Kourtis & Burns, 2019). FMEA is particularly useful in evaluating a new process prior to implementation and in assessing the impact of a proposed change to an existing process, but compared with resource base theory, it is relatively new within health care organization and time consuming. Therefore, failure mode and effectives analysis (FMEA) did not match alongside my study.

CPOE Implementation

Computerized physician order entry (CPOE) systems can improve medication safety, but user resistance can make them difficult to use. The adoption of the system by users determines the success of the implementation. Therefore, it is critical to understand the users' perspectives to adjust the implementation process and future system optimization (Jungreithmayr et al., 2022). Implementing a computerized physician/provider order entry (CPOE) system for every healthcare business is a difficult task (Almoaber & Amyot, 2021). It necessitates a significant shift in how care is delivered, and staff operate. Organizations must examine crucial variables of employee acceptance to reduce resistance and maximize chances of success due to the required change complexity. The co-author, Almoaber and Amyot (2021), want to determine what aspects influence employees' acceptance of CPOE systems and how they relate to existing change management approaches. The co-author conducted a comprehensive literature review to identify hurdles to employees' acceptance of CPOE systems and make recommendations. Then, based on Kotter's model, the co-author did a comparative analysis to explain the relationship between the discovered components and change management. There were 23 articles in the review. There are a total of 28 obstacles and 25 recommendations. According to Almoaber and Amyot (2021), employee acceptance considerations fall into two categories: one connected to the implementation approach utilized, and the other related to how the system was developed. Many of the elements are like change management principles. Employee acceptability of the system would likely improve if healthcare business leaders systematically incorporated management

principles throughout CPOE installation. In a general pediatric hospital in Hong Kong, Sin et al. (2021) assess the impact of a closed-loop computerized physician order entry (CPOE) system on prescriptions. The co-author looked at how the CPOE system affected medication prescribing errors and the types of errors that occurred before and after management implemented the system. During the pre-and post-implementation of the system, the co-author conducted a single-site, prospective, observational study at a public hospital's general pediatric unit in Hong Kong from March to April 2019 and 2020, respectively. The number of medicine orders processed, the number of prescribing errors found, and the characteristics of errors, such as the severity, the age group of the children, the drug formulation, and the drug class, were all collected. After CPOE adoption, the prescribing error rate dropped from 6.7 percent to 3.9 percent, according to the co-author. Because the implementation eliminated handwriting-related errors and reduced dosage selection-related errors, the co-author discovered that the reasons for prescribing errors were significantly different. However, the co-author found that CPOE increased other errors, such as missing patient information, which could disrupt the dispensing process and delay patients' drug delivery. The co-author concluded that the CPOE system reduced prescribing errors and changed certain of their characteristics. Creating new causes of the error could be caused by poor system design or insufficient user training.

CPOE systems and EHRs were created to decrease the risk of injuries to patients. According to Srinivasamurthy et al. (2021) studies of computerized physician/ provider order entry (CPOE) systems, decreases in certain types of medication errors occur simultaneously with the introduction of system-related errors – uncommon or uncommon

errors impossible to arise with paper-based prescription charts. However, little is known about whether the types and rates of system-related errors that occur shortly after CPOE implementation are like those that persist or appear years later (Srinivasamurthy et al., 2021). System-related errors appear to have persisted for many years after CPOE was implemented.

Computerized physician order entry with clinical decision support, aimed to notify clinicians and avoid probable adverse medication events at entry and before they reach the patient, can increase safety. On the other hand, early studies revealed that performance in preventing adverse medication events was equivocal. From 2009 to 2016, Holmgren et al. (2020) examined data from a national, longitudinal sample of 1527 hospitals in the United States. The hospitals participated in a safety performance assessment test using simulated prescription orders to see how successfully their EHR prevented pharmaceutical errors that could cause patient damage. Holmgren et al. (2020) calculated the descriptive statistics on assessment performance over time, by years of hospital experience with the test, and across the hospital characteristics. Finally, the co-author used ordinary least squares regression to find hospital attributes linked to better test results. According to Holmgren et al. (2020) findings, in 2009, the average hospital EHR system properly prevented only 54.0 percent of probable adverse medication events examined on the 44-order safety performance assessment; by 2016, that number had risen to 61.6 percent. Hospitals that took the test multiple times performed better in subsequent years than those who took it for the first time, improving from 55.2 percent in the first year to 70.3 percent

in the eighth. My interpretation of the data is that voluntary self-assessment and improvement efforts may help improve medication safety performance.

Because companies have significant discretion in what they adopt, the intricacies of EHR medication safety implementation and improvement play a critical role in attaining the benefits of computerized prescribing. According to Holmgren et al. (2020), hospital medication order safety has improved but is still far from flawless. Intentional quality improvement initiatives appear to be a significant component of strong safety performance, suggesting the need for a safety culture. The CPOE implementation within the neonatal intensive care unit (NICU) has demonstrated improvement in medication safety, with the most consistent benefit involving reducing medication errors and wrong-time administration errors (York et al., 2019). The potential for new healthcare information technologies in healthcare facilities increased the safety and quality of care.

While many CPOE systems serve adult patients, the development of pediatric and neonatal inpatient systems has lagged. In a study done by York et al. (2019) on methods to reduce medication errors in (NICU) the neonatal intensive care unit. Computerized physician/provider order entry (CPOE) is one crucial information technology that has demonstrated the ability to prevent medication errors within the hospital. Delayed implementation of pediatric CPOE may reflect the additional complexities associated with pediatric care. Such as frequent weight changes and the need for precise measurement (e.g., weights in the NICU population are often measured down to the gram), high-risk medications, small medication doses,

immunizations, and pediatric data capture (e.g., the calculation of postmenstrual age and gestational age in neonates). There is evidence that medication errors occur more often in the neonatal intensive care unit (NICU) than anywhere else in the hospital (York et al., 2019). The neonatal population is especially vulnerable.

The most common type of prescription errors included incomplete information entered or unnecessary drugs prescribed. However, the accuracy of medication prescriptions was affected in healthcare organizations that did not implement CPOE due to illegible handwriting and absent or wrong dosages for the patient (Almanasreh et al., 2020). The main reason healthcare organizations implement CPOE is to improve the accuracy of medication prescriptions between multiple healthcare organizations.

Medication errors continue to exist during the process of integrating CPOE into health care organizations. In the United States, the federal government sent out recommendations for healthcare organizations to adapt to CPOE systems provided subsidies for EHR adoption, drug events, and CPOE to improve the quality problems that continuously plague the health care system in the United States (Holmgren et al., 2021). Computerized physician order entry (CPOE) systems for medication prescribing allow pharmacy owners/managers to electronically receive accurate and complete medication orders. The CPOE system has clinical decision support (CDS) features that help reduce medication errors and increase safety, such as an alert system to warn a pharmacist of drug allergies and drug-drug interactions and a feature offering advice regarding medication dosages and frequencies. CPOE for prescribing medication has been reported

to be helpful to pharmacists by providing them with easy access to patient data, a faster prescribing process, and guidelines to enhance compliance with best practices (Mogharbel et al., 2021). It also reduces medical costs and improves organizational efficiency.

Challenges to pharmacy managers seeking to automate their workflows stem from both the process and product using CPOE systems. The keyways to a successful CPOE implementation would require health care organizations to focus first on automating the physician's ordering process, recognize and minimize the effects to ancillary workflows, design a CPOE system to improve physician efficiency, and allow for a flexible implementation approach and rollout strategy (Kilsdonk et al., 2017; Ross et al., 2018). The study of improving CPOE adoption by using a phased, flexible implementation process focused on extending CPOE solutions to meet the specific, meaningful use requirements depending on the pharmacy implementing the CPOE system (Kilsdonk et al., 2017; Rose et al., 2018). If the project is adapted to the particular and relevant usage of the organization, the result will improve the workflow of the company in question.

Health Information Exchange

Policy actions that make it easier to enable high-value health information exchange (HIE) could lead to more widespread adoption of HIE and the use of data to inform care. According to Amiri et al. (2018), manual prescription order entry can lead to errors and adverse medication occurrences (ADEs). By deploying Computerized Provider Order Entry (CPOE), health information technology can help reduce medical errors (Amiri et al., 2018). In order to reduce errors and improve the quality and efficiency of

healthcare, public policy initiatives have encouraged information technology innovation to improve the availability of patient health information (Everson & Butler, 2020). In several developed countries, health information exchange (HIE) programs as a policy topic can enable the sharing of adequate and accurate information across providers and healthcare organizations to improve care coordination. Despite the expected benefits of HIE participation in improving coordination, lowering costs, and improving patient safety, previous studies show clinicians still use HIE mechanisms at a low rate. Clinicians' lack of participation in data exchange networks can reduce the value of HIE. Esmaeilzadeh (2022) contributed to the existing literature. Addressing internal and external barriers would raise the possibility of HIEs being widely used in various healthcare settings and improve interoperability and connection in regional and community-based health information networks (Esmaeilzadeh, 2022). While progress has been made in health information exchange, the complexity of engaging in widespread exchange has also increased, resulting in a patchwork of connectivity that forces providers to seek multiple solutions to participate in HIE, implying that both enhancement and simplification are needed (Everson & Butler, 2020). Providing a more informed way of conceptualizing and explaining HIE adoption in healthcare organizations can assist HIE decision-makers, healthcare organizations, and providers in identifying key HIE inhibitors and taking corrective action to address them.

Gathering information from many sources and ensuring that it is complete and up to date can be a time-consuming procedure for clinicians. Most Organization for Economic Cooperation and Development (OECD) nations have made significant

progress in developing health information systems that enable the electronic sharing of pharmaceutical data over the last two decades (Motulsky et al., 2018). This procedure has been driven primarily by the need to guarantee that physicians have access to accurate, thorough, and easy-to-use prescription lists for patients at any point in their care trajectory to improve drug prescribing and utilization quality (Motulsky et al., 2018). Local health departments using electronic health records, according to Yeung (2019), increase health-related quality of life and save years of potential life lost. Electronic records from primary care, acute care, or long-term care facilities, pharmacy records from dispensing pharmacies, electronic prescription warehouses, and pharmacy claim data from pharmacy benefit management systems can all give helpful information for creating patient medication lists (Motulsky et al., 2018). Manual reconciliation between multiple sources is typically required (Motulsky et al., 2018). For patients with chronic diseases, this gets more difficult because their drug histories might be lengthy and come from various sources.

Many state or regional health information exchanges (HIEs) can facilitate the collection, exchange, and analysis of clinical and administrative data between health care organizations and clinicians. More than 95% of United States hospitals and health care organizations such as pharmacies now use electronic health records (EHRs), which creates an opportunity to develop a nationwide real-time data collection infrastructure (Sittig & Singh 2020). However, the need to protect patients' privacy can hinder the adoption of e-health and requires specific attention (De Pietro & Francetic, 2018). For example, many HIEs rely on an opt-in model of patient consent (i.e., each patient must

agree to have their data from each visit shared) before authorizing data exchange (Sittig & Singh 2020). The infrastructure for robust and rapid information collection and exchange is available, and healthcare organizations must overcome many legal and social barriers before the United States can realize the full potential of this infrastructure.

Medication Error and CPOE

The National Coordinating Council for Medication Error Reporting and Prevention defines a medication error (ME) as any preventable event that causes or leads to inappropriate medication use or patient harm while the medication is controlled by the health care professional, patient, or consumer. Prescribing, order communication, product labeling, packing, nomenclature, compounding, dispensing, distribution, administration, education, monitoring, and use are all examples of such occurrences (Kapaki, 2018; Giannetta et al., 2021; Srinivasamurthy et al., 2021; Teoh et al., 2020). A medication error is defined as the improper use of a drug that may or may not cause harm, and any harm caused by a medication error is referred to as an adverse drug event (ADE) (Srinivasamurthy et al., 2021). According to the Food and Drug Administration (2020), a medication error is a preventable mistake that occurs during the preparation, distribution, administration, or monitoring of pharmaceutical use; it can result in substantial patient damage or improper prescription use. Medication errors are a type of error that is more common in healthcare facilities. They refer to any incident that could cause or contribute to incorrect medication use or patient injury throughout the therapeutic procedure (Kapaki, 2018). The classification and evaluation of medication errors according to their severity may be a critical component of process improvement to make medicine

administration safe (Maxwell & Webb, 2019). Medication errors detected before the patient is harmed are referred to as "near-misses." On the other hand, those that go unnoticed generally result in patient injury, unnecessary hospitalizations, and higher healthcare expenses (Maxwell & Webb, 2019). The healthcare provider system, the healthcare professional, the pharmacy, and the scientific competency of the personnel are the primary categories of causes that lead to pharmaceutical errors.

Government and non-governmental organizations monitor reporting of medical adverse events. According to the Office of Inspector General (OIG) of the United States Department of Health and Human Services, ADEs are responsible for one-third of all hospital adverse events; hence, drug safety has a considerable impact on patient safety (Srinivasamurthy et al., 2021). The World Health Organization (WHO) announced the third Global Patient Safety Challenge, 'Medication Without Harm,' in 2017 to reduce avoidable medication errors by more than half in all countries by 2022 (Srinivasamurthy et al., 2021). There is substantial uncertainty around estimates due to the assumption that avoidable adverse drug events (ADEs) correspond to medication errors, data quality, and lack of data on longer-term impacts of errors. Linking data between errors and patient outcomes is critical for advancement in this field (Elliott et al., 2021). Unsurprisingly, widespread pharmaceutical use in health care leads to a high rate of medication errors, most of which are not clinically significant.

These days, technology has become an integral element of medicine. The right technology may boost efficiency, improve quality, and save costs (Kapaki, 2018). The following are some benefits that technology can provide helping clinician

communication, improving medication safety, reducing potential medical errors and adverse events, increasing access to medical information, and supporting patient-centered healthcare (Kapaki, 2018). Computerized prescriber (or physician) order entry (CPOE) deployment is one of the strategies to reduce prescription errors, according to Srinivasamurthy et al. (2021). Kinlay et al. (2021) agreed with Elliott et al. (2021) that the use of computerized provider order entry (CPOE) systems reduced the rate of medication errors in hospitals significantly. For example, Srinivasamurthy et al. (2021) found that after CPOE implementation, there was a consistent decrease in chemotherapy-related medication errors (CMEs). According to Abbassi et al. (2022) Implementation of CPOE system on parenteral nutrition (PN) medication errors in the neonatology department in the largest teaching hospital in Tunisia decreased PN order errors from 379 to 147 representing a 61.1% reduction. The decreases in PN order errors per stage, i.e., prescribing and preparation, were from 207 to 22 (89.4%), and from 117 to 66 (43.6%) respectively. Mean nutrients intakes were in conformity to the recommended daily intakes during the CPOE phase of the study (Abbassi et al., 2022). CPOE is a protective tool against prescription and preparation errors. It significantly impacted all items of the ordering process. Abbassi et al. (2022) concluded that in addition to the rigorous application of the recommendations, the CPOE system allows to reduce the risk of PN medication errors. This improves the safety and quality of medicines in newborns. Kinlay et al. (2021) identified and described system-related errors during short, medium, and long-term use of CPOE systems, but system-related errors persist with long-term use of CPOE systems. However, they occur at a reduced rate. Kinlay et al. (2021) review has

highlighted a significant gap in knowledge on how system-related errors change over time. Determining what and when system-related errors occur and the system factors that contribute to their occurrence at different time points after CPOE implementation is necessary for the future prevention and mitigation of these errors Kinlay et al., 2021). Identifying and understanding the factors contributing to medication errors associated with computerized provider/physician order entry (CPOE) and providing recommendations on how healthcare leaders could improve CPOE systems are essential (Tolley et al., 2018). Suda et al. (2019) identify antibiotics to be the most common drug class prescribed by dentists. However, up to 80% of prescriptions are deemed unnecessary for both therapeutic and prophylactic indications (Suda et al., 2019). In addition to potential patient harm, unnecessary prescribing contributes to the global public health issue (Teoh et al., 2020). The medication administration process is complex and consequently prone to errors (Tolley et al., 2022). Efforts to ensure safe and optimal medication management are crucial in reducing the prevalence of medication errors **(**Manias et al., 2021). To prevent mistakes that could result in prescription errors, pharmacy staff must carefully read written prescriptions.

The safety of hospital medication orders has improved over time, but it is still far from flawless. Computerized physician order entry with clinical decision support, designed to notify clinicians and avoid probable adverse drug events at entry and before they reach the patient, can increase safety (Holmgren et al., 2020). On the other hand, early studies revealed that performance in preventing adverse drug events was equivocal. Intentional quality improvement initiatives appear to be a vital component of strong

safety performance, implying the significance of safety culture (Holmgren et al., 2020). Because organizations have significant discretion in what they adopt, the intricacies of EHR medication safety implementation and improvement play a critical role in attaining the benefits of computerized prescribing.

Patient Medication Safety

Patient safety is rapidly recognized as a critical priority for action, requiring a coordinated and community response. Medication errors are the most significant source of harm or injury in healthcare systems (Bader et al., 2019). Worldwide, healthcare systems continue to struggle with medicine distribution that is both safe and effective (Maxwell & Webb, 2019). As specialists in medications, the pharmacy workforce is critical in reducing prescription errors and addressing the global challenge of patient safety. The pharmacist's participation as a multidisciplinary team member is crucial in ensuring patient safety (Duarte et al., 2019). Dawoud et al. (2019) also noted that pharmacist engagement in the ward multidisciplinary team enhances patient safety and satisfaction while being cost-effective when offered regularly throughout the ward stay. The role of pharmacists in maintaining patient safety is vital. Pharmacists ensure that when a patient receives and utilizes a medicine, it does not hurt or kill them (Bader et al., 2019). The International Pharmaceutical Federation (IPF) recognizes the critical role of pharmacy in achieving global, regional, and national patient safety goals and works with partners, stakeholders, and members around the world to advocate for pharmacy's role in achieving this global patient safety agenda and to envision a world where medicines and care are available safely (Bader et al., 2019). The role played by pharmacists in

medication safety is essential and welcome at all levels to have continuity in the mitigation of prescription errors.

The challenges and complexity of ICU patient transitions are frequently underestimated in structured handover recommendations. Patients recovering from an episode in an intensive care unit (ICU) typically have medication errors when moving to the hospital ward, according to Bourne et al. (2022). The intervention components of patient medication safety that currently lower the risks of medication errors for adult ICU patients moving to a hospital ward include staff education, medication review, guidelines, electronic transfer/handover tool or letter, and medicines reconciliation. Overall, a pooled analysis of all interventions reduced the probability of unnecessary medication continuing at ICU and hospital discharge (Bourne et al., 2022). ICU clinical pharmacist availability and participation in multi-professional ward rounds were facilitators of intervention delivery, but increased workload related to the discharge intervention process was a barrier. Bourne et al. (2022) underlined that multicomponent interventions based on staff education and recommendations were effective at de-prescribing incorrect medicine nearly four times more by the time patients were discharged from the hospital. Employee training is critical at all levels to increase awareness of unintended prescriptions that could lead to medication errors. This is possible if employees know what medication to discontinue to prevent multiple uses of different medicines with the same active ingredient.

To Err Is Human*,* published by the Institute of Medicine in 1999, was a watershed moment for the United States healthcare system. The study significantly boosted the

visibility of patient safety and sparked dedicated research funding for this critical part of patient care (Bates & Singh, 2018). Since 1999, highly effective therapies for hospital-acquired infections and medication safety have been developed and accepted, while their effectiveness varies due to poor implementation and practice. Other hospital-acquired adverse effects have had varying degrees of success. Additional safety risk areas, such as outpatient care, diagnostic errors, and health information technology, have been recognized and targeted for management in the last two decades (Bates & Singh, 2018). The Healthcare management team must take their time and pay attention to details if they want to mitigate medication errors to the least minimum.

The occurrence of avoidable harm remains high, necessitating innovative scientific and policy methods to address both existing and developing risk areas. With the growing availability of electronic data, healthcare management must now invest in creating and testing ways to evaluate the frequency and types of patient harm and anticipate the risk of injury for specific patients routinely and constantly. This advancement could propel us from basic instrument development to a Golden Age of much-improved patient safety (Bates & Singh, 2018). Medication Safety is a program that aims to protect patients from being harmed by medications, specifically "adverse drug events." Medication Safety is part of the broader movement "Patient Safety" that aims to keep patients safe from healthcare-related harm due to preventable errors and weaknesses in the processes and systems (Teoh et al., 2020). Medication Safety is a subset of the more significant "Patient Safety" movement, which strives to protect patients from healthcare-related harm caused by preventable errors and flawed processes

and systems (Teoh et al., 2020). A workable system created with input from all stakeholders will go a long way toward lowering prescription error rates and raising patient safety.

Patient safety is an essential aspect of healthcare quality. Strengthening a safety culture in health organizations is critical to constantly improving care quality (Reis et al., 2018). Safety programs aim to prevent adverse drug events by assisting clinicians and patients in achieving best practices in medication management through the implementation of proven and long-term solutions that address the human factor in medication error prevention. One aspect of this process is prescribing mistakes (Teoh et al., 2020). Double-checking orders rather than single checking them and computerized prescribing and dispensing systems like CPOE and HIE were linked to a lower risk of potentially hazardous pharmaceutical errors (Manias et al., 2021). When introducing CPOE systems in healthcare organizations, improving patient safety is critical to reducing prescription medication errors.

Pharmacy Employee Training

The training and education of pharmacy employees vary based on the practice site and state law. The demand for highly qualified pharmacy professionals has increased as the pharmacist's role has evolved (Pereda et al., 2022). Safety culture refers to an organization's awareness of its values, beliefs, and standards and what safety-related attitudes and behaviors are appreciated, supported, and expected (Reis et al., 2018). Good communication among employees, mutual trust, and shared opinions of the importance of safety and the success of preventative measures describe organizations with a strong

safety culture (Reis et al., 2018). The goal of the American healthcare system has been to improve patient outcomes. For example, the focus has been on developing a "Just Culture (JC)," which is defined as "a learning culture that is constantly improving and oriented toward patient safety, with the primary appeal of creating such a culture being to encourage individuals to report mistakes so that management can better understand the precursors to an error in order to fix the system issues" (Foslien-Nash & Reed, 2020; Marx, 2019; Small et al., 2021). According to the just culture concept, individual practitioners should not be held responsible for system flaws over which they have no influence. A JC has processes in place that hold people and the system accountable for quality and safety (Foslien-Nash & Reed, 2020; Marx, 2019; Small et al., 2021). This help encourages reporting an error and reduces employee work stress and fear of losing their jobs.

Establishing a policy and procedure training manual that includes the process and implementation is critical. To accomplish ongoing patient care quality improvement, pharmacy managers should cultivate personnel performance and implement enhanced training (Wang et al., 2019). Pharmacy managers oversee educating, training, and informing pharmacy employees about the importance of double-checking prescriptions for errors before filling or dispensing them to consumers (Manias et al., 2021). According to Jacobs et al. (2018), occupational stress in community pharmacies is on the rise worldwide, owing to pharmacists' expanding duties and escalating workloads, which influence work-life balance. While businesses have a strong commercial argument for preventing and managing workplace stress, there is limited evidence that organizational

stress management interventions in community pharmacy settings are successful. The research from Jacobs et al. (2018) reviews the deFrank and Cooper's framework for categorizing stress management interventions and can help community pharmacy organizations build effective and successful stress management programs for pharmacists and pharmacy staff.

Prescription errors are a significant source of irrational medication use. Invalid prescribing is dangerous because it can lead to inadequate therapy, disease progression, patient suffering, and higher drug expenditures (Atif et al., 2018). Prescription errors can arise because of lack of communication with patients, transcribing errors, or failure to consider the patient's clinical situation when writing the prescription (Atif et al., 2018). Tobiano et al. (2019) suggested that healthcare professionals can proactively minimize communication errors by communicating with the patient through counseling, patient participation, medication reconciliation, and patient medication knowledge by making medication communication an accurate two-way information-sharing. According to Larmene-Beld et al. (2018), the evidence from laboratory-based studies suggesting "Tall Man" lettering contributes to reduced error rates was recently published in a systematic review. The authors noted that prescription labels were easier to read (Larmene-Beld et al., 2020). To write lookalike and soundalike medications (LASA), the Tall Man writing approach employs a mix of upper-case and lower-case letters. Using resources other than Tall Man writing, such as color and highlighting, to reduce recognition errors in LASA medicine names may help pharmacy managers explore new techniques to improve LASA

drug safety (da Rocha et al., 2021). Patient safety will increase if pharmacy managers use prescription labels that are easily read and stick out with vivid colors.

Handwritten prescriptions are frequently illegible due to the prescriber's poor handwriting. Computerized prescription order entry systems (CPOE), reduce the risk of prescription errors caused by illegible handwriting. However, the use of the CPOE system has been linked to an increase in new types of pharmaceutical errors. As a result, management using the CPOE system must consider the human component, be adapted to the healthcare organization's needs, and provide ongoing training to prevent prescription errors (Angela & Adisasmito, 2019). Building, mapping, testing, and instructing each healthcare specialty were required to use CPOE safely. Employees in pharmacies need adequate training in managing the complexities of various CPOE and electronic health record system (HER) software modules.

Financial Performance (Profitability)

In the resource-based theory, financial performance typically refers to profits, which are the funds left over after a company pays for the costs of the resources and capabilities it employed to earn that revenue. However, financial performance can also refer to other financial performance indicators, including return-on-investment (ROI), cost-benefit analysis, and budget effect. An executive with a strategic and innovative plan to oversee the design and operation of the comprehensive complex medication-use process and financial performance is required to lead a health system organization such as a pharmacy (Amerine et al., 2022). As the most knowledgeable leader of the medication-use process, this leader aggressively integrates pharmacy goals with strategic

organizational efforts to advocate for pharmacy practice advancement and enhanced patient care by leveraging technology to improve patient care and financial performance (Amerine et al., 2022). Therefore, the pharmacy executive will provide the pharmacy with unique clinical and business perspectives to the organization (Amerine et al., 2022). The wrong financial decisions can cripple a sound business strategy; thus, an organization's business strategy and financial decisions must work in tandem and effectively to achieve value and competitive advantage to exploit the inconsistencies in the market it operates (Peprah & Ayaa, 2022). Hence, financial decisions and business strategy are crucial to attaining organizational competitiveness leading to sustainable competitive advantage (Peprah & Ayaa, 2022). Financial performance refers to a company's ability to generate additional economic benefits through innovation, such as implementing CPOE in a specific market like the pharmacy business (Holdford, 2018). Understanding work ethic, client focus, and innovation, according to Wilson and Slobodzian (2020), is critical to enhancing an independent pharmacy's financial success. These financial performance measurements will, in many situations, be more relevant for describing the impact of pharmacy practice changes (Holdford, 2018). The company's financial performance and the attractiveness of the market in which it competes are determined by its competitive advantage (Holdford, 2018). Market conditions must support innovation to be financially feasible and sustainable (Holdford, 2018). Hence, a service innovation's profitability is determined by its capacity to build a competitive advantage and its ability to discover a potential market where the benefits to the

innovating firm or organization outweigh the expenses of supplying the innovation over time.

CPOE software is beneficial. It allows doctors to send medication orders electronically rather than writing them down on a prescription pad (Lewing et al., 2018). Lewing et al. (2018) explores the effects of CPOE implementation on pharmacist workflow and time allocation across various task categories. The co-author measured Pharmacists' time on multiple duties in prospective time-and-motion research. Pharmacists in CPOE pharmacies spend less time entering orders (Lewing et al., 2018). This time savings will increase the number of orders completed by pharmacists, enhancing organization workflow performance, encouraging lower costs, increasing efficiency, and resulting in profits.

The distance to close competitors and a predetermined journey time were used to calculate pharmacy competition. Chen (2019) studied how pharmacy competition influences prescription payments in the United States using pharmacy claims from New Hampshire between 2009 and 2011. The author finds significant relationships between economic success (measured by market power, concentrated buyer, and sales profitability) and both resources (i.e., staff number) and capabilities after controlling for various resource factors such as an insurer, pharmacy, drug, technology, and area characteristics (i.e., active customer oriented-management, aggressive attitude to competitors). The author finds that more concentrated seller (pharmacy) markets have higher average medicine prices, but more concentrated buyer (insurer) markets have lower pricing. In other words, pharmacists with high market power (concentration in the

90th percentile) charge 2.78 percent more than pharmacies with low market power (concentration in the 10th percentile). The distance impact is amplified if a local pharmacy is part of the same national chain (Chen, 2019). Furthermore, the author demonstrates that distance effects vary by medication type and location. The author's study adds new evidence from the retail pharmaceutical sector to the empirical literature on competitiveness measures.

Firms ’profitability per resources-based theory is the final goal of every commercial activity. According to Obeidat (2021), employing customer relationship management software allows businesses to collect a large amount of data about their customers' demands, prioritizing their efforts in establishing a competitive advantage and increasing profitability and productivity. The business case for pharmacy practice innovations' contribution to the firm's financial well-being is critical to their long-term viability (Holford, 2018). Financial performance indicators, such as ROI, cost-benefit analysis, and budget effect, serve as bridges to profitability.

Transition

The purpose of this study was to explore the strategies pharmacy managers use to mitigate the cost of prescription errors and increase profit. The emphasis of the discussions in Section 1 contains the background of the research problem, problem statement, the purpose statement, and nature of the study. This section included the following subsections: the research question, interview questions, conceptual framework, significance of the study, a detailed review of the academic literature on the Resource base theory, CPOE system capability and implementation, medication errors and their

costs, the complexity of medication errors, and strategies to address this business problem.

In section 2, I provide the study purpose statement, the researcher's role, and a description of the study participants. The research method, design selection, population and sampling, ethical research, data collection instruments, data collection technique, data organization technique, data analysis, reliability and validity, and appropriateness justifications for addressing the research question are all covered in Section 2. Section 3 of the study will present findings, applications to professional practice, implications for social change, recommendations for action, recommendations for further research, reflections, and a conclusion.

Section 2: The Project

Purpose Statement

The purpose of this qualitative multiple case study was to explore strategies some pharmacy managers used to mitigate the cost of pharmacy employee prescription errors and dispensing turnaround times, which will improve patient outcomes and increase pharmacy profits. The targeted population was pharmacy managers from five pharmacies in Texas who had successfully implemented strategies to increase pharmacy profits by mitigating prescription errors of pharmacy employees. The study's findings may affect social change by decreasing medical errors due to system implementation in independent pharmacies, which may increase the quality of patient care and improve the quality of life for patients. Bridging the gap to prevent medication errors for providers by compiling an accurate medication list is necessary for care coordination (Johnson et al., 2015; Al Anazi, 2021; Tyynismaa et al., 2021). By implementing the proposed study's findings, pharmacy owners/managers will be able to reduce the cost of healthcare in their communities.

Role of the Researcher

My primary responsibility in this qualitative multiple case study was to collect data and maintain the study's integrity. In qualitative research, the researcher is the instrument for gathering, organizing, and evaluating data; categorizing themes; identifying ethical and confidentiality issues; and minimizing personal biases in data collection and analysis (Yin, 2018). Gaining insight into the study problem and

accurately reflecting and analyzing the respondents' viewpoints on the topic of interest was essential for my work as the primary data collection instrument.

I am a healthcare administrator with 5 years in the hospital pharmaceutical industry and 12 years in the pharmaceutical retail sector. According to Kyngäs et al. (2020), researchers should be very knowledgeable about the research topic. Since 2003, I have worked as a pharmacy technician, pharmacy quality assurance analyst, pharmacy administrative manager, and pharmacy owner. As a pharmacy co-owner, I am familiar with the topic and field of study. I acknowledged the possible biases resulting from my professional experience as a pharmacy quality assurance analyst and pharmacy owner. In order to avoid compiling, analyzing, interpreting, and seeing data through personal lenses, views, or biases, researchers must take proactive precautions (Yin, 2018). I used the member-checking technique to lessen any possible bias and to neutralize personal bias. Editors, peer reviewers, the Institutional Review Board (IRB), dissertation advisers, and research supervisors may believe that challenges to validity are not sufficiently handled until member checking is incorporated into the research design, according to Motulsky's (2021) observation. Each participant checks the accuracy and completeness of a summary of their interview responses, known as *member checking*. It was easier for me to determine whether I introduced personal bias into the participants' comments as I gave them the chance to confirm the accuracy of the interview data. I also reduced bias by doing a semistructured interview with open-ended questions. As Yin (2018) pointed out, open-ended, semistructured interview questions enable participants to provide more in-

depth, comprehensive responses in their own words. Where appropriate, I also asked follow-up questions to participants to get more information about their first responses.

Researchers should avoid recruiting participants who might not give objective answers to interview questions. According to Yin (2018), researchers can attain objectivity by refusing to choose participants with whom they have had a previous or current personal or professional relationship. I had no prior personal or professional relationships with the targeted participants.

When performing qualitative research, the researcher must observe ethical principles and standards. According to Cumyn et al. (2019), researchers are primarily responsible for the ethical conduct of research; therefore, understanding how they perceive and carry out their role in research is critical. However, most of the study literature on ethics and research focuses on researchers' perceptions of the duties and functions of Research Ethics Boards (REBs; also known as Institutional Review Boards). To ensure that my research adheres to ethical research standards, I followed the Belmont Report's and Walden University's Institutional Review Board's guidelines (IRB). The ethical principles and rules for any form of human study are included in the *Belmont Report* (Brothers et al., 2019; National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979; Moorthy, 2020; Sathi, 2018). I used the *Belmont Report* as a guideline to discuss the three major ethical principles to protect the rights of participants. According to Anabo et al. (2019), *Belmont Report's* three primary ethical principles are respect for persons, beneficence, and justice. I abided by the standard of this report in this study.

Qualitative research may be subject to researcher bias. According to Yin (2018), researchers are vulnerable to biases because they do preliminary research and comprehend the study's flaws. Similarly, according to Wesely (2018), the researcher's identity, experiences, and values might impact the interview process during the interview exchange. According to Bhandari and Hallowell (2021), existing literature on expert opinion-based studies shows that seemingly harmless alterations to standard methodological frameworks can induce cognitive biases. Member checking and data saturation are two important tactics I used to mitigate my biases as the principal researcher.

I double-checked that the respondents had a chance to study the interview summary to verify the accuracy of the data interpretation. According to Caretta and Perez (2019), member checking is a practical qualitative approach for confirming validity. I used saturation to verify that the sample size is appropriate for a qualitative case study methodology, in addition to member checking. During this study analysis, I evaluated the data until no new codes or concepts arise and looked for redundancy in the data. The gold standard for judging qualitative research quality, according to most experts, is saturation (Saunders et al., 2018).

Interview protocol is essential if the researcher plans to use an interview to collect data. According to Yin (2018), interview protocols are used by researchers to standardize and guide the interviewing process. I followed an interview protocol to organize and standardize the interview sessions with participants (see Appendix A). A document known as the interview protocol details the actions and practices needed for the interview

process (Yin, 2018). Interviewers use interview protocols to make participants feel at ease, minimize the researcher's personal biases, encourage participants to share information freely, facilitate consistent data collection techniques for all interview sessions, and establish a laid-back context and environment during the interview sessions (Yin, 2018). When interviewing the study's participants, I employed the interview protocol to reduce the issue of personal bias.

Participants

Pharmacy managers from five independent pharmacies participated in the study. Qualitative research participants are chosen based on the project's requirements (Yin, 2018). Participants were independent pharmacy managers who apply strategies to reduce the costs of prescription errors and were owners or employees of the independent pharmacy. Participants were former coworkers in a hospital context in a different department (outpatient pharmacy) who had gone on to create their independent pharmacy and become self-employed; nevertheless, I had no relationship with the pharmacists because I work in the inpatient pharmacy department.

To increase the validity and reliability of the study, I chose participants based on their experiences. A qualitative study's validity and reliability are bolstered by using selective eligibility criteria for selecting participants (Wilson et al., 2018; Yin, 2018). Researchers in qualitative studies choose participants based on their experience in the field and the knowledge and information each participant can contribute, according to Yin (2018). According to Arifin (2018), selecting qualified volunteers with experience relevant to the research topic allows researchers to answer and gather data for the study.

Choosing participants based on their area of expertise will help solidify and give credibility to the study.

I acquired Walden University's IRB clearance to interview people who satisfy the study's criteria (see Appendix C). The success of a research study is determined by participants who match the requirements for the study's needs (Yin, 2018). To gain access to participants relevant to my study, I called, emailed, and set up a face-to-face meeting to establish a relationship with my study participants.

The success of the research endeavor is determined by the relationship between the participants and the researcher. Kaufmann and Vallade (2020) demonstrate the relevance of the researcher's role in establishing and maintaining the rapport and atmosphere necessary for a research project's success. Establishing a relationship with participants necessitates discussing the study before the interviews to build trust. I explained the study topic's goal and participants comprehended and enjoyed it.

The process of gaining access to a participant requires a certain level of trust and establishing a relationship with the participants. I formed a relationship with the participant by creating a form of effective communication. According to DeJonckheere and Vaughn (2019), offering incentives for the participants in the study, research transparency, and during the data collection process, establishing a relationship with participants as a researcher would develop open and honest communication throughout the study. A continued engagement with participants was via participant preference of contact that builds trust and enables stability and continuity of our relationship.

Research Method and Design

The qualitative methodology was the most appropriate research methodology for my doctoral study. Choosing a research methodology is frequently influenced by the researcher's value system and what he finds important in his research work (Yin, 2018). Using qualitative methods allows the researcher to take a more exploratory approach to understand the causes for the study problem or topic they are trying to solve (Taguchi, 2018). According to Aspers and Corte (2019), qualitative research is a process that aims to improve a community's understanding of a phenomenon by delving further into the issue. According to the authors, qualitative research allows for examining new variables and the exploration of new outcomes for future research.

Research Method

This study was conducted using a qualitative research method. Qualitative, quantitative, and mixed-method research are the three types of research (Yin, 2018). Qualitative researchers explore objective evidence by collecting narrative data through interviews or observations (Yin, 2018). Researchers agree that using the qualitative technique to explore the human experience from respondents' viewpoints and obtain knowledge of the participants' ideas, observations, and expertise on a topic of interest in their natural context, is an effective research strategy (Prasasti et al., 2021). The qualitative research method was suitable for this doctoral study to explore strategies independent pharmacy managers used within their organization to mitigate medication errors and increase profitability. Researcher applying the qualitative research method

allows the participants to answer questions in the interview with their perspectives and voice.

The quantitative technique was not appropriate for acquiring thorough and rich information on this problem due to the exploratory nature of this research question. The quantitative method demonstrates statistical correlations between variables rather than an in-depth examination of the topic (Maxwell, 2021). Dzwigol (2020) asserted that a mixed-method study that combines quantitative and qualitative methodologies is complicated. Due to the exploratory nature of this research question, integrating quantitative and qualitative approaches in a mixed-method strategy was also inappropriate for gathering comprehensive and rich information on this problem. In an instance where complex, broader research questions are addressed to collect data, is when researchers would use the mixed-method approach (Yin, 2018). Although the research question could have been addressed using the mixed-method approach, I did not focus on collecting numerical data, examining the relationship of cause and effect between two variables, nor did I focused on many participants.

Research Design

It is a critical and vital effort to ensure that the components of qualitative research are appropriately aligned. A research study's design must align with the study's goal (Yin, 2018). When these elements are well linked, the study becomes logical and easy to comprehend, boosting the likelihood that the research will considerably contribute to the existing literature on the research issue. In a case study, in-depth details from a smaller sample of participants are captured through interviews in a natural situation (Yin, 2018).

Researchers use a multiple case study design in a case study to collect data from several case units to delve deeper into complex phenomena (Fearon et al., 2021; Yin, 2018). Multiple firms are involved in a multi-case study, whereas a single case study researcher recruits' participant from a single agency or organization (Yin, 2018). I analyzed five independent pharmacies using a multiple case study design. A multi-case research design, according to Yin, entails examining sources of phenomena utilizing a variety of resources. Direct observations, archival records, documentation, interviews, physical artifacts, and participant observations, all components of a multi-case research study, contribute to a qualitative research study (Yin, 2018). Even though a multi-case study involves various dimensions, I used documentation from the five pharmacies and the responses of my participants' interviews. A researcher used qualitative research to find answers to the research question (Yin, 2018). Using a multi-case study approach to my research question, I identified strategies some pharmacy managers used to mitigate the cost of prescription errors and increase profitability. The multiple case study methodology was the best fit for my research because I collected data from various pharmacies to explore the phenomenon of prescription error. Phenomenologists investigate a phenomenon by delving into the meanings of people's or groups' lived experiences (Ataro, 2020). Because I did not collect data on participants' actual experiences, the phenomenological design was not employed. Second, ethnographers focus their research on a particular cultural topic (Baskerville & Myers, 2015; Collins et al., 2020). I did not use an ethnographic design because I am not focused on a specific cultural phenomenon. Finally, narrative inquiry researchers concentrate on the

participants' life stories (Challinor et al., 2021). I did not employ a narrative inquiry design because I did not engage in the participants' personal stories.

Population and Sampling

It is a critical and vital effort to ensure that the components of qualitative research are appropriately aligned. A research study's design must align with the study's goal (Yin, 2018). When these elements are well linked, the study becomes logical and easy to comprehend, boosting the likelihood that the research will considerably contribute to the existing literature on the research issue. In a case study, in-depth details from a smaller sample of participants are captured through interviews in a natural situation (Yin, 2018). Researchers utilize a multiple case study design in a case study to collect data from several case units to delve deeper into complex phenomena (Fearon et al., 2021; Yin, 2018). Multiple firms are involved in a multi-case study, whereas a single case study researcher recruits' participant from a single agency or organization (Yin, 2018). I analyzed five independent pharmacies using a multiple case study design. A multi-case research design, according to Yin, entails examining sources of phenomena utilizing a variety of resources. Direct observations, archival records, documentation, interviews, physical artifacts, and participant observations, all components of a multi-case research study, contribute to a qualitative research study (Yin, 2018). Even though a multi-case study involves various dimensions, I used documentation from the five pharmacies and the responses of my participants' interviews. Qualitative research aims to find answers to the research question (Yin, 2018). Using a multi-case study approach to my research question, I identified strategies some pharmacy managers used to mitigate the cost of

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Ethical Research

Sharing research data can accelerate scientific progress, maximize data value, and promote scientific integrity. On the other hand, data sharing introduces new practical and ethical problems to human-participant research (Ross et al., 2018). The goal of ethical research in a qualitative study is to safeguard research participants from any potential bodily or psychological harm that may arise from the study by following ethical principles throughout the research process (Reid et al., 2018). The key principles of research ethics—respect for persons, beneficence, and justice—have been impacted by open access to research data, and how a reinterpretation of these values translates to processes for the preservation of the rights and wellbeing of human research participants (Ross et al., 2018).

The Belmont Report (1979) outlined the principles that researchers should follow to respect the rights of research participants. I emailed all participants a consent form with complete information about the research study they engaged in as part of my research study process. When conducting human research, it is critical to protect the subjects' well-being, anonymity, and rights. I have completed the Belmont Report certification. I followed the Belmont Report's and Walden University's Institutional Review Board's (IRB) requirements to guarantee my research meets ethical research standards. Informed consent forms are necessary to improve potential subjects' knowledge of research projects and to allow information flow between the researcher and possible subjects (LeCompte & Young, 2020). To assist potential subjects in making educated decisions about participation, a researcher should distill relevant information about the study into a succinct crucial information section. Increasing transparency and improving clarity by presenting more information in a comprehensible style during the consent process would help to enhance human subject protection (LeCompte & Young, 2020).

Outside of the research study situation, when autonomous persons are allowed to engage in actions that would inevitably damage them, the right is well-aligned with individual freedoms. They cannot be forced to fulfill contracts for their services, and they cannot be fined if they do not. The ability to withdraw from participating in a research study without penalty is well-established worldwide (Fernandez Lynch, 2020). These liberties are backed up by more globally relevant United State legislation and ethical analysis (Fernandez Lynch, 2020). Before and during the interviews, participants have

the option to withdraw, and their information is destroyed. I told the participants about their rights and how they can end the interview, have their data destroyed, and leave the research at any time. Participants must notify me if they choose to withdraw by contacting me by phone or e-mail. Any participant who withdraws will have their digital audio recording deleted and any field notes destroyed.

Financial incentives may endanger the voluntariness of research participants' consent since they can impact decision-making. In health research, financial incentives are commonly used to attract participants, retain them, and promote health-related behaviors (Roa & Biller-Andorno, 2022). According to Roa and Biller-Andorno, the evolution of health research standards has sparked a long-running debate about the ethical implications of applying financial incentives. According to the co-author, some researchers say that monetary incentives compromise the integrity of the research process and its conclusions. Financial incentives may lead to undue inducement, exploitation, and biased enrollment of research subjects (Roa & Biller-Andorno, 2022). My responsibility is to inform participants about the presence or lack of participation incentives. The participants were informed that there are no monetary or nonmonetary incentives for participating. In this research study, I used The Belmont Report to establish ethical boundaries. Participants in the study needed to be assured that their information would not be exploited (Nunan, 2021) and that the researcher called for a nuanced and respectful implementation of research ethics (Mac-Seing et al., 2021). Nunan emphasizes the growing dangers of the reidentifying of datasets. Nunan pointed out that as analytical techniques progress, the capacity to reidentify previously assumed data to be anonymous

grows. I protected participants' privacy and their organization by using unique identifiers to substitute their names or any other detailed information that could reveal their participant identity. By assigning identification numbers, I safeguarded the confidentiality and privacy of each of the participants and companies. I used IP1, IP2, IP3, IP4, and IP5 to identify individuals and use F1, F2, F3, F4, and F5 to identify their organizations.

Because of the in-depth nature of the study process, ethical questions have a particular resonance in qualitative research. In all research studies, the protection of human participants requires suitable ethical norms (Arifin, 2018; Armstrong et al., 2019; de Medeiros et al., 2022; Francis-Auton et al., 2020; Joodaki et al., 2020; Kanazawa et al., 2020; Leikas & Kulju, 2018; Ochieng et al., 2021; Quintal et al., 2020; Wichmann et al., 2021). Thus, researchers are responsible for storing study documents in a secure and easily accessible location for 5 years (Arifin, 2018). I kept paper and computer files with transcriptions, summarized versions of participants' responses, written notes, and other pertinent records. I kept both the paper file and the password-protected digital files on a flash drive in a bank safe deposit box for 5 years, after which I will delete all data collected for this study. The Walden University IRB approval number for this study is 09-12-22-1060540 and it will expire on September 11, 2023.

Data Collection Instruments

As the principal researcher, I will serve as the primary data collection instrument, researcher, and interviewer in this qualitative research study. The researcher collects data in qualitative research studies (Yin, 2018). My study's interview questions were open-

ended. In an open-ended interview, participants are asked semistructured questions followed by probing questions to elicit thoughtful and thorough responses (Hammer & Wildavsky, 2018). One of the goals for a qualitative researcher is to understand the human condition better. Semistructured interviews are one of the most common approaches to accomplishing this goal (Bearman, 2019). Semistructured in-depth interviews are the most common qualitative data source in health services research in qualitative research (DeJonckheere & Vaughn, 2019). This method usually entails a conversation between the researcher and the participant, guided by a customizable interview strategy and augmented with follow-up questions, probes, and comments. The semistructred method lets the researcher collects open-ended data, delve deeply into personal and often sensitive themes, and explore participant thoughts, feelings, and opinions about a specific topic (DeJonckheere & Vaughn, 2019). Semistructured interviews also improve data collecting because participants are not restricted to prepared responses (Yin, 2018). I employed a semistructured question technique because it is appropriate for health-related research.

I organized and standardized the participant interviews by adhering to a protocol (see Appendix A). The acts and procedures required for the interview process are described in a document known as the interview protocol (Yin, 2018). The purpose of interview protocol in a qualitative study with an interview is to facilitate consistent data collection techniques for all interview sessions, minimize the researcher's personal biases, encourage participants to share information freely, and create a relaxed context and

environment during the interview sessions (Yin, 2018). I followed the interview protocol when engaging with the study's participants to minimize the problem of personal bias.

For data triangulation, I used a supplementary gathering method, and a company document was incorporated. I asked the 5 independent pharmacy managers for their records, including handwriting paper prescriptions that cause errors, electronic prescription training, guidelines, and insurance companies' documentation for fund retrieval because of prescription errors. I seeked data that influences the dimensions of information quality, system quality, service quality, efficiency, and cost reduction. A researcher uses other data sources such as document information, archival records, and observations to augment interview data in a case study (Yin, 2018). The use of several data sources in a study improves internal validity, reliability of results, and data saturation (Yin, 2018). I also used observation as the third method for triangulations. I observed the pharmacy employees at the pharmacy on the process in place to mitigate prescription errors. According to Fofana et al. (2020), saturation is a crucial concept in qualitative research that signals when data collecting should end. Saturation is reached when the researcher can gain no more meaningful information from additional interviews.

After the interviews were finished, I utilized the member checking technique to improve the validity and reliability of the data gathering equipment. Participants' and researchers' errors and bias were recognized as risks to reliability by Saunders et al. (2018). They also found many threats to validity by past or recent events, testing, and mortality. The procedure of member checking entails sharing the researcher's data

interpretation with the study participants to ensure that the researcher's interpretations are correct. I transcribed the interview responses from participants to verify that my interpretation was correct from their answers. Participants will receive a copy of the interpretations as confirmation that what is documented represents their thoughts concerning the research interview questions. Implementing the member checking technique should enhance the validity and reliability of the interview. Finally, I inquired whether they have any new information to contribute or add.

Data Collection Technique

When meeting with a participant, it is critical to establish confidence to obtain rich data. Similarly, describing and documenting a research study's data collection technique establishes the validity of the data collection procedure (Jentoft & Olsen, 2019). After gaining the Walden University IRB approval, I began collecting data from the participants through face-to-face (FTF) interview sessions. The advantage of data collection through face-to-face interviews is that researchers can ask follow-up questions to understand better the respondents' actual meanings and intents (Yin, 2018). Face-to-face (FTF) interviewing is the "gold standard" for survey interviewing, against which all others are measured (Schober, 2018). In an era of budgetary problems and new questions about whether data sources are crucial and lead to trustworthy information, Schober stated that many patterns suggest that FTF is likely to be one modality among many (Schober, 2018). One problem with using interviews to collect data is that the researcher's personal biases may skew the participants' responses. Personal bias is eliminated by researchers identifying and documenting their own biases, utilizing interview protocols

during interview sessions, and member checking the accuracy and comprehensiveness of the participants' responses (Yin, 2018). To reduce potential bias and neutralize personal bias, I employed the member-checking technique.

The intent of this qualitative multiple case study is to explore the strategies used by independent pharmacy managers in their businesses to mitigate prescription errors and increase profitability. The research question is: What strategies do some pharmacy managers use to mitigate the cost of prescription errors and increase profitability? Creating a positive interview environment is a crucial but sometimes overlooked component, typically characterized by the "abnormality" of the interviewer-interviewee contact (Maryudi & Fisher, 2020). Much of the first part of the interview, especially for people who don't know one other, can be devoted to establishing trust. If the interview questions are particularly sensitive or pointed, it may alter a respondent's willingness to reveal information or the truthfulness with which they respond. That is why the interviewer is encouraged to create situational circumstances that make the interviewee feel at ease and unthreatened (Maryudi & Fisher, 2020)—creating a safe and comfortable environment for the interviewee to share their personal experiences and attitudes (Maryudi & Fisher, 2020). A researcher must be in a cheerful mood to keep the interview flowing well (Maryudi & Fisher, 2020). The interview with the participants will take place in a natural setting, in the participants' offices. Interviewing in a natural setting gives participants greater control and eliminates potential pressures (Korner et al., 2019). I got the participants' full participation by interviewing them in their preferred venue.

I discussed my research topic with the participant over coffee before the interview question session, emphasizing the purpose of my study. According to Saunders et al. (2018), thorough preparation is essential for a successful interview. The 'five Ps' are useful to remember when utilizing semistructured interviews: The five Ps ’are prior planning preventing poor performance (Saunders et al., 2018). Before I began the interview, I reminded potential participants that they have the right to continue or stop the interview process at any time for any reason by informing me personally, by phone, or by email. Researchers are required to inform participants of their right to withdraw from the research study at any time and for any reason (Fernandez Lynch, 2020). I went over the procedure of informed consent with the participants. I also went over the study's business problem with the participant. After easing the participant into the study environment, I started with the research questions.

I utilized an audio recorder and took notes during the interview. According to Saunders et al. (2018), recording an interview and taking notes as it goes is advantageous. It can assist a researcher in retaining concentration, constructing points to summarize back to the interviewee to assess the researcher's understanding, and devising follow-up probing questions (Saunders et al., 2018). Taking notes demonstrates that you value your interviewee's responses (Saunders et al., 2018). I used a digital voice recorder app and the digital audio video-recording device application on my iPhone 10 X-plus smartphone as a backup and through notetaking using a journal. Note-taking was also used to capture participants' motions and facial expressions in an unintended manner. Listening intently to the interviewee, demonstrating a keen interest in what the respondent has to say, using

tact in questioning, repeating, and clarifying the questions posed, and paraphrasing some of the answers to ensure thorough understanding go a long way toward maintaining the respondent's interest throughout the interview (Bougie & Sekaran, 2019). Bougie and Sekaran also stressed the importance of accurately recording the responses. The length of the study interview per participant was more focused and took approximately 1 hour. If the study procedure is followed, the study interview per participant will be between 45 minutes to an hour (Yin, 2018). According to Saunders et al. (2018), interviewing takes time, and the process may require a lengthy discussion. Arranging interviews for too long could reduce the quantity and diversity of people wanting to participate in interviews.

Data saturation occurs when there is enough information to replicate the study, a researcher cannot gather new information, and further coding is no longer possible. Data saturation, or information redundancy, is required of qualitative researchers that collect data through interview sessions (Alam, 2020). According to Alam (2020), saturation can be defined as the researchers' final data gathering point without adding anything to the databank. Saturation is regarded as a modern measure for reducing subjectivity in qualitative research, a yardstick for calculating sample sizes in qualitative research, and assurance of rigor and quality in qualitative research (Sebele-Mpofu, 2020). I used member checking, presenting a summarized version of participant responses to each participant, and asking follow-up questions where needed until I reach data saturation. Data saturation failure impacts the study's quality and content validity. Because a short study will achieve saturation faster than a more comprehensive study, the study's purpose should include the criteria for determining when data saturation is attained (Saunders et

al.,2018). Because study designs differ, there is no one-size-fits-all strategy for a researcher to achieve data saturation. According to Saunders et al., saturation should be operationalized per the research question(s), theoretical perspective, and analytic framework. Researchers agree on a few general ideas and notions, such as the lack of new data, themes, or coding and the study's ability to be replicated (Saunders et al., 2018). Data saturation occurs when further questioning of participants fails to produce new themes from their responses. A researcher could duplicate the results if the individuals were asked the same question within the same time frame.

To achieve triangulation, qualitative researchers use more than one source of data. According to Noble and Heale (2019), research triangulation is the process of enhancing research's credibility and validity. In other words, a researcher uses triangulation to verify a study's findings. I utilized methodical triangulation. In a study, methodical triangulation can be "across method" or "within method" (Bans-Akutey & Tiimub, 2021). According to Yin (2018), methodological triangulation entails using more than one method to collect data, such as interviews, observations, documents, and questionnaires. I supplemented the information from the semistructured face-to-face interviews by examining archival pharmacy records and documentation. I used Otter.ai, a digital transcription software program, to transcribe the recorded interview material. I summarized the participants' responses and gave the transcribed form of the responses to the participants for member checking. When participants verify a copy of their interview responses to ensure that the researcher accurately recorded their true intentions, this is known as member checking (Yin, 2018). Researchers employ semistructured interview sessions to acquire data

because they can ask open-ended, follow-up questions to get clarity. The risk of transcribing data through the researcher's personal biases is a potential disadvantage of using interview sessions to acquire data (Yin, 2018). I overcame the issue of personal bias by identifying and documenting my personal biases, using interview protocols during interview sessions, and members checking the responses of the participants for accuracy and comprehensiveness. During each interview session, I reduced personal biases by following the itemized procedures in the interview protocol and asking each participant the same question in the same way. I kept an open mind, documented everything, including body language, limit myself to the research interview and follow-up questions, interpret data solely from the participant's perspective, and employ member checking to ensure the neutrality of my documentation.

Data Organization Technique

I imported all relevant documents into NVivo for coding, analysis, and storage, including interview responses, member-checked copies of the participants' journal notes, and company records. Qualitative data interpretation necessitates in-depth and intelligent interactions with the data (Maher et al., 2018). It is critical to organize the raw data from interview sessions into developing concepts and themes (Yin, 2018). NVivo software, according to Maher et al. (2018), provides good data management and retrieval tools that allow analysis and write-up linked with rigor implications. NVivo is a web-based data analysis program that may be used to find themes and topics in a document (Yin, 2018). NVivo is a software tool for computer-assisted qualitative data analysis, according to Mortelmans (2019). I used NVivo because it is user-friendly and suitable for data

management. NVivo is a versatile program that helps academics navigate and manage a wide range of textual and audiovisual data (Mortelmans, 2019). NVivo is a valuable tool for expanding the scope and depth of one's study. By searching coded material or constructing conceptual models, Mortelmans demonstrates NVivo's triple power: data management, data coding, and data analysis. NVivo is popular among qualitative researchers because it is simple to use, accommodates small and big data sets, and is tailored to qualitative research. I used NVivo software because it is user-friendly and does handle small data sets like my data.

I coded the interview data using NVivo's emergent themes as a guide. In an interview, coding entails identifying themes and concepts. To protect participants' privacy and the study's organization, researchers keep the raw data from their studies in secure and protected areas (Yin, 2018). I made a physical and digital folder to organize and track this study's raw data and emergent understandings. I kept the interview notes in a physical folder and the digital folder in a bank safe deposit box for 5 years, after which I will erase all the data obtained for this project. I preserved the participant's and company's documents in a password-protected digital folder on an external flash drive. After 5 years, I will retrieve it from the bank safe deposit box, shred the physical folder's contents, and destroy the electronic files. Researchers use coding techniques to preserve the anonymity and confidentiality of the participants in research (Arifin, 2018; Yin, 2018). I used the following code names: IP1, IP2, IP3, IP4, and IP5 to identify individuals and use F1, F2, F3, F4, and F5 to identify their organizations.

Data Analysis

The data for this qualitative multi-case study was compiled from semistructured interviews with participating independent pharmacy managers, documents from the organization, and site observation notes. Qualitative researchers begin the data analysis process after conducting and compiling the raw data from their semistructured interview sessions (Yin, 2018). According to Yin (2018), the most effective use of company documents in qualitative research is enhancing and validating evidence from other sources, such as semistructured interviews. In qualitative research, company information and documents enhance evidence from semistructured interviews with study participants.

Methodological triangulation, a technique using more than one method to investigate a phenomenon within a study, will be used in the data collection process. Methodical triangulation can be "across method" or "within method" (Bans-Akutey & Tiimub, 2021). Methodological triangulation entails using more than one method to collect data, such as interviews, observations, documents, and questionnaires (Yarney et al., 2021; Yin, 2018). According to Noble and Heale (2019), research triangulation is the process of enhancing research's credibility and validity. I reviewed the documents from the pharmacies in my multi-case study: writing prescriptions classified to have errors and insurance companies' reimbursements documents filed by the owners/managers of the pharmacies.

The initial phase in the data analysis procedure for this multi-case research was to familiarize oneself with the data and get information from the participants about the company documentation. I transcribed each participant's audio interview. Transcribing

facilitated an interpretative act of analysis in a study employing qualitative data collection methods, according to Oluwafemi et al. (2021), and it improved the study's credibility, validity, and accuracy. I used Otter.ai, a digital transcription software tool, to transcribe the recorded interview content.

After each interview was saved to Otter.ai, I constructed a transcription of the participant's responses. Through follow-up member checking transcribing evaluations, the data collected from the participants was validated. A long-standing qualitative research technique for establishing validity is member checking (Brear, 2019). Member checking interviews in a qualitative study, according to Busetto et al. (2020), allows the researcher to improve and analyze the quality of the research. Participants were given a summary of the answers to their questions utilizing the member checking technique, which allows them to authenticate their information during the transcribing evaluation of their responses.

After the member checking process, thematic analysis was the next phase in the data analysis process to identify themes developed from the interview and extra data collected from the organizations. In the data analysis process, I constructed codes for the study based on the themes developed during the interview. Coding is assigning a code to each data unit inside a data item, such as a transcript or document, that symbolizes or summarizes the meaning of that extract (Saunders et al., 2018). According to Yin (2018), the data analysis process in qualitative research projects entails evaluating data to uncover themes, patterns, codes, and descriptions. Thematic analysis is a process for identifying, analyzing, and reporting themes in qualitative research studies to provide

codes for data analysis (Saunders et al., 2018). The data analysis procedure entailed organizing data within the study to create codes based on the generated themes (Saunders et al., 2018). After compiling the interview data, I coded the data and grouped the codes. Following coding, searching for themes, and finding links in the data are all steps of analysis, according to Saunders et al. (2018). I arranged the data into thematic categories based on the words collected, the data grouped from the transcription, and the additional information obtained from the site. According to Yin (2018), coding to construct themes enables the identification of themes built from the study's core concepts. I identified cost mitigation concepts, categorized them into key themes, and correlated them to the conceptual framework.

In the following step in the data analysis process, I entered my data into NVivo, a computer-assisted qualitative data analysis software (CAQDAS). Because the qualitative data analysis software will help me sort, manage, and comprehend text data. According to Yin (2018), qualitative researchers code and categorize data from open-ended interviews and documents using software applications. Using the NVivo software has several advantages, including a visual interface that makes coding for eye visualizations rapid and straightforward. NVivo essentially aids in the coding and categorization of enormous amounts of data (Yin, 2018). Researchers aim to correlate main themes from interview results with other sources of evidence such as direct observations and company records that authenticate or support the study's conceptual framework theory to triangulate their interpretations (Saunders et al., 2018; Yin, 2018). Finally, I looked for common patterns and themes in the emerging data that align with (a) the RBTCA, which is the conceptual

theory on which this study was based, (b) the common themes that helped to indicate the strategies some independent pharmacy managers successfully used to mitigate the cost of prescription errors and increase profitability, and (c) the evidence from previously published literature. I correlated the themes with the conceptual framework and literature review by looking at the study finding's relationships and consistency with the literature review and conceptual framework.

Reliability and Validity

If additional researchers can duplicate the study, reliability and validity are improved even in principle. When conducting qualitative research, researchers must establish the validity of their findings so that other researchers and practitioners can see if and how they may apply the research claims and conclusions to their educational settings (Watts & Finkenstaedt-Quinn, 2021). Yin (2018) described reliability and validity as follows. Validity relates to the adequacy of the research measures utilized, analytical accuracy of the results, and generalizability of the study's conclusions, whereas reliability refers to replication and consistency. Dependability, bias, cultural variations, transferability, and trustworthiness are potential areas of data quality difficulties in qualitative research data analysis (Yin, 2018). In a qualitative study, reliability refers to the study's findings' dependability. In contrast, validity relates to the study's credibility, confirmability, and transferability. To establish the integrity of their doctoral research study conclusions, students undertaking qualitative research must employ many data sources or repeated measures of a phenomenon.

Reliability

One technique to show the trustworthiness and rigor of qualitative research was reliability. In qualitative research, reliability is essential for measuring data, and researchers should recognize that no single source outweighs the others; different sources complement each other (Saunders et al., 2018; Yin, 2018). According to the concept of reliability, researchers can repeat the study and get the same results using the same data collection processes in similar research settings (Yin, 2018). Researchers use an interview process to assure reliability. To ensure reliability, I asked interview questions with precise language and order for each participant and standardized the study with an interview methodology. Researchers can also use the study's dependability to assess the trustworthiness of a qualitative research project.

Dependability

Qualitative researchers equate reliability with the process of improving the concept of dependability. In qualitative research, dependability relates to data consistency, and repeatability over time and situations. The term "dependability" refers to the consistency of the findings and their capacity to be duplicated (Kyngas et al., 2020). In qualitative research, expert evaluation of interview questions, interview protocols, transcript review, member checking of data interpretation, methodological data triangulation, and guaranteeing data saturation is used to improve dependability (Yin, 2018). I increased dependability by asking each participant specific interview questions that align with the research question using the interview protocol during every interview

session, verbatim transcribing the participants' responses using Otter.ai, a digital transcription software program, and NVivo transcribing capability without personal bias.

Summarize the participants' responses, using member checking to ensure I captured the exact phrasing. I used methodological triangulation to collect data from more than one source and ensure the attainment of data saturation. Member checking displays a synthesized summary of the participants' responses to determine the accuracy and the possibility of adding more data to achieve data saturation (Saunders et al., 2018; Yin, 2018). The point in data collection when interviewing participants ceases to yield any new insights into the interview questions is known as data saturation (Saunders et al., 2018; Yin, 2018). To ensure the trustworthiness of my investigation, I employed a technique called member checking. I undertook member checking and peer review to ensure that I accurately recorded and evaluated the data collected from participants. To obtain validity and dependability in my doctoral research, I followed Yin's advice. Using several sources of information and building a chain of evidence, I obtained construct validity or credibility. I attained external validity or transferability by employing replication logic across several case studies and comparing my findings to previous research.

Furthermore, to achieve reliability or dependability, I also recorded my research process, maintained a chain of evidence, and built a procedure and database for the case studies. In a qualitative research study, member checking ensures that biases are minimized, and reliable data is collected. The member-checking procedure entails confirming the accuracy and reliability of my interpretation of the data gathered from

each participant. Qualitative researchers use the member checking approach to improve reliability, validity, transferability, and accuracy (Brear, 2019; Yin, 2018). After completing the initial interviews, I employed members checking to review and share the interpretations established during the interviews.

Validity

It is tough to establish and write about validity in qualitative research. In qualitative research, validity has a tumultuous history (FitzPatrick, 2019). The author noted that in qualitative research, establishing and writing about validity can be difficult. Trustworthiness, credibility, dependability, confirmability, authenticity, rigor, plausibility, goodness, soundness, transferability, and quality evaluation are used to describe validity (FitzPatrick, 2019). There is, nevertheless, widespread agreement that creating trust in the inferences made is essential. The research's goal and environment determine validity. It refers to results using specialized approaches to handle validity threats relevant to a given research investigation (FitzPatrick, 2019). According to Yin (2018), validity in a doctorate research study includes the study's design and researcher consistency when collecting and interpreting data. Validity is essential since it ensures that the metrics used to assure outcomes are accurate and that the data in the study is generalized. Furthermore, a researcher can improve validity by accounting for personal biases, acknowledging biases in sampling and critically reflecting on methods, meticulous record-keeping, transparent and consistent data analysis, including detailed and thick verbatim descriptions of participants' accounts to support findings, and demonstrating clarity of thought processes during data analysis and subsequent

interpretation. Validity has a tumultuous history in qualitative research (FitzPatrick, 2019). Validity is defined by trustworthiness, reliability, confirmability, authenticity, rigor, plausibility, goodness, soundness, transferability, and quality evaluation (FitzPatrick, 2019). There is universal agreement that building trust in conclusions is critical.

The research purpose and environment determine validity. It refers to the outcomes of utilizing specialist ways to deal with validity risks in a research study (FitzPatrick, 2019). Validity is threatened by past or recent events, testing, instrumentation, mortality, maturing, and ambiguity concerning casual direction. Validity is sometimes referred to as credibility. Yin (2018) identified three dimensions of validity/credibility: construct validity, which ensures that the working measures/constructs defined for a study accurately measure the intended phenomenon, and can be achieved through data triangulation, which entails using multiple sources of evidence in a single study; and internal validity, which aims to establish relationships in explanatory or causal studies and can be accomplished through pattern matching, explanation building, and data triangulation. The third component is external validity, which refers to the possibility of generalizing case study findings. A single case study can be accomplished using current theory, and in multiple case studies, it can be accomplished using replication logic.

Credibility

The validity, particularly construct and internal validity, are equivalent to credibility in terms of how valuable and believable the research is (Saunders et al., 2018).

Credibility can be defined as trust in the results' (Kyngas et al., 2020). Using various sources of evidence and building a chain of evidence, I built credibility. Data from multiple sources is required for qualitative research to be credible, and triangulation is used to see if the conclusions from diverse sources converge (Yin, 2018). In a doctorate study, credibility, or the trustworthiness of the data, is present when the research findings reflect the participants' opinions. Credibility ensures that the researcher's study accurately reflects the participant's intentions. The researcher can achieve study credibility by sustaining long-term involvement with participants and constant observation to build the necessary trust and relationship (Saunders et al., 2018). Credibility also necessitates a thorough understanding of the phenomenon under investigation, up to the point when new data may be unavailable (Alam, 2020; Saunders et al., 2018). Interestingly Low (2019, p. 131) considers defining saturation as the point where "new information emerges as "problematic" and a "logical fallacy" that gives little or no advice as to how to achieve that point. Triangulation, which comprises using various sources of evidence for data gathering or employing diverse ways to explore the same phenomenon to assure data confirmation and completeness, is another technique for ensuring the credibility of case study research (Fusch et al., 2018; Yin, 2018). Data confirmation is comparing and assessing data from many sources for consistency and authenticity (Fusch et al., 2018; Yin, 2018). Contrastingly, data completeness pertains to divergence of findings and focuses on bringing multiple perspectives from many sources to get insight and a detailed understanding of the study phenomenon from various views and settings (Yin, 2018).

Reaching the saturation point and triangulating of research study is necessary for research credibility.

The members-checking technique can also be used to boost the credibility of the research. Allowing participants to cross-check acquired data, analysis results, and interpretations while ensuring that their original perspectives are not altered but clarified is known as member-checking (Saunders et al., 2018; Yin, 2018). Another method for increasing study credibility is explanation building, which entails iterative refinement and review of the research analysis and consideration of competing explanations to arrive at the best potential cause of the occurrence (Saunders et al., 2018; Yin, 2018). A researcher can use pattern matching and logic model processes for data analysis (Yin, 2018). In addition, to address study credibility difficulties, the researcher can use a peer debriefing technique. Peer debriefing comprises enlisting the help of the researcher's peers, external colleagues, or specialists to do independent data analysis using the same data definitions as the researcher (Saunders et al., 2018). Another way to establish credibility is for the researcher to guarantee that personal biases and preconceived ideas/postulations do not overwhelm participants' perspectives by acknowledging and recording them as they arise and thoroughly examining them throughout the data analysis (Saunders et al., 2016). Bias indicates that the researcher should admit and assess those subjective perspectives and prejudices rather than deny or ignore them. Overall, approaches that assure extensive documenting of the research processes, correctness, and completeness of research evidence, data analysis, and interpretation while checking my subjective opinions on the phenomena form the measures to accomplish research reliability and credibility.

Confirmability

The confirmability of research findings is something qualitative researchers should ensure. Kyngäs et al. (2020) define confirmability as the degree of neutrality or how a study's findings reflect the respondents' beliefs and experiences rather than the researchers' biases, intentions, or interests. Transcript review, data triangulation, and reflexivity will help me attain confirmability. The term "reflexivity" refers to a researcher's ability to effectively describe the overlapping contextual links between participants and themselves and the researcher's personal biases in the study (Dodgson, 2019). I employed reflexivity to ensure my thoughts do not get in the way of the participants' contributions. I documented every set of data from the perspective of the participant. I employed the follow-up member checking technique to double-check the findings of my study. During the follow-up member checking process, I ensured that the interpretation of the questions provided during the interview accurately reflects the participants' experience and perspectives on the research questions. After evaluating the researcher's interpretations, participants had the opportunity to contribute additional information during the member-checking follow-up process.

Transferability

The degree to which future researchers will be able to apply the findings of one qualitative research study to other research settings in the future is transferability. The term "transferability" refers to the fact that the findings can be used in various situations (Kyngäs et al., 2020). Current qualitative researchers are improving the potential for research findings to be transferable to future researchers who may want to apply the

findings of one study to another. Researchers that thoroughly define and document their research techniques increase the likelihood that their findings will be transferable to future researchers (Yin, 2018). Additionally, I described every step of the research process, including the underlying assumptions and other details, to help the transferability of the study's findings.

I increased the study's transferability to future research by recording and sequentially summarizing the whole research process to enable future researchers to replicate comparable findings in diverse population contexts. I detailed every step of the research process, from my function as a researcher to the study's conclusions, to make it easier to understand and replicate in other situations by future researchers. Interview locations, participants, activities, time spent, study phenomena, data collection and analysis, and interpretation of situations and events relevant to the research are all described in the study process description.

Data Saturation

The saturation of data further enhances the validity of the research. Data saturation occurs when several data sources are triangulated (Fusch et al., 2018). Data saturation is the most used notion for calculating sample sizes in qualitative research, according to Guest et al. (2020). How many sufficient qualitative interviews have received significant attention from scholars over the past 20 years using both empirical research and mathematical/statistical models (Guest et al., 2020; Nascimento et al., 2018). The importance of data saturation in research is acknowledged by Chitac (2022) as a methodological tool guiding the indisputable but highly debated scientific rigor in

research. Data saturation is not calculated statistically but rather when the researcher stops seeing or hearing new information (Renjith et al., 2021). When new data does not add value to a qualitative study, "data saturation" refers to a situation in which additional interviews are counterproductive. When researchers reach data redundancy, they have reached data saturation (Saunders et al., 2018). Saturation is described by Braun and Clarke (2021) as "information redundancy," or the point at which no new themes or codes "emerge" from data. According to Fusch et al. (2018), failure to reach data saturation in a study might compromise the study's reliability, trustworthiness, confirmability, and transferability. I kept interviewing additional participants until no new codes emerge, no further information is gathered, and no new themes emerge from the data analysis.

Transition and Summary

This proposed qualitative multiple case study was to explore strategies some pharmacy managers in Texas use to mitigate the cost of pharmacy employee prescription errors and increase profitability. In section 2 of the doctoral study, the purpose statement is stated for the second time. The role of the researcher, participants involved in the study, the research method and design, population and sampling, and the privacy of the participants of this study are under the section of ethical research. The remaining subsections in Section 2 included data collection instruments, data collection technique, data organization technique, data analysis, reliability, validity, and finally, the transition and summary. Section 3 of the study will present findings, applications to professional

practice, implications for social change, recommendations for action, recommendations for further research, reflections, and a conclusion.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this qualitative multiple case study was to explore strategies some pharmacy managers used to mitigate the cost of pharmacy employee prescription errors and increase profitability. The data came from face-to-face semistructured manager interviews, site observations, and company documentation at five independent pharmacy stores in Texas. The findings showed strategies that the independent pharmacy managers used to mitigate the cost of pharmacy employee prescription errors and increase profitability. For the five interviewees to confirm that I had accurately recorded and interpreted their answers to the interview questions, I asked them to participate in the member-checking process. During member checking, I gathered more information from the participants and kept going until no new themes, patterns, or codes appeared.

After transcribing the interviews and gathering company records and observation notes, I imported the data collected into NVivo for Windows software version 20 qualitative data analysis software for coding, theme identification, and analysis. My research question was: What strategies do some pharmacy managers use to mitigate the cost of prescription errors and increase profitability? Four strategies emerged as key themes (a) cost of prescription quality check and errors reduction strategy, (b) increased profitability strategy through error cost mitigation, (c) technology system implementation strategy to reduce prescription error, and (d) positive utilization of organization resources strategy. Findings indicated that positive utilization of organization resources, prescription error-reducing strategies, pharmacy employee training, and automating the

pharmacy workflow using technology strategies was necessary for reducing the cost of prescription errors in independent pharmacies and increasing profitability. Section 3 contains the findings of the study and includes (a) an introduction, (b) a presentation of the findings, (c) applications to professional practice, (d) implications for social change, (e) recommendations for action, (f) recommendations for further research, (g) reflections, (h) conclusion, and (i) appendices/table of content.

Presentation of the Findings

The overarching research question for this multiple case study was: What strategies do some pharmacy managers use to mitigate the cost of prescription errors and increase profitability? Barney (1991) resource-based theory of competitive advantage (RBTCA) formed the conceptual framework for the study. In the literature review section, I used this conceptual framework to explore the different causes of prescription errors and the various strategies for reducing prescription errors cost. The findings of the interview included a comparison of five independent pharmacy managers with unique experiences in terms of mitigating the cost of prescription errors in their organizations. The site observation and organization confidential documents were used to complement the interviews to understand strategies to mitigate cost of prescription errors and increase profitability in independent pharmacy organization. The following were the emerging strategies: (a) cost of prescription quality check and errors reduction strategy, (b) increased profitability strategy through error cost mitigation, (c) technology system implementation strategy to reduce prescription error, and (d) positive utilization of

organization resources strategy. The themes that emerged from my interviews with the independent pharmacy managers who took part in this study are shown in Table 1.

Table 1 *Major Themes Development and Independent Pharmacy Managers' Participations*

Themes	Participants' Participation Percentage
Cost of prescription quality check and errors reduction strategy	100%
Increased profitability strategy through error cost mitigation	100%
Technology system implementation strategy to reduce prescription errors	100%
Positive utilization of organization resources strategy	100%

Theme 1: Cost of Prescription Quality Check and Errors Reduction Strategy

The cost of prescription error reduction theme consists of: (a) quality check, (b) employee training, (c) correct medication, correct patient, correct prescription, and correct prescriber, and (d) counseling data subthemes. Although the five participants, differed a little in their methods to mitigate prescription errors, all agreed and were consistent on the methods mentioned above. I addressed the study question and thought about the significance of eliminating prescription errors in a pharmacy using this first theme. Incorporating practice-based research findings with implementable strategies may be a valuable tool in helping other practitioners solve related challenges such as eliminating pharmacy prescription errors, save on healthcare costs, and improve patient

safety in their practice settings (Mariotto et al., 2020). After data analysis, I identified four subthemes (methods) that the participants had used to implement their prescription error reduction strategy. Table 2 displays the four subthemes and frequency of the use of the strategy by the participants.

Table 2

Theme 1: cost of Prescription Quality Check and Error Reduction Strategy Coding Frequency

Subthemes	Frequency
Quality check	30
Employee training	26
Correct medication, patient, and prescriber	62
Counseling	19

Quality check

All the participants agreed and noted that a quality check that consists of no guesswork, distraction, and double-checking of prescriptions by two or more pharmacy employees is essential. Participants IP3, IP4, and IP5 noted that pharmacy employees must avoid guesswork and double-check prescriptions by two or more employees while filling prescriptions. Participant IP3 reported, "We also go through what is called a double triple, even four times checking." Participant IP4 stated, "we always make sure people count and double-check." Participant IP5 also said, "The five steps we have gone

through are called checking. When you were checking, you are double checking." This finding is linked to the findings of Manias et al. (2021) in that double-checking orders rather than single checking can lower the risk of potentially hazardous pharmaceutical errors. Lam et al. (2021) found that a pharmacist must check the medication for quality and safety before dispensing.

Employee training

The five participants reported similar views on continuing to train pharmacy employees to reduce prescription errors. Establishing a policy and procedure training manual that includes the process and implementation is critical. Pharmaceutical errors are preventable occurrences that can happen at any point during the medication use process, according to Jaam et al. (2021). They are pervasive in healthcare systems and have been associated with a higher risk of morbidity and mortality. Several methods, including various pharmacy-based therapies, have been researched to reduce recurrence. Programs for educational training are one of the main initiatives led by pharmacists, and they appear to have good advantages (Jaam et al., 2021). Wang et al. (2019) emphasized that to accomplish ongoing patient care quality improvement, pharmacy managers should cultivate personnel performance and implement enhanced training. Participant IP1 stated, “So, we must ensure that our staff gets the right training to ensure that all the information necessary to carry out their duty is given or taken.” Participant IP2 stated, “Oh, first, they must follow the training.” Participant IP3 stated, “We go through rigorous training, okay, at least once a year.” Participant IP4 agreed by saying “We trained our staff a lot, especially knowing at least an elementary basis of what most medications they fill are

used for." Participant IP5 concluded that, "Employee training is extremely important." Despite stating and emphasizing training by the participants, they also corroborated their statement by giving me the continuous education training certificate of their employees on topics like (a) reducing prescription medication errors: what you need to know and what your patients should be told, (b) minimize prescription errors and maximize patient safety, (c) generic drug substitution regulations: legal implications for pharmacists, (d) medication disposal: current issues and legal considerations for pharmacists, (e) strategies for managing nasal congestion, (f) self-monitoring of blood glucose: more effective with patient counseling, (g) managing multiple medications in heart failure-article (h) FDA pharmaceutical labeling requirements: promoting safe use of "approved as safe" yet risky drugs, and (i) prevention of medication errors in the older adult patient. The submissions from Participants IP1, IP2, IP3, IP4, and IP5 imply that pharmacy staff members need a training and learning environment that would support teaching the values of consistently giving the proper medication to the right patient in the correct method. This study's findings align with Holmgren et al.'s (2020) findings in that intentional quality improvement initiatives appear to be a vital component of strong safety performance, implying the significance of safety culture.

Correct medication, patient, and prescriber

The pharmacy staff are essential in decreasing prescription errors and addressing the global challenge of patient safety since they are medication experts. Worldwide, healthcare systems continue to struggle with medicine distribution that is both safe and effective (Maxwell & Webb, 2019). Prescription errors have a significant financial

impact on individuals, society, and the healthcare system. Prolonged hospitalization, loss of confidence, and decreased productivity are some effects on health organizations, health professionals, and patients (Dorothy et al., 2021). The ultimate objective of every pharmaceutical business is to provide the appropriate medication to the appropriate patient. Crosschecking patient-identifying data to prevent errors is the first step in the strategy for assuring accurate data at the prescription drop-off area or the built-in verification feature of an e-script system. Using the patient's name and date of birth, a two-person team confirms patient identification during the medication filling process to ensure correctness. The five participants agreed that (a) correct medication can be verified with the national drug code (NDC) and medication lot number, (b) patient can be verified with full name, date of birth (DOB), allergy and diagnosis, and (c) prescriber can be verified with national provider identifier number (NPI). Participant IP1 stated that "Our primary goal is to ensure that we give the right medication to the right patient." Participant IP2 stated,

> During the time before you sell it (the medication), you want to counsel the patient, whereby you open the medication. In that case, you will be able to see that the medication was filled properly by your technician or if the right medication was dispensed. If the name was spelled rightly, the proper NDC was given.

Participant IP4 also agreed to the line of thought by stating, "We match the name, the prescriber's name, the actual medication, and check the patient's allergy profile." Participant IP5 stated, "We call it the two-step check, double checking and checking the

right medication." The findings were consistent with Bader et al. (2019) in that pharmacists ensure that when patients receive and use a medicine, it does not hurt or kill them.

Counseling

Patient counseling is the final step in dispensing a prescription to a patient or customer. Customer counseling activities improve the level of customer trust and brand loyalty and have a higher chance of detecting some prescription errors, if there are any, before the pharmacist's final dispensation of the prescription before the customer walks out of the pharmacy. All participants agreed that every Texas-licensed pharmacist must counsel every drugstore customer under Texas Board of Pharmacy regulations unless the customer declines the offer. Additionally, the Omnibus Budget Reconciliation Act (OBRA-90) of the federal government in 1990 mandated that pharmacist counsel Medicaid patients regarding medications. When pharmacy managers properly schedule their workers, the pharmacist may have more time to counsel customers. Participant IP1 stated,

> We counsel the patient to know that they are so aware of their medication that they also know that if certain conditions arise while taking their medication, they have a free line to call so that we can address the problem on time.

Participant IP2 said,

> That is the most important thing; you must make sure that the medication you give that you are about to dispense must match what the doctor has prescribed,

> then the last stage is making sure during counseling that the actual tablet is really the same thing prescribed.

Participant IP3 added that, “Counseling is very important.” Participant IP4 mentioned, “We also make sure we counsel the patient on each prescription to make sure that they understand.” Participant IP5 concluded by stating, “We do counseling. Counseling is a biggie for us.” The counseling subtheme from the findings link to the error’s reduction strategy in that prescription errors is a significant source of irrational medication use. Invalid prescribing is dangerous because it can lead to inadequate therapy, disease progression, patient suffering, and higher drug expenditures (Atif et al., 2018). This confirms Atif et al.’s (2018) finding that prescription errors can arise because of a lack of communication with patients, transcribing errors, or failure to consider the patient's clinical situation when writing the prescription. Tobiano et al. (2019) suggested that healthcare professionals can proactively minimize communication errors by communicating with the patient through counseling, patient participation, medication reconciliation, and patient medication knowledge by making medication communication an accurate two-way information-sharing.

The findings of this study's included the independent pharmacy manager's strategy for ensuring prescription accuracy by analyzing patient data for gaps in the system's patient profile to prevent errors. Additionally, as a method for timely data accuracy, pharmacy staff members receive and crosscheck data from the doctor's office in real-time from workstations. Prescription error mitigation refers to ways independent pharmacy managers can improve the accuracy and timeliness of data to increase patient safety. The

prescription errors dimension of the research question is related to the cost of prescription quality check and errors reduction strategy theme from the findings. In that pharmacy, managers employ strategies to increase patient, prescriber, and medication information data accuracy and timeliness to guarantee patient safety. The pharmacy staff examines patient profiles, prescriber information, and prescription data to look for any missing information that could compromise safety. Pharmacists can double-check the patient, prescriber, and prescriptions from workstations for patient safety. The pharmacy managers hold their personnel accountable for completing verification on time by enforcing a timeliness guideline. These findings aligned with the findings of Teoh et al. (2020) in that medication safety and counseling is a program that aims to protect patients from being harmed by medications, specifically *adverse drug events*. Medication Safety and counseling are part of the broader movement *Patient Safety* that aims to keep patients safe from healthcare-related harm due to preventable errors and weaknesses in the processes and systems.

Finally, the resource-based theory of competitive advantage (RBTCA) framework aligned with theme 1. According to responses from the participants, this tenet of the theory, which focuses on the pharmacist's ability to use resources to meet customers' and stakeholders' needs effectively, needs to be divided into organizational and dynamic capabilities that acknowledge the interaction between the pharmacist and the resources available at work. The ability of a pharmacist to manage their time effectively and employ organizational resources to perform a series of coordinated tasks is known as pharmacist capacity. In this instance, employing the organizational abilities of the

pharmacist to complete a series of tasks with the help of the pharmacy's resources enhanced profitability, which is a sign that the pharmacy was doing better.

Theme 2: Increased Profitability Strategy Through Error Cost Mitigation

The independent pharmacy managers in this study all mentioned how efficiently mitigation of prescription errors benefited patients and pharmacy employees by reducing medication errors and increasing profits. The five participants reported that decreasing the number of prescription errors in their pharmacies positively affected the profit levels of their businesses. When I posed the following question to each participant in the semistructured interview: *What strategies do you use to increase profit by mitigating prescription errors?* The five participants claimed they came to conclusions due to favorable feedback from clients and staffs. Also, a trend toward fewer prescription errors, as shown in their adverse drug event (ADE) and medication errors incident reports, an increase in profit postings in their company's internal revenue services (IRS) from 1120, and a decrease in insurance company audit. Participant IP1's insurance audit, IP2's and participant IP3's prescription errors show that $4,888.11, $9,393.99, and $10,559.85, respectively, would have been lost in two months if the insurance company had confirmed an error. Participant IP1 IRS form 1120 shows that between 2014 to 2021, the gross receipts or sales increase from $601,100 to $1,605,302. Participant IP3 IRS form 1120 shows that between 2014 to 2021, the gross receipts or sales increase from $997,930 to $2,147,432. Participant IP4 shows an increase from $515,111 to $1,199,930. Participant IP5 showed an increase from $828,212 to $1,666,505. Participant IP2 IRS form, the 1120S, shows that between 2014 to 2021, the gross receipts or sales increase

from $767,650 to $2,010,026. These findings confirmed the findings of Miotto et al. (2020) 's results in that intangible assets like reputation and legitimacy are essential variables for establishing a lasting competitive advantage in this new terrain.

The body of research from the literature supports the notion that fewer prescription errors benefit an independent pharmacy business's profit margin (Fang et al., 2022; Singh et al., 2020; Wongleedee, 2020). Singh et al. (2020) noted that pharmacy employees' dispensing incorrect prescriptions to customers exposes the pharmacy business to legal and regulatory risks, unsatisfied customers, and reduced profitability (Singh et al., 2020). Table 3 displays the methods the participants in this study used to mitigate errors and improve profitability in their pharmacies, and table 4 displays the frequency of the increased profitability strategy.

Table 3

Participants' Methods for Improving Profitability

Methods	Participating participants pharmacy
1. Streamline inventory and formulary	F1, F2, F3, F4, F5
2. Proper storage design (organize alphabetically)	F1, F2, F3, F4, F5
3. Ensure separation of look-alike and sound-alike medications	F1, F2, F3, F4, F5
4. Documentation of errors and ADE	F1, F2, F3, F4, F5
5. Take responsibility for the error and fix it	F1, F2, F3, F4, F5
6. Customer service	F1, F2, F3, F4, F5

Table 4

Theme 2: Increased Profitability Strategy Coding Frequency

Theme Developed	Frequency
Increased profitability strategy through error cost mitigation	54

All the participants noted that streamlining the inventory by adhering to their organization's formulary helps their organization run smoothly, which leads to error reduction and improved profit. The participants indicated that appropriate and systematic organization of their inventory alphabetically by name/class improved pharmacy employees' perception of medication safety and dispensing while inadvertently reducing medication errors and improving profitability. The participant further noted that the organization of their medication inventory helped resolve the problem or issue of look-alike and sound-alike medication that happened to be one of the leading reasons for medication errors because these are medications that look alike in appearance, with similar-sounding names (Weingart et al., 2018). The participants indicated that proper documentation of prescription errors and adverse drug events (ADE) with follow-up training helps the employees keep abreast of helpful information on how to address prescription errors in a timely manner before things get out of hand that could lead to

patient harm, death, and ultimately significant legal and regulatory risk that could cause reduced profitability. The participants all agreed on the non-punitive response of their employees. Participant IP1 stated,

> We know that certain people might cause an error; we train and let everybody have buy-in and input. Also, due to non-punitive error reporting, when we see an error, we must have a way of addressing it.

Participant IP4 stated that “Reporting prescription errors is non-punitive. They do it out of their free will because we encourage them to do it.” Participant IP5 stated that “Our employees are allowed, and the technicians are allowed to report the error to the states. Without any punishment or repercussion, or recrimination.” These findings emphasized, "Just Culture (JC)," a concept which is defined as "a learning culture that is constantly improving and oriented toward patient safety, with the primary appeal of creating such a culture being to encourage individuals to report mistakes so that management can better understand the precursors to an error in order to fix the system issues" (Foslien-Nash & Reed, 2020; Marx, 2019; Small et al., 2021). According to the just culture concept, individual practitioners should not be held responsible for system flaws over which they have no influence. A JC has processes that hold people and the system accountable for quality and safety (Foslien-Nash & Reed, 2020; Marx, 2019; Small et al., 2021).

The participants agreed that all employees must take full responsibility for errors and fix them by reporting them, documenting them, correcting the error, and notifying the patient, the prescriber, and poison control if the patient had ingested the medication. Then dispense the correct medication and retrieve the incorrect medication back to the

pharmacy. The participants also agreed that their objectives as pharmacy managers were to ensure patient safety and well-being. Avoid potential lawsuits and indemnity payments, regain customers' trust and confidence in their pharmacies, and prevent future errors after experiencing prescription incidents in their organizations. Furthermore, the participants stated that profitability increases because of a lack of errors that leads to better reimbursements by the insurance industry. Participant IP1 said that “We try to use what is formulary for the insurance so that we do not have a regression of claims.” Participant IP4 noted that “If the insurance company audits and finds a slight error, they will reverse the claim and get all the money back.” Participant IP5 stated that “Insurance companies look for every error to take money away from you.” Therefore, error prevention from insurance companies' claims is an incentive that results in better reimbursement and higher profit in the long run.

The participants encouraged and welcomed an environment that cherishes customers, and they all noted that training pharmacy staff members is crucial to ensuring quality client care. There is a consensus among the participants that satisfying customer needs and desires is essential. Pharmacy managers that train employees and have an organizational culture that puts customers at for front by providing excellent customer experiences by exceeding clients' expectations for quality products and services (Ghattas & Al-Abdallah, 2020) will likely increase customer retention. For an example of excellent customer service, participant IP5 stated, "We do free delivery, and upon the medication leaving the pharmacy. We do counseling. Counseling is a biggie for us." This is crucial because prescription errors have a detrimental effect on customer retention

when pharmacy staff cannot win back the trust of angry clients. Due to the adverse effects of bad customer experiences on brand loyalty and reduced customer retention, an organization's profitability is significantly impacted by increased prescription errors in a pharmacy and poor customer service. The findings aligned with Glaveli et al. (2021) in that they emphasize reputation, community involvement, and professional expertise/behavior of the pharmacist(s) and staff as the factors that most influence customer satisfaction and choosing a pharmacy as a go-to one. Additionally, according to the study's findings, combining the aforementioned factors with quick, error-free service, respect, and confidentiality might provide businesses with an edge over rivals. The current research results offer guidelines for tactical steps that can assist a pharmacy in improving patient happiness, creating lasting relationships with patients, and differentiating itself from the competition.

Finally, theme 2 was aligned with the resource-based theory of competitive advantage (RBTCA) framework. Participants' responses indicate that this theory's tenet is focused on the possibility of outperforming competitors in a specific market. The participants agreed that reducing prescription errors is crucial since it improves client retention. All participants concurred that employee competence, communication, rapport, patient-centeredness, and the physical working environment of pharmacy employees are high-quality services that help with customer retention and provide the pharmacy a competitive advantage over rivals.

Theme 3: Technology System Implementation Strategy to Reduce Prescription Error

Participants IP1, IP2, IP3, IP4, and IP5 said that technology stands out among all of their organization's resources. The rise of digital database marketing and technology helped businesses better monitor client information, transforming the buyer-seller relationship (Denga et al., 2022). The participants acknowledged that the most effective strategies for reducing prescription errors in their various practices were their investments in enhancing technology, such as CPOE, HIE, prescription scanners, pharmacy software, and barcoding scanners. And compatibility of these technological resources with their various pharmacy software systems, practice settings, and processes.

Computerized physician order entry (CPOE)

Computerized physician order entry (CPOE) systems for medication prescribing allow pharmacy owners/managers to receive accurate and complete medication orders electronically. Participant IP1 said, “There are several benefits to CPOE, also known as computerized physician order entry. One, it increases the pace and efficiency of the work because compared to fax, sometimes you cannot read efficient writing.” Participant IP2 stated that,

> Just like what I have been saying about electronic prescriptions, it is very good that they introduced the system. It is beneficial to us to read the prescription properly. That is the most important thing, making sure that what the doctor is sending to you is input in the system, not trying to figure out what they are trying to do or say, so that is the most important thing.

Participant IP3 further acknowledge participant IP1 and IP2 position on CPOE by saying,

> that is what I have been talking about all this while about electronic prescription. It is a hundred percent beneficial because doctors scribble in the olden days. They claim when they are in medical school, they are so busy. So, they lose their penmanship, and their handwriting becomes very bad. So, some doctors want to write Aristada. And we will think maybe they wrote something else. Gone are those days when this doctor would type in his writing. So, there is no guesswork anymore, except if the doctor puts it in the system wrong, we will get it right. So, if the doctor puts in Abilify, we will get Abilify. If the doctor puts in hydralazine, we will get hydralazine; gone are the days one would think hydralazine is hydroxyzine because it is typed in, we can see the alphabet, and we know exactly what we are getting. So, it is very helpful.

Participant IP4 stated that,

> it is very beneficial because it helps reduce many prescription errors. It does that, and it also helps us be more efficient. It makes it easier for prescriptions to be filled. You are not wasting time figuring out what the doctor is writing or what the doctor means.

Participant IP5 said that "CPOE is the best thing that ever happened. This system enables us to have what is called an e-script. Moreover, it is the clarification that is priceless." The most common prescription errors included incomplete information entered or unnecessary drugs prescribed. This finding confirmed the finding of Almanasreh et al. (2020) that the accuracy of medication prescriptions was affected in healthcare

organizations that did not implement CPOE due to illegible handwriting and absent or wrong dosages for the patient.

Health information Exchange (HIE)

Using HIE lowered pharmacy organization costs, reduced errors, increased patient safety, and improved patient privacy and security protections. Health information exchange is a reliable mechanism for nurses, doctors, patients, and pharmacists to share electronic health information among health care organizations (Hutton et al., 2021). Health information exchange (HIE) allows patients' records to be kept in the same area as patients. Participant IP1 stated that,

> we use the Health Information Exchange technology properly. And there is compliance with HIPAA guidelines. So, we must ensure that our staff gets the proper training to ensure that all the information necessary to carry out their duty is given or taken.

Participant IP2 said, "If you have a good system and technology when you have that patient's information, it will transmit all other information from the other system out there." Participant IP4 confirmed, " Software's very important in business." Participant IP5 said, "That is an excellent system that has helped us greatly. Because I will tell you, when this information is put into the system, it comes directly to us." These findings confirmed the findings of Zheng et al. (2016) that HIE practices improved healthcare safety efficiency, resulting in revenues from healthcare organizations.

Even though health information exchange technology can potentially increase patient safety, its use and implementation have resulted in unexpected consequences and

questions about the security of patient information. This has resulted in healthcare providers hoarding information from each other, referencing HIPAA law. Participant IP1 stated that “Compliance with HIPAA guidelines hinder the free transfer of patient pieces of information.” Participant IP2 stated that “HIPPA! You must know how to protect patients' information and identity; we cannot freely share patient information.” Participant IP3 confirmed participant IP1's and IP2's statements, saying, "HIPAA is Health Information Portability and Accountability Act. So, with the HIPAA guidelines, there's a limit to what you can do." Participant IP4 stated that,

> the one that comes to my mind is the HIPAA laws; there has been something that has unintended consequences. It's a good law, but it has helped slow down the sharing of information because most staff, if you have questions and you call them, the first thing that comes to mind is HIPAA.

Participant IP5 stated that, “HIPAA has restrictions.” This finding confirmed the finding of Choi and Williams (2022) that Data breaches significantly impact firms connected to sectors like the US healthcare system, such as pharmacy. As the US healthcare system continues to integrate into the digital world, this effort puts further strain on healthcare practitioners who already have unrestricted access to patient data. The Health Insurance Portability and Accountability Act, the Omnibus Rule, and the Health Information Technology for Economic and Clinical Health regulations were also the result of pressure. Following the department of defense (DoD) cybersecurity policies, standards, architectures, security controls, and validation procedures, the Defense Information Systems Agency also creates and updates security technical implementation guidelines.

The goal is to design a network (a doctor's office) to fulfill the complex requirements and unforeseen threats provided by attackers. The network must also abide by the HIPAA security and privacy requirements established by law. The understanding requirements for information assurance security and control will be articulated by a network architecture that is successfully implemented.

Prescription scanners

A prescription is a legal document given to a pharmacist by a licensed physician to produce or administer pharmacological agents/medications to diagnose, cure, or treat an illness. A written prescription is the most common method of prescribing medications. The unreadability of a doctor's handwriting when prescribing medication leads to errors using an incorrect medicine dose or even death (Malbog et al., 2022). Participants IP1, IP2, IP3, IP4, and IP5 noted that electronically transcribed prescriptions allowed them to notice potential errors and get around the issue of misreading the prescribing doctor's handwriting. The prescription scanner aids in this procedure by enabling the pharmacist performing the data and medication verification to compare the image of a hardcopy prescription with the typed prescription side by side.

All participants agreed that investing in patient counseling, drug utilization reviews, and dispensing software that flagged alerts for sound-alike-look-alike pharmaceuticals could assist the verifying pharmacist in avoiding mistakes. The five participants said that by employing high-tech point-of-sale registers for prescription pickup, the technician could prevent the issue of providing the right patients with the proper medications. All the participants provided a hard copy of handwriting and

electronic prescriptions during company documents pick up to support their claim. I also observed the use of an electronic prescription scanner during site observation at IP1, IP2, IP3, IP4, and IP5. The study's findings aligned with Malbog et al. (2022), which stated that developing a device that helps pharmacists perform jobs effectively and helps the pharmacy translate sloppily written prescriptions is necessary.

Pharmacy software

All the participants agreed that their pharmacy software compatibility with other technologies within their pharmacy is very important in increasing efficiency and reducing prescription errors. Pharmacy IP2, IP4 and IP5 emphasized the importance of compatibility of their software with other available tools. Participant IP2 stated that,

> having good software is one of the first things you need to get. In that case, when doctors send in a prescription, you will be able to transmit it whereby having patients' information and medication, and it is clearly written that you will not have to look too deep into it. I use Best Rx, and the CPOE software is very compatible with my software.

Participant IP4 stated that,

> yeah, a lot of software is out there right now. Most of them are compatible with CPOE. But we specifically use the Best Rx. The Best Rx is the one we use at the pharmacy because it's straightforward. It is not cumbersome software; everything is easy for every employee to use. You do not have to be a pharmacist; the technicians can easily navigate the system. And it prompts you on every step, too, especially when technicians are doing work on there. It prompts them to stop so

> that if something is wrong, they can ask the pharmacist to come and look at it and ensure that everything is working well. This software has helped us a great deal. Yeah, we use the Best RX.

Participant IP5 stated that "And the software, which is the electronic system. my God, is the best thing that ever happened to pharmacy." This finding is in line with that of Holdford (2018), who found that pharmacy managers who employ technological development as one of their resource methods to decrease prescription errors achieve their objectives more quickly.

Barcoding scanner

During site observation, I observed all the technology in place in all the pharmacies, and the barcoding tool stood out. All participants use the barcoding scanner tool in all aspects of work. The pharmacy employees use a barcoding scanner to scan each medication bottle that arrives in the pharmacy from the whole seller to when the medication is dispensed to a potential customer. The barcode scanner is used to scan the medication into the pharmacy system to update the inventory of medicines at hand; then, the barcode is used to pick medication over the shelves and crosscheck the drugs with the typed medicines on the prescription label to avoid an error. The barcode scanner is used in all aspects of the pharmacy process to prevent the mistake of incorrect medication, the quantity of dispensed tablets and capsules, pulling the wrong drug from the shelf, labeling vials with the wrong labels, and ensuring that the correct customer picked up the proper medication. The barcode scanner is continually used for verification at each stage

of the medication preparation station until the pharmacist counsels the patient and dispenses the drug to the patient. Participant IP5 stated that,

> a barcode scanner enables you to use the barcode to scan a medication. And then it is like when you scan a medication, that scanning identifies just that medicine. So, the error is eliminated through that process. And this is done by the system.

This finding is consistent with Ali's (2021) research, which informs healthcare professionals about the principles and technology behind developing, processing, and implementing barcoding technology for the automatic identification of healthcare products and materials, as well as capturing, extracting, and retrieving data from the same. In order to improve the performance, productivity, and profit of many stakeholders in the healthcare setting—and ultimately, the welfare of humanity—healthcare items and materials are handled carefully to prevent harm or loss of life as well as environmental risks.

Finally, the resource-based theory of competitive advantage (RBTCA) framework aligned with theme 3. According to responses from the participants, this tenet of the theory focuses on identifying a context in which benefits to the innovating pharmacy exceed the costs of providing the innovation over time. According to the participants, the cost of innovation towards technology and automation of the workplace is the most effective strategy for reducing prescription errors in their various practices. All participants agreed that the cost of CPOE, HIE, prescription scanner, pharmacy software, and barcoding scanner software had been met over time, increasing profit. Table 5

displays the frequency of the technology system implementation strategy to reduce prescription errors.

Table 5

Theme 3: Technology System Strategy Coding Frequency

Theme Developed	Frequency
Technology system implementation strategy to reduce prescription error	60

Theme 4: Positive Utilization of Organization Resources Strategy

An organization's positive utilization of tangible and intangible resources in achieving a competitive advantage is essential. Tangible resources are buildings, fixtures, land, machines, people, and technology. While institutional knowledge, proprietary information, brand recognition, management skills, financial assets, and organizational culture are intangible resources. The five participants utilized their organization's available resources and capabilities using their management skills, financial assets, and corporate culture in a positive way that reflects the principle of this study's conceptual framework. The participants display the internal resources of their organization and the capabilities to use them. For example, the participants utilized tangible resources such as personal by creating a balanced workflow, favorable work schedule, space work hours, vacation time, adequate staffing, and making their organization a stress-free

establishment to work. The frequency of the responses to the positive utilization of organization resources strategy is displayed in Table 6.

Table 6

Theme 4: Organization Resources Strategy Coding Frequency

Theme Developed	Frequency
Positive utilization of organization resources strategy	61

Participant IP1 stated, "Our workflow includes a verification toolbar to look at the order before we dispense." Participant IP2 noted, "I always tell them (employees) to follow the workflow. Follow a workflow that will reduce your first error, and you have to know where to start; you cannot jump from one section to another." Participant IP3 stated, "Adequately, if you staff your organization and are well-staffed, your pharmacists are not stressed out; they are calmer and more at an advantage to have fewer errors to eradicate errors in filling prescriptions." Participant IP4 stated,

> so, we try to make sure we have everybody on board. Also, we tried to ensure that our staff had adequate rest. I don't want them to be overworked. We have enough staff; we have about four technicians working every day so that everybody can work effectively and take breaks in between. And we also have a team each time somebody's on break time or vacation. It makes them fresh because most mistakes and errors happen when people are tired and overworked. So, we think we have

> enough staff to help us do that. So, those are the few strategies we have employed to reduce prescription errors in our establishment and have drastically helped cut prescription errors for us.

Second, all the participants concurred that the development of technological capabilities was crucial in determining how well their organization's workflow reduced prescription errors and boosted profitability. Technology adoption benefits all participating organizations in terms of information quality, system quality, and service quality. The CPOE, HIE, pharmacy hardware, and software's information quality dimension refers to a quality attribute of data like correctness, timeliness, increased access, and current patient information. Information quality refers to whether data in the pharmacy system are pertinent, extensive, and available by pharmacy staff in performing their duties. Participant IP1 stated, "We use the Health Information Exchange technology properly." Participant IP2 stated, "If you have a sound system, a promising technology when you have that patient's information, it will transmit all other information from the other system." Participant IP3 stated, "Technology helps with the doctor's interface link into the pharmacy interface." Participant IP4 stated,

> we employ e-prescribed e-prescription, where most of the medications that come to the pharmacy come electronically straight from a doctor's office, unlike previously when we get handwritten prescriptions. Furthermore, sometimes it is difficult to interpret what doctors write, and it is very tough to have the technicians, especially when you are typing, to make those things out. So, the e-prescribe helps make everything clear.

Participant IP5 said,

> technology eliminates paper prescription where we are second-guessing the doctor's need for us okay, so doctors can send it directly from their computer to our computer. Moreover, they will be obvious; you are not guessing anything. You are saving paper. We are going green; I do not know if you know that the whole world is going green.

This finding aligns with Fennelly et al. (2020) findings that the system that combines pharmacy software, CPOE, and HIE is well-designed and promotes productivity and user performance. In order to reduce user irritation, pharmacy systems are created to mimic pharmaceutical workflow regarding data entry and retrieval procedures. Benefits of workflow restructuring include improved information quality for data qualities such as precise, quick, and current patient information. Despite the generally acknowledged advantages of electronic health records (EHRs) and health information exchange (HIE), these technologies' full potential has not always been reached, frequently as a result of the deployment process.

The ability to deliver advantages due to technical constraints, privacy concerns, and security considerations is referred to as the system quality of pharmacy software. System quality refers to the technological restrictions of the pharmacy software system that influence reaction times during data saving and retrieval at login. The system's stability might be compromised by technical issues, which would prevent proper application. Concerns about confidentiality and privacy are also related to system quality. To guarantee the privacy and security of patient information, the pharmacy software

system, CPOE, HIE, and EHR systems follow Health Insurance Portability and Accountability Act (HIPAA) security rules and procedures. To support privacy and confidentiality, authorized workers with the proper login privileges have secure access to the pharmacy's software and hardware (Shahriar et al., 2022).

Third, all participants agreed that service quality is enhanced by the availability of staff training, a system user's handbook, and help features. Pharmacy staff members with insufficient training enter data incorrectly, making retrieving the information harder. Independent pharmacy managers require their staff (human resources) to abide by state pharmacy board standards, laws, and ethics and give them practical training. External software provides technical support IT both affects and influences the service quality dimension. Competence, communication, rapport, patient-centeredness, and the physical environment of pharmacy workers are quality services that aid in customer retention, notably the physical setting, hygienic conditions, and ambiance (Wongvedvanij & Darawong, 2022). Considering employee quality service, Participant IP1 stated,

> one strategy we use is to ensure that we do regulatorily to keep our staff up to date. We must ensure that our staff gets the proper training to ensure that all the information necessary to carry out their duty is given." Participant IP2 stated, "They must follow the training.

Participant IP3 said, "We go through what is called training every time, and almost every mistake is a learning curve. It is a learning opportunity, and we make sure we do not miss it." Participant IP4 stated, "We train them on the new trends that are coming up in the pharmacy; we send them to conferences. Moreover, we also ensure they have CEs

because new drugs are coming out every day." Participant IP5 stated, "Employee service. It further gives the patient confidence that their medication will work, and you will gain more customers." Despite stating and emphasizing on service quality training by the participants, they also corroborated their statement by giving me the continuous education training certificate of their employees on topics like: (a) counseling patients about heartburn, constipation, and intestinal gas, (b) counseling patients about over-the-counter treatment of teething pain, (c) over-the-counter use of neuroactive peptides for the treatment of chronic pain. The finding is in line with Holdford's (2018) research findings, which showed how closely participants in a work process were connected by the resource base theory, resulting in efficiency, quality, workforce resilience, financial performance, customer satisfaction, and competitive advantage.

Fourth, all the participants agreed that proper medication and medical supplies inventory is key to decreasing errors and increasing profitability. Positive utilization of proper medication inventory and tools, scanning the medication NDC, and removing expired medication off the shelves with stipulated guidelines of pharmacy formulary helped the participant properly utilize their organization resources. Participant IP1 stated that,

> one of the ways we will increase the profit and reduce prescription error is to streamline our formulary so that we do not carry several varieties of different strains of the same medication. So, once you reduce that, you reduce the inventory on hand and reduce the mixing up of different strengths. So, that is one of the ways, and the other way is to stop medication in such a way that medications that

> look alike or sound alike and not in the same area; we markedly separate them into different areas.

Participant IP2 stated,

> we check the date on the prescription and hope. Hopefully, they have not expired. We check if anything is expired in our patients' homes; that is the extra thing we do for our patients. However, in everything we do in the pharmacy, we check workflow with our system and ensure that everything is being done to reduce error.

Participant IP3 said

> So, we do what is called proper storage and proper inventory reduction. In other words, we ensure that the kind of medication we use is what we usually stock. And secondly, we also do what is called the first fast movers. Excuse me. So, with the fast movers, the way we stock our medication is based on how frequently we use them, so we have the first 100 drugs. In my pharmacy, we do mainly pediatric psychotropic drugs. So, when you walk in, we have a shelf that takes up to about 50 medications that we use repeatedly. So, a technician will not go looking for this drug to fill it; it is right there in front of you; you know where it is at. We do not move things around. If we get somebody new, we make sure they stop watching for a day or two days, even up to a week, depending on how quickly the person can learn where medications are. So, we have a fast mover, and then we make sure all the medications are stored alphabetically.

Participant IP4 stated “We also streamline our inventory at the pharmacy. So, without overstocking medications that may expire on us, that helps us reduce cost, and when the cost is reduced, your profit margin will likely get high." Participant IP5 said, "Cerner attribute is a lot because it enables you to use the barcode to scan a medication. And when you scan a medication, that scanning identifies just that medicine." This finding aligns with Dubey et al. (2022) that the pharmaceutical sector relies heavily on the inventory management system. No matter how small or large, local or foreign, every firm needs to manage an inventory. Setting a minimum safety stock for such things is crucial since the raw materials in a pharmaceutical company have an expiration date attached to them. Most businesses strive to maintain a minimal inventory of goods to manage their business successfully.

Finally, the resource-based theory of competitive advantage (RBTCA) framework aligned with theme 4. "The status quo in pharmacy practice is not sustainable, but it is also unclear what practice models can succeed (Holdford, 2018)." The resource-based theory of competitive advantage clarifies how innovations in pharmacy practice can be sustained in various marketplaces (Holdford, 2018). Participants' responses indicate that this theory's premise focuses on the physical, human, and organizational capital required to provide pharmacy practice innovation. The participants concurred that effective resource management enhanced productivity, mitigated the cost of prescription errors, and sustained innovation in their pharmacy.

Applications to Professional Practice

By identifying the strategies independent pharmacy managers can employ to successfully mitigate the cost of prescription errors to achieve a cost savings benefit, I hope to contribute to the body of knowledge through this study. To effectively choose the appropriate methods to carry out the corporate goal of enhancing corporate profit through the reduction of the cost of prescription errors, all stakeholders in the pharmaceutical industry need current, practice-based research findings (Trakulsunti et al., 2022). In this study, I explored strategies retail pharmacy managers had used to mitigate the cost of prescription errors in their respective pharmacies to increase profit. The research findings can enhance independent pharmacy managers' and owners' understanding of strategies, benefits, and advantages for preventing and mitigating the cost of prescription errors. The research findings study ought to be helpful to pharmacy managers who want to mitigate the cost of prescription errors and boost revenue at their company. The study's participants have shown how its findings can help organizations achieve their objectives. Pharmacy managers who put the detailed, actionable methodologies, strategies, and recommendations from this study's findings into practice will assist their staff members in developing plans for increasing profit by mitigating the cost of prescription errors.

Applying the findings from this study can lead to a reduction in prescription errors and an increase in pharmacy customer retention with an attendant increase in pharmacy profitability. Developing the scenario wherein pharmacy engagement towards the customer via the pharmacists" delivery of healthcare services has changed the atmosphere in the community leading to enhanced customer devotion and improved

loyalty to the pharmacy business (Gargantiel Maryglen & Faller Erwin, 2022). Holdford (2018) noted that pharmacy customer retention positively correlated with customers' perception of how the independent pharmacy uses its resources to meet customers' / stakeholders' needs effectively. Furthermore, how the pharmacist harnesses physical, human, and organizational resources to adapt to and thrive in rapidly changing environments is critical. The capabilities of pharmacists and other pharmacy employees to fill customer prescriptions correctly without errors are essential. Using the findings from this study, managers who train their workforce should increase corporate profit by increasing customer retention.

The findings of this research should also be helpful to independent pharmacy staff members, such as staff pharmacists, pharmacy technicians, pharmacy interns, and pharmacy clerks, who receive training on mitigating prescription errors in their daily operations. The study's participants reported that their pharmacy staff members became more capable as they enthusiastically adopted the company's strategies for mitigating prescription errors. When pharmacy staff realize that earlier studies on such strategies demonstrated that other practitioners had achieved adequate results, they might use the advantages of maximizing the organization's resources strategies for mitigating prescription errors (Holdford, 2018). Using the four emergent themes from this study, which are proven strategies utilized by five independent pharmacy managers, could help other independent pharmacy managers mitigate the cost of prescription errors and increase profitability and business continuity.

Implications for Social Change

The findings of this study: (a) would be useful in various pharmacy practice settings, such as in retail or independent pharmacies, (b) foster social change by catalyzing economic growth, and job opportunities, and (c) enhance societal wellness. Such as adult well-being, positive youth development, and community development (McMichael & Weber, 2020). Pharmacy leaders may use the study's findings to improve patient health and the efficiency of healthcare technology. Pharmacy leaders who learn how to train personnel to prevent prescription errors and the costs that come with them, may foster positive social change through patient prescription error reduction, positively impacting individual patient health and the overall well-being of families and communities, resulting in healthier communities. Second, communities would see economic growth and job opportunities, which is another positive social implication of this study's findings. The community members employed by independent pharmacy groups would have a higher probability of keeping their jobs for a long time as those organizations increase profit by mitigating the cost of prescription errors in a community. Third, the most often asked questions while researching customer loyalty in the pharmacy sector, according to Wongleedee (2020), concern customer interactions with the company's staff. As a result, training pharmacy staff members is crucial to ensuring quality client care. Because of this social transformation, customers may suffer fewer unnecessary health related setbacks from inaccurate prescriptions, quicker recovery periods while sick, fewer hospitalizations, and even fewer fatalities due to taking the proper medication. According to Mariotto et al. (2020), eliminating pharmacy

prescription errors saves healthcare costs and improves patient safety. Customers who heal more quickly from their illnesses due to accurate prescriptions may have more time to assist in the community. Such patients could help the community by volunteering at community health centers, churches, and firefighters or peace officers at the local police stations.

Recommendations for Action

The strategies to mitigate the cost of prescription errors that were shared by the participants of this study can be resourceful to independent pharmacy managers, owners, leaders, and stakeholders experiencing problems within their organization to reduce medication errors and increase profitability. Based on the research findings of this multi-case qualitative study, I developed several recommendations for action based on the study results. Independent pharmacy managers, owners, leaders, and stakeholders can use the recommendations for action to implement new strategies to mitigate the cost of prescription errors. Once the new strategies are implemented successfully, the leaders within their organization can mitigate the cost of prescription errors and increase profitability.

Findings from this study included several strategies that independent pharmacy managers, owners, leaders, and stakeholders can use to mitigate the cost of prescription errors to achieve profit increase. Based on the study findings, I recommend the following actions for independent pharmacy managers, owners, leaders, and stakeholders:

Involve pharmacy staff in the process of developing the pharmacy system to meet the workflow buildout of the pharmacy station by reducing inventory to promote user

acceptance, which will assist reduce prescription errors and raise profit. According to the state board of pharmacy guidelines, pharmacy managers should ensure that staff members participate entirely in the annual inventory process.

To make the most use of pharmacy resources, invest in, subscribe to, and deploy a suitable, compatible, and user-friendly pharmacy software system that will assist in automating the pharmacy process and readily interface with CPOE, HIE, prescription scanners, and barcoding scanners. In order to maintain a competitive advantage over rivals, companies should also be vigilant about updating their dispensing software to the most recent versions.

Implement comprehensive pharmacy staff training that will uphold and promote rules and regulations that require staff members to fill prescriptions without speculating. Examples include in-house pharmacy training, online pharmacy training, peer-to-peer seminars, and ongoing computer-based continuing education (CE) training. Additionally, they should support the idea of a just culture in their organization and encourage and enforce personal and professional accountability on the pharmacy staff when dispensing a prescription. With the knowledge that the goal of the peer review and double-checking of prescription errors is not to punish the affected employees but rather to identify the systemic flaws that may have contributed to the errors, this will motivate their staff to carry out their pharmaceutical functions.

Construct methods for data verification to prevent prescription errors. Implement strategies and policies that would aid in enforcing the requirements for accurate insurance reimbursement documentation and patient counseling, as well as complying with HIPAA

law by securing data with encryption, antivirus software, and frequently changing complex passwords to protect patient information.

To improve productivity and reduce costs, independent pharmacy managers should make the most of internal and pharmacy software helpdesk support to fix problems with the pharmacy system's interface with CPOE and HIE applications.

Enforce organizational best practice guidelines to maximize reimbursement savings, satisfy legal requirements, and adjust to insurance company policy changes to maximize reimbursement, stay clear of financial penalties, and adhere to federal and state laws and the state board of pharmacy guidelines.

Allocate enough staff hours to the pharmacy technician and pharmacist to balance the workload. Pharmacy managers and leaders need to be aware of the workload mismatch in the pharmaceutical industry. Prescription errors and decreased profit can expand with increased workload and stress.

Implement policies that motivate all staff members to get to know their customers and correctly identify them when accepting and confirming their prescriptions. The prescription processing under the incorrect customer profile could result in privacy violations, and managers must warn pharmacy staff. Customers are happier if they perceive themselves as stakeholders in your company rather than just another number. Managers must remind the pharmacy staff that providing excellent customer service can go a long way toward creating a lasting bond that will increase client retention.

Finally, educate all staff members on potential legal action resulting from the prescription error and customer privacy violations. Managers must inform pharmacy staff

that legal fees may reduce an independent pharmacy's profit margin or necessitate permanent closure.

The study results can be used by independent pharmacy managers, owners, leaders, and stakeholders who plan to mitigate the cost of prescription errors and increase profit. As promised during participant recruitment for this study, each participant will receive a summary of the study's findings. The study will also be in ProQuest, where dissertations are uploaded to the Walden University school database. I also plan to share the results of my study through various pharmaceutical journals or potential conferences.

Recommendations for Further Research

The findings of this study reflect that further research into the strategies some pharmacy managers used to mitigate the cost of pharmacy employee prescription errors and increase profitability is necessary. This multi-case qualitative study's research yielded a wealth of knowledge for independent pharmacy managers looking for ways to reduce the expense of prescription errors made by staff members. A quantitative study in the future might concentrate on statistical data that demonstrates the progress in prescription error reduction over time and the acquisition of more income that increases profit. Understanding this study can help independent pharmacy managers, owners, leaders, and stakeholders create new ways to reduce prescription errors while successfully utilizing organizational resources.

Subsequent researchers might widen this study's scope to include additional regions. By broadening the scope of this study, future researchers will be better able to assess the reliability and validity of the outcomes found in this investigation and test the

transferability of the current findings to independent pharmacy practice settings outside of Texas.

The sample size and participant recruitment were the study's main limitations. However, in future research, a study could be conducted with a larger sample size using a quantitative study approach to collect statistical data on how independent pharmacy managers' strategies to mitigate the cost of prescription errors have improved over time. To avoid this limitation in the future, the researcher could collect a more extensive data sample to be more accurate and less biased towards having a small sample of participants.

Reflections

The challenges and solutions associated with balancing work and family life are significant, as are the amount of effort, commitment, and time management skills required by the Walden University Doctor of Business Administration program. Numerous modern cultures are characterized by change and uncertainty, which has many root causes, including economic issues, sociopolitical events, and technological revolutions. Individuals, companies, and society must participate in constant learning to adapt to this changing world (Simons et al., 2000). Embarking on this journey is an eye-opener for me to reflect on the background, biases, challenges, and benefits of this doctoral quest. The purpose of this qualitative multiple-case study is to explore strategies some pharmacy managers in Texas use to mitigate the cost of pharmacy employee prescription errors and increase profitability.

With my 5 years of experience as a quality assurance analyst in charge of collecting, processing, and regulating data on prescription errors, ADE, expired medications, high alert medication, and recalled medications in a county hospital pharmacy department in Texas, I assume the experience of mitigating prescription errors will be identical with independent pharmacy despite my 12 plus years as an independent pharmacy administration manager. I was concerned that my experience as an analyst in charge of prescription errors with a hospital inpatient pharmacy would influence my perspective. However, the experiences acquired from being an analyst in a hospital inpatient pharmacy differed from those shared by the participants (independent pharmacy managers).

My main concern was potentially developing a bias based on the study results from my experience in the field. Before conducting the semistructured interviews, I already knew what strategies could be used to mitigate the cost of prescription errors and increase profitability. However, to avoid my personal biases toward the study results, I continuously referred to the ethical guidelines. I followed the interview protocol during the semistructured interview process and follow-up questions to achieve data saturation. I used member checking to confirm with the participants that I reflected their opinions, not my personal biases. Also, company documents and site observation notes were used to corroborate participants' answers using a supplementary gathering method (methodical triangulation).

Lastly, now that I have the knowledge I do, I feel satisfied that I have contributed to the pharmacy industry and highlighted the gaps in reducing the cost of prescription

errors. It was wonderful to speak with various independent pharmacy managers from various Texas pharmacies since I helped expand my knowledge about methods for reducing the cost of prescription errors while boosting profitability. My overall experience broadened my perspective. I learned a lot from the participants about how organizational resources, like assets, capabilities, organizational processes, firm attributes, information, and knowledge, enable a firm to develop and carry out plans that increase its efficiency and effectiveness. This study was practical and applied to the resource base theory of competitive advantage.

Conclusion

In this multi-case qualitative study, I researched strategies to mitigate the cost of prescription errors in independent pharmacy organizations. Based on the findings of this study, I concluded that independent pharmacy managers who made use of the organizational resources, such as assets, capabilities, organizational processes, firm attributes, information, and knowledge, controlled by the pharmacy, allowed the pharmacy to develop and implement strategies that mitigate the cost of prescription errors and increased organizational profit (Holdford, 2018). Four themes emerged in this study regarding the strategies independent pharmacy managers use to mitigate the cost of prescription errors and increase profitability:

1. Cost of prescription quality check and errors reduction strategy
2. Increased profitability strategy through error cost mitigation
3. Technology system implementation strategy to reduce prescription error
4. Positive utilization of organization resources strategy

Independent pharmacy managers, owners, owners, leaders, and stakeholders of other independent pharmacy organizations may use the strategies from this study to mitigate prescription errors effectively, have a competitive advantage over their competitors, and ultimately increase their corporate profit.

References

Abbassi, A., Hasni, N., & Hamida, E. B. (2022). Impact of computerized physician order entry system on parenteral nutrition medication errors in a teaching neonatal intensive care unit. In *Annales Pharmaceutiques Françaises*. https://doi.org/10.1016/j.pharma.2022.05.002

ADLE, A. A., & Akdemir, Ö. (2019). Achieving competitive advantage in technology based industry: How developing intellectual capital matters. *International Journal Of Ebusiness And Egovernment Studies*, *11*(2), 89–103. https://doi.org/10.34111/ijebeg.20191121

Adunlin, G., Murphy, P. Z., & Manis, M. (2020). COVID-19: how can rural community pharmacies respond to the outbreak?. *The Journal of Rural Health*, 37(1), 153–155. https://doi.org/10.1111/jrh.12439

Akhlaq, A., Sheikh, A., & Pagliari, C. (2017). Defining health information exchange: Scoping review of published definitions. *Journal of Innovation in Health Informatics, 23*, 684–764. https://doi.org/10.14236/jhi.v23i4.838

Al Anazi, A. (2021). Medication reconciliation process: Assessing value, adoption, and the potential of information technology from pharmacists 'perspective. *Health Informatics Journal*, *27*(1), 1460458220987276. https://doi.org/10.1177/1460458220987276

Alam, M. K. (2020). A systematic qualitative case study: questions, data collection, NVivo analysis and saturation. *Qualitative Research in Organizations and*

Management: An International Journal. https://doi.org/10.1108/QROM-09-2019-1825

Alam, S., Osama, M., Iqbal, F., & Sawar, I. (2018). Reducing pharmacy patient waiting time. *International journal of health care quality assurance*. https://doi.org/10.1108/IJHCQA-08-2017-0144

Ali, M. (2021). Imitation or innovation: To what extent do exploitative learning and exploratory learning foster imitation strategy and innovation strategy for sustained competitive advantage? *Technological Forecasting and Social Change*, *165*, 120527. https://doi.org/10.1016/j.techfore.2020.120527

Alli, S. M. A. (2021). Barcoding an automatic identification and data capture system in healthcare settings. https://www.thepharmajournal.com/archives/2021/vol10issue1/PartC/9-12-67-867.pdf

Almanasreh, E., Moles, R., & Chen, T. F. (2020). The medication discrepancy taxonomy (MedTax): The development and validation of a classification system for medication discrepancies identified through medication reconciliation. *Research in Social and Administrative Pharmacy*, *16*(2), 142–148. https://doi.org/10.1016/j.sapharm.2019.04.005

Almasri, B. M., & McDonald, D. D. (2021). Philosophical Assumptions Used in Research on Barriers for Effective Cancer Pain Management: A Scoping Review. *Pain Management Nursing*, *22*(5), 634–644. https://doi.org/10.1016/j.pmn.2021.04.006

Almoaber, B., & Amyot, D. (2021). Key factors of clinicians 'acceptance of CPOE system and their link to change management. *Informatics for Health and Social Care*, 1–20. https://doi.org/10.1080/17538157.2021.1993858

Amerine, L. B., Granko, R. P., Brummond, P. W., Calabrese, S. V., Gullickson, K. K., Kelley, L. R., Little, J. D., & Sullivan, M. (2022). ASHP Statement on the Roles and Responsibilities of the Pharmacy Executive. *American Journal of Health-System Pharmacy*, *79*(6), 497–499. https://doi.org/10.1093/ajhp/zxab340

Amiri, P., Rahimi, B., & Khalkhali, H. R. (2018). Determinant of successful implementation of Computerized Provider Order Entry (CPOE) system from physicians 'perspective: feasibility study prior to implementation. *Electronic physician*, *10*(1), 6201. https://doi.org/10.19082%2F6201

Anabo, I. F., Elexpuru-Albizuri, I., & Villardón-Gallego, L. (2019). Revisiting the Belmont Report's ethical principles in internet-mediated research: Perspectives from disciplinary associations in the social sciences. *Ethics and Information Technology*, *21*(2), 137–149. https://doi.org/10.1007/s10676-018-9495-z

Angela, N., & Adisasmito, W. B. B. (2019). Computerized Physician Order Entry (CPOE) in Reducing Medication Error: A Narrative Review. *Jurnal Administrasi Rumah Sakit Indonesia*, *5*(3). https://doi.org/10.7454/arsi.v5i3.3030

Arenas-Villafranca, J. J., Rodríguez-Camacho, J. M., Pérez-Moreno, M. A., Moreno-Santamaría, M., de Asís Martos-Pérez, F., & Tortajada-Goitia, B. (2018). The role of clinical pharmacists in the optimisation of medication prescription and reconciliation on admission in an emergency department. *European Journal of*

Hospital Pharmacy, *25*(e1), e59-e61. https://doi.org/10.1136/ejhpharm-2017-001339

Arifin, S. R. M. (2018). Ethical considerations in qualitative study. *International Journal of Care Scholars*, *1*(2), 30–33. https://doi.org/10.31436/ijcs.v1i2.82

Armstrong, S., Langlois, A., Siriwardena, N., & Quinn, T. (2019). Ethical considerations in prehospital ambulance based research: qualitative interview study of expert informants. *BMC Medical Ethics*, *20*(1), 1–12. https://doi.org/10.1186/s12910-019-0425-3

Ash, J. S., Stavri, P. Z., & Kuperman, G. J. (2003). A consensus statement on considerations for a successful CPOE implementation. *Journal of the American Medical Informatics Association*, *10*(3), 229–234. https://doi.org/10.1197/jamia.M1204

Aspers, P., & Corte, U. (2019). What is qualitative research. *Qualitative Sociology, 42*(2), 139–160. https://doi.org/10.1007/s11133-019-9413-7

Assiri, G. A, Shebl, N. A., Mahmoud, M. A., Aloudah, N., Grant, E., Aljadhey, H., & Aziz, S. (2018). What is the epidemiology of medication errors, error-related adverse events and risk factors for errors in adults managed in community care contexts? A systematic review of the international literature. *British Medical Journal*, *9*(e019101corr1), 1–29. https://doi.org/10.1136/bmjopen-2017-019101

Ataro, G. (2020). Methods, methodological challenges and lesson learned from phenomenological study about OSCE experience: Overview of paradigm-driven

qualitative approach in medical education. *Annals of Medicine and Surgery, 49*, 19–23. https://doi.org/10.1016/j.amsu.2019.11.013

Atif, M., Azeem, M., Sarwar, M. R., Malik, I., Ahmad, W., Hassan, F., Rehman, A., & Rana, M. (2018). Evaluation of prescription errors and prescribing indicators in the private practices in Bahawalpur, Pakistan. *Journal of the Chinese Medical Association*, *81*(5), 444–449. https://doi.org/10.1016/j.jcma.2017.12.002

Bader, L., Kusynová, Z., & Duggan, C. (2019). FIP Perspectives: Realising global patient safety goals requires an integrated approach with pharmacy at the core. *Research in Social and Administrative Pharmacy*, *15*(7), 815–817. https://doi.org/10.1016/j.sapharm.2019.02.012

Bans-Akutey, A., & Tiimub, B. M. (2021). Triangulation in Research. *Academia Letters*, 2. https://doi.org/10.20935/AL3392

Barlas, S. (2018). Vertical integration heats up in drug industry: will medication price hikes cool down as a result?. *Pharmacy and Therapeutics*, *43*(1), 31. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5737250/

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of management*, *17*(1), 99-120. https://doi.org/10.1177%2F014920639101700108

Barney, J. B. (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of management*, *27*(6), 643–650. https://doi.org/10.1177%2F014920630102700602

Barney, J. B., Ketchen Jr, D. J., & Wright, M. (2021). Resource-based theory and the value creation framework. *Journal of Management*, *47*(7), 1936–1955. https://doi.org/10.1177%2F01492063211021655

Baskerville, R. L., & Myers, M. D. (2015). Design ethnography in information systems. *Information Systems Journal, 25*, 23–46. https://doi.org/10.1111/isj.12055

Bates, D. W., & Singh, H. (2018). Two decades since to err is human: an assessment of progress and emerging priorities in patient safety. *Health Affairs*, *37*(11), 1736–1743. https://doi.org/10.1377/hlthaff.2018.0738

Bhandari, S., & Hallowell, M. R. (2021). Identifying and controlling biases in expert-opinion research: Guidelines for variations of Delphi, nominal group technique, and focus groups. *Journal of Management in Engineering*, *37*(3), 04021015. https://doi.org/10.1061/(ASCE)ME.1943-5479.0000909

Bougie, R., & Sekaran, U. (2019). *Research methods for business: A skill building approach*. John Wiley & Sons.

Bourne, R. S., Jennings, J. K., Panagioti, M., Hodkinson, A., Sutton, A., & Ashcroft, D. M. (2022). Medication-related interventions to improve medication safety and patient outcomes on transition from adult intensive care settings: a systematic review and meta-analysis. *BMJ quality & safety*. https://doi.org/10.1136/bmjqs-2021-013760

Braun, V., & Clarke, V. (2021). To saturate or not to saturate? Questioning data saturation as a useful concept for thematic analysis and sample-size

rationales. *Qualitative research in sport, exercise and health*, *13*(2), 201–216. https://doi.org/10.1080/2159676X.2019.1704846

Brear, M. (2019). Process and outcomes of a recursive, dialogic member checking approach: A project ethnography. *Qualitative Health Research*, *29*(7), 944–957. https://doi.org/10.1177%2F1049732318812448

Brothers, K. B., Rivera, S. M., Cadigan, R. J., Sharp, R. R., & Goldenberg, A. J. (2019). A Belmont reboot: Building a normative foundation for human research in the 21st century. *Journal of Law, Medicine & Ethics*, *47*(1), 165–172. https://doi.org/10.1177/1073110519840497

Busetto, L., Wick, W., & Gumbinger, C. (2020). How to use and assess qualitative research methods. *Neurological Research and practice*, *2*(1), 1–10. https://doi.org/10.1186/s42466-020-00059-z

Campbell, S., Greenwood, M., Prior, S., Shearer, T., Walkem, K., Young, S., Bywaters, D., & Walker, K. (2020). Purposive sampling: complex or simple? Research case examples. *Journal of Research in Nursing*, *25*(8), 652–661. https://doi.org/10.1177%2F1744987120927206

Carayon, P., & Hoonakker, P. (2019). Human factors and usability for health information technology: old and new challenges. *Yearbook of Medical Informatics*, *28*(01), 071–077. https://doi.org/10.1055/s-0039-1677907

Caretta, M. A., & Pérez, M. A. (2019). When participants do not agree: Member checking and challenges to epistemic authority in participatory research. *Field Methods*, *31*(4), 359-374. https://doi.org/10.1177%2F1525822X19866578

Challinor, A., Ogundalu, A., McIntyre, J. C., Bramwell, V., & Nathan, R. (2021). The empirical evidence base for the use of the HCR-20: A narrative review of study designs and transferability of results to clinical practice. *International Journal of Law and Psychiatry, 78*, 101729. https://doi.org/10.1016/j.ijlp.2021.101729

Chaudhuri, A., Subramanian, N., & Dora, M. (2022). Circular economy and digital capabilities of SMEs for providing value to customers: Combined resource-based view and ambidexterity perspective. *Journal of Business Research*, *142*, 32–44. https://doi.org/10.1016/j.jbusres.2021.12.039

Chen, J. (2019). The effects of competition on prescription payments in retail pharmacy markets. *Southern Economic Journal*, *85*(3), 865–898. https://doi.org/10.1002/soej.12325

Chien, S. C., Chin, Y. P., Yoon, C. H., Islam, M. M., Jian, W. S., Hsu, C. K., Chen, Y. C., Chien, P. H., & Li, Y. C. (2021). A novel method to retrieve alerts from a homegrown Computerized Physician Order Entry (CPOE) system of an academic medical center: Comprehensive alert characteristic analysis. *Plos one*, *16*(2), e0246597. https://doi.org/10.1371/journal.pone.0246597

Chitac, I. M. (2022). The Rationale For Saturation In Qualitative Research: When Practice Informs Theory. *CrossCultural Management Journal*, (1), 29–35. https://doaj.org/article/f741d1f317ad447db0008a307791d959

Choi, Y. B., & Williams, C. E. (2022). A HIPAA security and privacy compliance audit and risk assessment mitigation approach. In *Research Anthology on Securing Medical Systems and Records* (pp. 706–725). IGI Global.

https://doi.org/10.4018/978-1-6684-6311-6.ch032

Collins, A. B., Boyd, J., Czechaczek, S., Hayashi, K., & McNeil, R. (2020). (Re)shaping the self: An ethnographic study of the embodied and spatial practices of women who use drugs. *Health & Place, 63*, 102327. https://doi.org/10.1016/j.healthplace.2020.102327

Cumyn, A., Ouellet, K., Côté, A. M., Francoeur, C., & St-Onge, C. (2019). Role of researchers in the ethical conduct of research: A discourse analysis from different stakeholder perspectives. *Ethics & Behavior*, *29*(8), 621–636. https://doi.org/10.1080/10508422.2018.1539671

Daniel, B. K. (2019a). What constitutes a good qualitative research study? Fundamental dimensions and indicators of rigour in qualitative research: The TACT framework. In *Proceedings of the European conference of research methods for business & management studies*, 101–108. https://doi.org/10.34190/RM.19.113

Daniel, B. K. (2019b). Using the TACT framework to learn the principles of rigour in qualitative research. *Electronic Journal of Business Research Methods*, *17*(3), pp118–129. https://doi.org/10.34190/JBRM.17.3.002

da Rocha, B. S., Moraes, C. G., Okumura, L. M., da Cruz, F., Sirtori, L., & da Silva Pons, E. (2021). Interventions to reduce problems related to the readability and comprehensibility of drug packages and labels: a systematic review. *Journal of Patient Safety*, *17*(8), e1494-e1506. https://doi.org/10.1097/PTS.0000000000000619

Dawoud, D. M., Smyth, M., Ashe, J., Strong, T., Wonderling, D., Hill, J., Varia, M., Dyer, P., & Bion, J. (2019). Effectiveness and cost effectiveness of pharmacist input at the ward level: a systematic review and meta-analysis. *Research in Social and Administrative Pharmacy*, *15*(10), 1212–1222. https://doi.org/10.1016/j.sapharm.2018.10.006

de Medeiros, K., Girling, L. M., & Berlinger, N. (2022). Inclusion of people living with Alzheimer's disease or related dementias who lack a study partner in social research: Ethical considerations from a qualitative evidence synthesis. *Dementia*, 14713012211072501. https://doi.org/10.1177%2F14713012211072501

DeJonckheere, M., & Vaughn, L. M. (2019). Semistructured interviewing in primary care research: a balance of relationship and rigour. *Family medicine and community health*, *7*(2). https://doi.org/10.1136%2Ffmch-2018-000057

Den Hertog, P., Van der Aa, W., & De Jong, M. W. (2010). Capabilities for managing service innovation: towards a conceptual framework. *Journal of service Management 21*(4), 490–514. https://doi.org/10.1108/09564231011066123

Denga, E. M., Vajjhala, N. R., & Rakshit, S. (2022). The Role of Digital Marketing in Achieving Sustainable Competitive Advantage. *Digital Transformation and Internationalization Strategies in Organizations*, 44–60. https://doi.org/10.4018/978-1-7998-8169-8.ch003

Denieffe, S. (2020). Commentary: Purposive sampling: complex or simple? Research case examples. *Journal of Research in Nursing: JRN*, *25*(8), 662. https://doi.org/10.1177%2F1744987120928156

De Pietro, C., & Francetic, I. (2018). E-health in Switzerland: The laborious adoption of the federal law on electronic health records (EHR) and health information exchange (HIE) networks. *Health Policy*, *122*(2), 69–74. https://doi.org/10.1016/j.healthpol.2017.11.005

Dodgson, J. E. (2019). Reflexivity in qualitative research. *Journal of Human Lactation*, *35*(2), 220–222. https://doi.org/10.1177%2F0890334419830990

Dorothy, A., Yadesa, T. M., & Atukunda, E. (2021). Prevalence of medication errors and the associated factors: a prospective observational study among cancer patients at Mbarara regional referral hospital. *Cancer Management and Research*, *13*, 3739. https://doi.org/10.2147%2FCMAR.S307001

Duarte, N. C., Barbosa, C. R., Tavares, M. G., Dias, L. P., Souza, R. N., & Moriel, P. (2019). Clinical oncology pharmacist: Effective contribution to patient safety. *Journal of Oncology Pharmacy Practice*, *25*(7), 1665–1674. https://doi.org/10.1177%2F1078155218807748

Dubey, M., Vishwakarma, H., & Nisha, P. (2022). Review Article on Pharmaceutical Inventory Models. *Journal of Drug Delivery and Therapeutics*, *12*(5-S), 230–235. https://doi.org/10.22270/jddt.v12i5-S.5659

Duff, J., Bowen, L., & Gumuskaya, O. (2022). What does surgical conscience mean to perioperative nurses: An interpretive description. *Collegian*, *29*(2), 147–153. https://doi.org/10.1016/j.colegn.2021.07.007

Dzwigol, H. (2020). Innovation in marketing research: quantitative and qualitative analysis. *Marketing and Management of Innovations, (1)*, 128–135. https://doi.org/10.21272/mmi.2020.1-10

Elliott, R. A., Camacho, E., Jankovic, D., Sculpher, M. J., & Faria, R. (2021). Economic analysis of the prevalence and clinical and economic burden of medication error in England. *BMJ Quality & Safety*, *30*(2), 96–105. https://doi.org/10.1136/bmjqs-2019-010206

Eloranta, V., & Turunen, T. (2015). Seeking competitive advantage with service infusion: a systematic literature review. *Journal of Service Management*. https://doi.org/10.1108/JOSM-12-2013-0359

Esmaeilzadeh, P. (2022). Identification of barriers to using health information exchange (HIE) in clinicians' practices: An empirical study in the United States. *Technology in Society*, 102007. https://doi.org/10.1016/j.techsoc.2022.102007

Everson, J., & Butler, E. (2020). Hospital adoption of multiple health information exchange approaches and information accessibility. *Journal of the American Medical Informatics Association*, *27*(4), 577–583. https://doi.org/10.1093/jamia/ocaa003

Falconer, N., Barras, M., & Cottrell, N. (2018). Systematic review of predictive risk models for adverse drug events in hospitalized patients. *British Journal of Pharmacology*, *84*, 846–864. https://doi.org/10.1111/bcp.13514https://doi.org/10.1111/bcp.13514

Fan, B., Fan, W., & Smith, C. (2020). Adverse drug event detection and extraction from open data: A deep learning approach. *Information Processing & Management*, *57*(1), 102131. https://doi.org/10.1016/j.ipm.2019.102131

Fang, S., Goh, C., Li, S., & Xu, L. C. (2022). Firm Resources, Strategies, and Survival and Growth during COVID-19. http://hdl.handle.net/10986/37294

Fearon, D., Hughes, S., & Brearley, S. G. (2021). Constructivist Stakian Multicase Study: Methodological Issues Encountered in Cross-Cultural Palliative Care Research. *International Journal of Qualitative Methods, 20*, 160940692110150. https://doi.org/10.1177/16094069211015075

Fennelly, O., Cunningham, C., Grogan, L., Cronin, H., O'Shea, C., Roche, M., Lawlow, F., & O'Hare, N. (2020). Successfully implementing a national electronic health record: a rapid umbrella review. *International Journal of Medical Informatics*, *144*, 104281. https://doi.org/10.1016/j.ijmedinf.2020.104281

Fernandez Lynch, H. (2020). The right to withdraw from controlled human infection studies: justifications and avoidance. *Bioethics*, *34*(8), 833–848. https://doi.org/10.1111/bioe.12704

Fittler, A., Vida, R. G., Káplár, M., & Botz, L. (2018). Consumers turning to the internet pharmacy market: cross-sectional study on the frequency and attitudes of Hungarian patients purchasing medications online. *Journal of medical Internet research*, *20*(8), e11115. https://doi.org/10.2196/11115

FitzPatrick, B. (2019). Validity in qualitative health education research. *Currents in Pharmacy Teaching and Learning*, *11*(2), 211–217. https://doi.org/10.1016/j.cptl.2018.11.014

Food and Drug Administration. (2020). Medication errors related to CDER-regulated drug products. https://www.fda.gov/Drugs/DrugSafety/MedicationErrors/default.htm

Foslien-Nash, C., & Reed, B. (2020). Just Culture Is Not "Just" Culture—It's Shifting Mindset. *Military medicine*, *185*(3), 52–57. https://doi.org/10.1093/milmed/usaa143

Francis-Auton, E., Warren, C., Braithwaite, J., & Rapport, F. (2020). Exploring the recruitment, ethical considerations, conduct and information dissemination of an audiology trial: a pretrial qualitative study (q-COACH). *Trials*, *21*(1), 1–15. https://doi.org/10.1186/s13063-019-3968-1

Fusch, P., Fusch, G. E., & Ness, L. R. (2018). Denzin's paradigm shift: Revisiting triangulation in qualitative research. *Journal of social change*, *10*(1), 19–32. https://doi.org/10.5590/JOSC.2018.10.1.02

Gargantiel Maryglen, F., & Faller Erwin, M. A. (2022). Review on Community Pharmacy Engagement and Customer Devotion: A Venue for Improving Customer Loyalty in Your Business. World Journal of Research and Review, 14(1). https://doi.org/10.31871/wjrr.14.1.7

Ghattas, D., & Al-Abdallah, G. (2020). Factors affecting customers selection of community pharmacies: The mediating effect of branded pharmacies and the

moderating effect of demographics. *Management Science Letters*, *10*(8), 1813–1826. https://doi.org/10.5267/j.msl.2019.12.037

Giannetta, N., Dionisi, S., Stievano, A., Eltaybani, S., Abdelgawad, M. E., Katigri, M. R., Azadboni, T.T., Lopez-Soto, P.J., Morales-Cane, I., Ali, I., Urban, J., Shrestha, S., Christensen, M., Voutilainen, A., Vaajoki, A., Hamdan, K., Rubicini, G., Rivera Pizarro, J.Y., Liquori, G., Cassar, M., Trapani, J., Rocco, G., Orsi, G.B., Di Simone, E., & Di Muzio, M. (2021). Comparison across 12 countries on knowledge, attitude, and behavior scores about medication errors in Intensive Care Units: an international study. *European review for medical and pharmacological sciences*, *25*, 7223–7230. https://doi.org/10.26355/eurrev_202112_27415

Glaveli, N., Manolitzas, P., & Grigoroudis, E. (2021). Developing strategies to increase the possibility of being selected as a "regular" independent community pharmacy: an application of MUlticriteria Satisfaction Analysis. *Journal of Pharmacy Practice and Research*, *51*(2), 160–164. https://doi.org/10.1002/jppr.1694

Grubb, M., & Newbery, D. (2018). UK electricity market reform and the energy transition: Emerging lessons. *The Energy Journal*, *39*(6). https://doi.org/10.5547/01956574.39.6.mgru

Guest, G., Namey, E., & Chen, M. (2020). A simple method to assess and report thematic saturation in qualitative research. *PloS one*, *15*(5), e0232076. https://doi.org/10.1371/journal.pone.0232076

Hajj, A., Hallit, S., Sacre, H., Akel, M., Zeenny, R. M., & Salameh, P. (2021). Lebanese pharmacy core competencies framework: tool validation for self-declared assessment. *International Journal of Pharmacy Practice*, *29*(6), 598–604. https://doi.org/10.1093/ijpp/riab055

Hamel, G., & Prahalad, C. K. (1990). The core competence of the corporation. *Harvard business review*, *68*(3), 79–91. https://doi.org/10.1007/3-540-30763-x_14

HealthIT. (2021). Computerized Provider Order Entry: The basics. https://www.healthit.gov/faq/what-computerized-provider-order-entry

HealthIT. (2021). *What is an Electronic Health Record?* www.healthit.gov/faq/what-electronic-health-record-ehr

HealthIT. (2021). *What is Electronic Prescribing.* https://www.healthit.gov/faq/what-electronic-prescribing

Hernandez, I., San-Juan-Rodriguez, A., Good, C. B., & Gellad, W. F. (2020). Changes in list prices, net prices, and discounts for branded drugs in the US, 2007–2018. *Jama*, *323*(9), 854-862. https://doi.org/10.1001/jama.2020.1012

Holdford, D. A. (2018). Resource-based theory of competitive advantage-a framework for pharmacy practice innovation research. *Pharmacy Practice (Granada)*, *16*(3), 1–11. https://doi.org/10.18549/pharmpract.2018.03.1351

Holmgren, A. J., Kuznetsova, M., Classen, D., & Bates, D. W. (2021). Assessing hospital electronic health record vendor performance across publicly reported quality measures. *Journal of the American Medical Informatics Association*, *28*(10), 2101–2107. https://doi.org/10.1093/jamia/ocab120

Holmgren, A. J., Newmark, L., Danforth, M., Classen, D., & Bates, D. (2020). Assessing the safety of electronic health records: a national longitudinal study of medication-related decision support. *BMJ quality & safety*, *29*(1), 52–59. https://doi.org/10.1136/bmjqs-2019-009609

Hunt, S. D. (2013). A general theory of business marketing: RA theory, Alderson, the ISBM framework, and the IMP theoretical structure. *Industrial Marketing Management*, *42*(3), 283–293. https://doi.org/10.1016/j.indmarman.2013.02.002

Hutton, K., Ding, Q. & Wellman, G. (2021). The effects of bar-coding technology on medication errors. *Journal of Patient Safety, 17*(3), 192–206. https://doi.org/10.1097/PTS.0000000000000366

Irwin, K., Gilstrap, C., Drnevich, P., & Sunny, M. (2022). The acquisition of capabilities: How firms use dynamic and ordinary capabilities to manage uncertainty. *Journal of Management & Organization*, 1–23. https://doi.org/10.1017/jmo.2022.23

Isabelle, D., Horak, K., McKinnon, S., & Palumbo, C. (2020). Is Porter's Five Forces Framework Still Relevant? A study of the capital/labour intensity continuum via mining and IT industries. *Technology Innovation Management Review*, *10*(6), 28–41. https://doi.org/10.22215/timreview/1366

Jaam, M., Naseralallah, L. M., Hussain, T. A., & Pawluk, S. A. (2021). Pharmacist-led educational interventions provided to healthcare providers to reduce medication errors: A systematic review and meta-analysis. *PloS one*, *16*(6), e0253588. https://doi.org/10.1371/journal.pone.0253588

Jacobs, S., Johnson, S., & Hassell, K. (2018). Managing workplace stress in community pharmacy organisations: lessons from a review of the wider stress management and prevention literature. *International Journal of Pharmacy Practice*, *26*(1), 28–38. https://doi.org/10.1111/ijpp.12360

Jentoft, N., & Olsen, T. S. (2019). Against the flow in data collection: How data triangulation combined with a 'slow'interview technique enriches data. *Qualitative Social Work*, *18*(2), 179–193. https://doi.org/10.1177%2F1473325017712581

Johnson, A., Guirguis, E., & Grace, Y. (2015). Preventing medication errors in transitions of care: a patient case approach. *Journal of the American Pharmacists Association*, *55*(2), e264-e276. https://doi.org/10.1331/japha.2015.15509

Joodaki, K., Nedjat, S., Dastjerdi, M. V., & Larijani, B. (2020). Ethical considerations and challenges of sex education for adolescents in Iran: a qualitative study. *Journal of Medical Ethics and History of Medicine*, *13*. https://doi.org/10.18502%2Fjmehm.v13i2.2664

Jungreithmayr, V., Rein, E. K., Haefeli, W. E., & Seidling, H. M. (2022). 1ISG-013 Users 'expectations and opinions on a computerised physician order entry (CPOE) system before and after its implementation. Section 1: *Introductory Statements and Governance.* https://doi:10.1136/ejhpharm-2022-eahp.8

Kalu, M. E. (2019). Using emphasis-purposeful sampling-phenomenon of interest–context (EPPiC) framework to reflect on two qualitative research designs and

questions: A reflective process. *The Qualitative Report*, *24*(10), 2524–2535. https://doi.org/10.46743/2160-3715/2019.4082

Kanazawa, J., Gianella, S., Concha-Garcia, S., Taylor, J., Kaytes, A., Christensen, C., Patel, H., Ndukwe, S., Rawlings, S. A., Hendrickx, S., Little, S., Brown, B., Smith, D., & Dubé, K. (2022). Ethical and practical considerations for HIV cure-related research at the end-of-life: a qualitative interview and focus group study in the United States. *BMC medical ethics*, *23*(1), 11–7. https://doi.org/10.1186/s12910-022-00741-8

Kapaki, V. (2018). The Anatomy of Medication Errors. In *Vignettes in Patient Safety-Volume 4*. IntechOpen. https://doi.org/10.5772/intechopen.79778

Kaufmann, R., & Vallade, J. I. (2020). Exploring connections in the online learning environment: student perceptions of rapport, climate, and loneliness. *Interactive Learning Environments*, 1–15. https://doi.org/10.1080/10494820.2020.1749670

Kilsdonk, E., Peute, L. W., & Jaspers, M. W. (2017). Factors influencing implementation success of guideline-based clinical decision support systems: a systematic review and gaps analysis. *International journal of medical informatics*, *98*, 56–64. https://doi.org/10.1016/j.ijmedinf.2016.12.001

Kinlay, M., Zheng, W. Y., Burke, R., Juraskova, I., Moles, R., & Baysari, M. (2021). Medication errors related to computerized provider order entry systems in hospitals and how they change over time: A narrative review. *Research in Social and Administrative Pharmacy*, *17*(9), 1546–1552. https://doi.org/10.1016/j.sapharm.2020.12.004

Körner, U., Müller-Thur, K., Lunau, T., Dragano, N., Angerer, P., & Buchner, A. (2019). Perceived stress in human–machine interaction in modern manufacturing environments—Results of a qualitative interview study. *Stress and Health*, *35*(2), 187–199. https://doi.org/10.1002/smi.2853

Kotter, J. P. (2009). What leaders really do: Harvard business review on leadership. *Harvard Business School*, *68*(3)103–111. https://doi.org/10.1109/EMR.2009.5235494

Kourtis, S. A., & Burns, J. P. (2019). Frameworks for quality improvement in pediatric intensive care: A concise review. *Pediatric Investigation, 3*(2), 117–121. https://doi.org/10.1002/ped4.12134

Kyngäs, H., Kääriäinen, M., & Elo, S. (2020). *The trustworthiness of content analysis.* In *The application of content analysis in nursing science research*, 41–48. https://doi.org/10.1007/978-3-030-30199-6_5

Lam, Y., McCrindle, R., Hui, T. K., Sherratt, R. S., & Donyai, P. (2021). The effect of quality indicators on beliefs about medicines reuse: an experimental study. *Pharmacy*, *9*(3), 128. https://doi.org/10.3390/pharmacy9030128

Lamprecht, C., & Guetterman, T. C. (2019). Mixed methods in accounting: a field based analysis. *Meditari Accountancy Research*. https://doi.org/10.1108/MEDAR-11-2018-0403

Larmené-Beld, K. H., Alting, E. K., & Taxis, K. (2018). A systematic literature review on strategies to avoid look-alike errors of labels. *European journal of clinical pharmacology*, *74*(8), 985–993. https://doi.org/10.1007/s00228-018-2471-z

Larmené-Beld, K. H. M., Keers, R. N., & Taxis, K. (2020). A survey about label enhancement methods for parenteral medication in European hospital pharmacies. *European Journal of Clinical Pharmacology*, *76*(11), 1567–1571. https://doi.org/10.1007/s00228-020-02916-x

LeCompte, L. L., & Young, S. J. (2020). Revised common rule changes to the consent process and consent form. *Ochsner Journal*, *20*(1), 62–75. https://doi.org/10.31486/toj.19.0055

Lee, S. E., Scott, L. D., Dahinten, V. S., Vincent, C., Lopez, K. D., & Park, C. G. (2019). Safety culture, patient safety, and quality of care outcomes: a literature review. *Western journal of nursing research*, *41*(2), 279–304. https://doi.org/10.1177%2F0193945917747416

Leikas, J., & Kulju, M. (2018). Ethical consideration of home monitoring technology: A qualitative focus group study. *Gerontechnology*, *17*(1), 38–47. https://doi.org/10.4017/gt.2018.17.1.004.00

Lenert, L., & McSwain, B. Y. (2020). Balancing health privacy, health information exchange, and research in the context of the COVID-19 pandemic. *Journal of the American Medical Informatics Association*, *27*(6), 963–966. https://doi.org/10.1093/jamia/ocaa039

Lestari, S. D., LEON, F. M., Widyastuti, S., BRABO, N. A., & Putra, A. H. P. K. (2020). Antecedents and consequences of innovation and business strategy on performance and competitive advantage of SMEs. *The Journal of Asian Finance,*

Economics and Business, *7*(6), 365–378. https://doi.org/10.13106/jafeb.2020.vol7.no6.365

Lewing, B. D., Hatfield, M. D., & Sansgiry, S. S. (2018). Impact of computerized provider order entry systems on hospital staff pharmacist workflow productivity: a three site comparative analysis based on level of CPOE implementation. *Journal of Hospital Administration*, *7*(1). https://doi.org/10.5430/jha.v7n1p1

Li, B., Wan, J., Qi, L., & Hang, J. (2022). Unveiling the role of knowledge management capabilities in strategic emergency response: insights from the impact of COVID-19 on China's new economy firms. *Journal of Knowledge Management*, (ahead-of-print). https://doi.org/10.1108/JKM-02-2022-0095

Lin, S. C., Jha, A. K., & Adler-Milstein, J. (2018). Electronic health records associated with lower hospital mortality after systems have time to mature. *Health Affairs*, *37*(7), 1128–1135. https://doi.org/10.1377/hlthaff.2017.1658

Livet, M., Haines, S. T., Curran, G. M., Seaton, T. L., Ward, C. S., Sorensen, T. D., & Roth McClurg, M. (2018). Implementation science to advance care delivery: a primer for pharmacists and other health professionals. *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy*, *38*(5), 490–502. https://doi.org/10.1002/phar.2114

Low, J. (2019). A pragmatic definition of the concept of theoretical saturation. *Sociological Focus*, *52*(2), 131–139. https://doi.org/10.1080/00380237.2018.1544514

Ma, L. (2021). Understanding non-adopters intention to use internet pharmacy: Revisiting the roles of trustworthiness, perceived risk, and consumer traits. *Journal of Engineering and Technology Management, 59*(2021), 1–11. https://doi.org/10.1016/j/jentecman.2021.101613

Mac-Seing, M., Ringuette, L., Zinszer, K., Godard, B., & Zarowsky, C. (2021). How to navigate the application of ethics norms in global health research: reflections based on qualitative research conducted with people with disabilities in Uganda. *BMC Medical Ethics*, *22*(1), 1–7. https://doi.org/10.1186/s12910-021-00710-7

Maher, C., Hadfield, M., Hutchings, M., & De Eyto, A. (2018). Ensuring rigor in qualitative data analysis: A design research approach to coding combining NVivo with traditional material methods. *International journal of qualitative methods*, *17*(1), 1609406918786362. https://doi.org/10.1177%2F1609406918786362

Malbog, M. A. F., Marasigan, R. I., Mindoro, J. N., Nipas, M. D., & Gulmatico, J. S. (2022). MEDSCANLATION: A Deep Learning-Based AI Scanner and Translation Device for Doctor's Prescription Medicine. In *2022 IEEE 13th Control and System Graduate Research Colloquium (ICSGRC)* (pp. 198–203). IEEE. https://doi.org/10.1109/ICSGRC55096.2022.9845144

Manias, E., Street, M., Lowe, G., Low, J. K., Gray, K., & Botti, M. (2021). Associations of person-related, environment-related and communication-related factors on medication errors in public and private hospitals: a retrospective clinical

audit. *BMC Health Services Research*, *21*(1), 1–13. https://doi.org/10.1186/s12913-021-07033-8

Mariotto, A. B., Enewold, L., Zhao, J., Zeruto, C. A., & Yabroff, K. R. (2020). Medical care costs associated with cancer survivorship in the United States. *Cancer Epidemiology and Prevention Biomarkers*, *29*(7), 1304–1312. https://doi.org/10.1158/1055-9965.epi-19-1534

Marx, D. (2019). Patient safety and the just culture. *Obstetrics and Gynecology Clinics*, *46*(2), 239–245. https://doi.org/10.1016/j.ogc.2019.01.003

Maryudi, A., & Fisher, M. R. (2020). The power in the interview: A practical guide for identifying the critical role of actor interests in environment research. *Forest and Society*, *4*(1), 142–150. https://doi.org/10.24259/fs.v4i1.9132

Maxwell, J. A. (2021). Why qualitative methods are necessary for generalization. *Qualitative Psychology, 8*(1), 111–118. https://doi.org/10.1037/qup0000173

Maxwell, S. R., & Webb, D. J. (2019). Improving medication safety: focus on prescribers and systems. *The Lancet*, *394*(10195), 283–285. https://doi.org/10.1016/S0140-6736(19)31526-0

McMichael, P., & Weber, H. (2020). *Development and social change*. Sage Publications. https://doi.org/10.4337/9781786431554.00009

McMillan, S. S., Wheeler, A. J., Sav, A., King, M. A., Whitty, J. A., Kendall, E., & Kelly, F. (2013). Community pharmacy in Australia: a health hub destination of the future. *Research in Social and Administrative Pharmacy*, *9*(6), 863–875. https://doi.org/10.1016/j.sapharm.2012.11.003

Miotto, G., Del-Castillo-Feito, C., & Blanco-González, A. (2020). Reputation and legitimacy: Key factors for Higher Education Institutions 'sustained competitive advantage. *Journal of Business Research*, *112*, 342–353. https://doi.org/10.1016/j.jbusres.2019.11.076

Mirzaei, A., Carter, S. R., & Schneider, C. R. (2018). Marketing activity in the community pharmacy sector–a scoping review. *Research in Social and Administrative Pharmacy*, *14*(2), 127–137. https://doi.org/10.1016/j.sapharm.2017.03.056

Mogharbel, A., Dowding, D., & Ainsworth, J. (2021). Physicians 'Use of the Computerized Physician Order Entry System for Medication Prescribing: Systematic Review. *JMIR Medical Informatics*, *9*(3), e22923. https://doi.org/10.2196/22923

Moorthy, G. (2020). Recruiting Psychology Students to Participate in Faculty/Department Research: Ethical Considerations and Best Practices. *Voices in Bioethics*, *6*. https://doi.org/10.7916/vib.v6i.7289

Mortelmans, D. (2019). *Analyzing qualitative data using NVivo.* In *The Palgrave handbook of methods for media policy research.* 435–450. Palgrave Macmillan, Cham.

Moses, H., Matheson, D. H., Dorsey, E. R., George, B. P., Sadoff, D., & Yoshimura, S. (2013). The anatomy of health care in the United States. *Jama*, *310*(18), 1947–1964. https://doi.org/10.1001/jama.2013.281425

Motulsky, A., Weir, D. L., Couture, I., Sicotte, C., Gagnon, M. P., Buckeridge, D. L., & Tamblyn, R. (2018). Usage and accuracy of medication data from nationwide health information exchange in Quebec, Canada. *Journal of the American Medical Informatics Association*, *25*(6), 722–729. https://doi.org/10.1093/jamia/ocy015

Nascimento, L. D. C. N., Souza, T. V. D., Oliveira, I. C. D. S., Moraes, J. R. M. M. D., Aguiar, R. C. B. D., & Silva, L. F. D. (2018). Theoretical saturation in qualitative research: an experience report in interview with schoolchildren. *Revista brasileira de enfermagem*, *71*, 228–233. https://doi.org/10.1590/0034-7167-2016-0616

National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. (1979). *The Belmont report: Ethical principles and guidelines for the protection of human subjects of research*. https://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/read-thehttps://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/read-the-belmont-report/index.htmlbelmont-report/index.html

Noble, H., & Heale, R. (2019). Triangulation in research, with examples. *Evidence-Based Nursing*, *22*(3), 67–68. https://doi.org/10.1136/ebnurs-2019-103145

Nunan, D. (2021). Collection: Privacy and research ethics. *International Journal of Market Research*, *63*(3), 271–274. https://doi.org/10.1177%2F14707853211015445

Obeidat, A. M. (2021). E-Marketing and Its Impact on The Competitive Advantage. *Ilkogretim Online*, *20*(5). https://doi.org/10.17051/ilkonline.2021.05.18

Ochieng, J., Kwagala, B., Barugahare, J., Mwaka, E., Ekusai-Sebatta, D., Ali, J., & Sewankambo, N. K. (2021). Perspectives and ethical considerations for return of genetics and genomics research results: a qualitative study of genomics researchers in Uganda. *BMC medical ethics*, *22*(1), 1–9. https://doi.org/10.1186/s12910-021-00724-1

Oluwafemi, A., Xulu, S., Dlamini, N., Luthuli, M., Mhlongo, T., Herbst, C., Shahmanesh, M., & Seeley, J. (2021). Transcription as a key phase of data analysis in qualitative research: Experience from KwaZulu-Natal, South Africa. *Field Methods*, *33*(4), 417–423. https://doi.org/10.1177%2F1525822X21989482

Palacios-Marqués, D., García, M. G., Sánchez, M. M., & Mari, M. P. A. (2019). Social entrepreneurship and organizational performance: A study of the mediating role of distinctive competencies in marketing. *Journal of Business Research*, *101*, 426–432. https://doi.org/10.1016/j.jbusres.2019.02.004

Patterson, J., & Holdford, D. (2017). Understanding the dissemination of appointment-based synchronization models using the CFIR framework. *Research in Social and Administrative Pharmacy*, *13*(5), 914–921. https://doi.org/10.1016/j.sapharm.2017.05.022

Patterson, J. A., Holdford, D. A., & Harpe, S. E. (2019). Patient preferences for objective quality metrics during community pharmacy selection: a discrete choice experiment. *Research in Social and Administrative Pharmacy*, *15*(6), 641–649. https://doi.org/10.1016/j.sapharm.2018.08.002

Peprah, W. K., & Ayaa, M. M. (2022). The Convergence of Financing Decision, Business Strategy Through Organisational Competitiveness to Sustainable Competitive Advantage: A Conceptual Analysis. *International Journal of Economics and Finance*, *14*(2). https://doi.org/10.5539/ijef.v14n2p87

Pereda, M. C., Goffman, D., Parker, S., Polat, N., & Kozakiewicz, J. M. (2022). Pharmacy technicians, supporting our past, shaping our future: Implementing an ASHP-ACPE–accredited pharmacy technician training program in an academic medical center. *American Journal of Health-System Pharmacy*, *79*(3), 179–186. https://doi.org/10.1093/ajhp/zxab242

Policarpo, V., Romano, S., António, J. H., Correia, T. S., & Costa, S. (2019). A new model for pharmacies? Insights from a quantitative study regarding the public's perceptions. *BMC health services research*, *19*(1), 1–11. https://doi.org/10.1186/s12913-019-3987-3

Pontinha, V. M., Wagner, T. D., & Holdford, D. A. (2021). Point-of-care testing in pharmacies—An evaluation of the service from the lens of resource-based theory of competitive advantage. *Journal of the American Pharmacists Association*, *61*(2), e45-e54. https://doi.org/10.1016/j.japh.2020.11.005

Prasad, S. S., Duncanson, K., Keely, S., Talley, N. J., Kairuz, T., Holtmann, G. J., Shah, A., & Walker, M. M. (2020). A Role for Primary Care Pharmacists in the Management of Inflammatory Bowel Disease? Lessons from Chronic Disease: A Systematic Review. *Pharmacy*, *8*(4), 204. https://doi.org/10.3390/pharmacy8040204

Prasasti, A., Aulisaina, F. I., & Rahman Hakim, M. A. (2021). Does Discount Matter in Indonesia e-Wallet Race? A Qualitative Study on Generation Z e-Wallet Preferences During Pandemics. *The Winners, 22*(1). https://doi.org/10.21512/tw.v22i1.7019

Prior, S. J., & Campbell, S. (2018). Patient and family involvement: a discussion of co-led redesign of healthcare services. *Journal of Participatory Medicine*, *10*(1), e8957. https://doi.org/10.2196/jopm.8957

Qato, D. M., Zenk, S., Wilder, J., Harrington, R., Gaskin, D., & Alexander, G. C. (2017). The availability of pharmacies in the United States: 2007–2015. *PloS one*, *12*(8), e0183172. https://doi.org/10.1371/journal.pone.0183172

Quintal, A., Messier, V., Rabasa-Lhoret, R., & Racine, E. (2020). A Qualitative Study of the Views of Individuals With Type 1 Diabetes on the Ethical Considerations Raised by the Artificial Pancreas. *Narrative Inquiry in Bioethics*, *10*(3), 237–261. https://doi.org/10.1353/nib.2020.0072

Reid, A. M., Brown, J. M., Smith, J. M., Cope, A. C., & Jamieson, S. (2018). Ethical dilemmas and reflexivity in qualitative research. *Perspectives on medical education*, *7*(2), 69–75. https://doi.org/10.1007/s40037-018-0412-2

Reis, C. T., Paiva, S. G., & Sousa, P. (2018). The patient safety culture: a systematic review by characteristics of hospital survey on patient safety culture dimensions. *International Journal for Quality in Health Care*, *30*(9), 660–677. https://doi.org/10.1093/intqhc/mzy080

Renjith, V., Yesodharan, R., Noronha, J., Ladd, E., & George, A. (2021). Qualitative methods in health care research. *International Journal of Preventive Medicine, 12*(1), 20. https://doi.org/10.4103/ijpvm.IJPVM_321_19

Roa, T. M., & Biller-Andorno, N. (2022). Financial incentives for participants in health research: when are they ethical?. *Swiss Medical Weekly*, (11). https://doi.org/10.4414/smw.2022.w30166

Romanow, D., Rai, A., & Keil, M. (2018). CPOE-enabled coordination: Appropriation for deep structure use and impacts on patient outcomes. *MIS Quarterly*, *42*(1), 189–212. https://doi.org/10.25300/MISQ/2018/13275

Ross, J., Stevenson, F., Dack, C., Pal, K., May, C., Michie, S., Barnard, M., & Murray, E. (2018). Developing an implementation strategy for a digital health intervention: an example in routine healthcare. *BMC health services research*, *18*(1), 1–13. https://doi.org/10.1186/s12913-018-3615-7

Ross, M. W., Iguchi, M. Y., & Panicker, S. (2018). Ethical aspects of data sharing and research participant protections. *American Psychologist, 73*(2), 138–145. https://doi.org/10.1037/amp0000240

Ross, P. T., & Zaidi, N. L. (2019). Limited by our limitations. *Perspectives on Medical Education*, *8*(4), 261–264. https://doi.org/10.1007/s40037-019-00530-x

Royce, T. J., Kircher, S., & Conti, R. M. (2019). Pharmacy benefit manager reform: lessons from Ohio. *Jama*, *322*(4), 299–300. https://doi.org/10.1001/jama.2019.7104

Sathi, C. (2018). Should Homeless Youth Participate in Research?. *Voices in Bioethics*, *4*. https://doi.org/10.7916/vib.v4i.6014

Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B. Burroughs, H., & Jinks, C. (2018). Saturation in qualitative research: Exploring its conceptualization and operationalization. *Quality & Quantity*, *52*(4), 1893–1907. https://doi.org/10.1007/s11135-017-0574-8

Schauerte, R., Feiereisen, S., & Malter, A. J. (2021). What does it take to survive in a digital world? Resource-based theory and strategic change in the TV industry. *Journal of Cultural Economics*, *45*(2), 263–293. https://doi.org/10.1007/s10824-020-09389-x

Schober, M. F. (2018). The future of face-to-face interviewing. *Quality Assurance in Education*. https://doi.org/10.1108/QAE-06-2017-0033

Scott, P., & Walker, J. T. (2018). Retailing under resale price maintenance: Economies of scale and scope, and firm strategic response, in the inter-war British retail pharmacy sector. *Business History*, *60*(6), 807–832. https://doi.org/10.1080/00076791.2017.1340455

Sebele-Mpofu, F. Y. (2020). Saturation controversy in qualitative research: Complexities and underlying assumptions. A literature review. *Cogent Social Sciences*, *6*(1), 1838706. https://doi.org/10.1080/23311886.2020.1838706

Shahriar, H., Haddad, H. M., & Farhadi, M. (2022). Assessing HIPAA compliance of open source electronic health record applications. In *Research Anthology on Securing Medical Systems and Records* (pp. 995–1011). IGI Global. https://doi.org/10.4018/978-1-6684-6311-6.ch048

Simons, R. J., Linden, J. V. D., & Duffy, T. (2000). New learning: Three ways to learn in a new balance. In *New learning*, 1–20. Springer, Dordrecht. https://doi.org/10.1007/0-306-47614-2_1

Sin, C. M. H., Young, M. W., Lo, C. C. H., Ma, P. K., & Chiu, W. K. (2021). The impact of computerised physician order entry on prescribing in general paediatric units in Hong Kong. *International Journal of Pharmacy Practice*, *29*(2), 164–169. https://doi.org/10.1093/ijpp/riaa018

Singh, A., Pradhan, S., Ravi, P., & Dhale, S. (2020). Application of six sigma and 5 S to improve medication turnaround time. *International Journal of Healthcare Management*, 1–9. https://doi.org/10.1080/20479700.2020.1757873

Sinha, M. S. (2022). Costly Gadgets: Barriers to Market Entry and Price Competition for Generic Drug-Device Combinations in the United States. *Minnesota Journal of Law, Science & Technology*, *23*(1), 293. https://scholarship.law.umn.edu/mjlst/vol23/iss1/7

Sittig, D. F., & Singh, H. (2020). COVID-19 and the need for a national health information technology infrastructure. *Jama*, *323*(23), 2373–2374. https://doi.org/10.1001/jama.2020.7239

Small, D., Small, R. M., & Green, A. (2021). Improving safety by developing trust with a just culture. *Nursing Management*, *28*(6). https://doi.org/10.7748/nm.2021.e2030

Srinivasamurthy, S. K., Ashokkumar, R., Kodidela, S., Howard, S. C., Samer, C. F., & Chakradhara Rao, U. S. (2021). Impact of computerised physician order entry (CPOE) on the incidence of chemotherapy-related medication errors: a systematic review. *European journal of clinical pharmacology*, *77*(8), 1123–1131. https://doi.org/10.1016/j.sapharm.2020.12.004

Suda, K. J., Calip, G. S., Zhou, J., Rowan, S., Gross, A. E., Hershow, R. C., Perez, R. I., McGregor, J. C., & Evans, C. T. (2019). Assessment of the appropriateness of antibiotic prescriptions for infection prophylaxis before dental procedures, 2011 to 2015. *JAMA network open*, *2*(5), e193909-e193909. https://doi.org/10.1001/jamanetworkopen.2019.3909

Taguchi, N. (2018). Description and explanation of pragmatic development: Quantitative, qualitative, and mixed methods research. *System, 75*, 23–32. https://doi.org/10.1016/j.system.2018.03.010

Teoh, L., McCullough, M. J., & Moses, G. (2022). Preventing Medication Errors in Dental Practice: An Australian Perspective. *Journal of Dentistry*, 104086. https://doi.org/10.1016/j.jdent.2022.104086

Theofanidis, D., & Fountouki, A., (2019). Limitations and delimitations in the research process. *Perioperative Nursing*, *7*(3), 155–162. https://doi.org/10.5281/zenodo.2552022

Tobiano, G., Chaboyer, W., Teasdale, T., Raleigh, R., & Manias, E. (2019). Patient engagement in admission and discharge medication communication: a systematic mixed studies review. *International journal of nursing studies*, *95*, 87–102. https://doi.org/10.1016/j.ijnurstu.2019.04.009

Tolley, C. L., Forde, N. E., Coffey, K. L., Sittig, D. F., Ash, J. S., Husband, A. K., Bates, D. W., & Slight, S. P. (2018). Factors contributing to medication errors made when using computerized order entry in pediatrics: a systematic review. *Journal of the American Medical Informatics Association*, *25*(5), 575–584. https://doi.org/10.1093/jamia/ocx124

Tolley, C. L., Watson, N. W., Heed, A., Einbeck, J., Medows, S., Wood, L., Campbell, L., & Slight, S. P. (2022). The impact of a novel medication scanner on administration errors in the hospital setting: a before and after feasibility study. *BMC medical informatics and decision making*, *22*(1), 1–9. https://doi.org/10.1186/s12911-022-01828-3

Trakulsunti, Y., Antony, J., Edgeman, R., Cudney, B., Dempsey, M., & Brennan, A. (2022). Reducing pharmacy medication errors using Lean Six Sigma: A Thai hospital case study. *Total Quality Management & Business Excellence*, *33*(5-6), 664–682. https://doi.org/10.1080/14783363.2021.1885292

Tyynismaa, L., Honkala, A., Airaksinen, M., Shermock, K., & Lehtonen, L. (2021). Identifying high-alert medications in a university hospital by applying data from the medication error reporting system. *Journal of patient safety*, *17*(6), 417–424. https://doi.org/10.1097/pts.0000000000000388

Vasileiou, K., Barnett, J., Thorpe, S., & Young, T. (2018). Characterising and justifying sample size sufficiency in interview-based studies: systematic analysis of qualitative health research over a 15-year period. *BMC medical research methodology*, *18*(1), 1–18. https://doi.org/10.1186/s12874-018-0594-7

Walker, J., Pan, E., Johnston, D., Adler-Milstein, J., Bates, D. W., & Middleton, B. (2005). The value of health care information exchange and interoperability. *Health Affairs, 24(Suppl1)*, W5–10–W5–18. https://doi.org/10.1377/hlthaff.w5.10

Wang, K. Y., Chou, C. C., & Lai, J. C. Y. (2019). A structural model of total quality management, work values, job satisfaction and patient-safety-culture attitude among nurses. *Journal of nursing management*, *27*(2), 225–232. https://doi.org/10.1111/jonm.12669

Wang, C. Y., Clavarino, A., & Luetsch, K. (2021). The implementation of a pharmacy residency program–A qualitative study on the diffusion of an innovation. *Exploratory Research in Clinical and Social Pharmacy*, *3*, 100048. https://doi.org/10.1016/j.rcsop.2021.100048

Watts, F. M., & Finkenstaedt-Quinn, S. A. (2021). The current state of methods for establishing reliability in qualitative chemistry education research articles. *Chemistry Education Research and Practice*, *22*(3), 565–578. https://doi.org/10.1039/D1RP00007A

Weingart, S. N., Zhang, L., Sweeney, M., & Hassett, M. (2018). Chemotherapy medication errors. *The Lancet Oncology*, *19*(4), e191-e199. https://doi.org/10.1016/S1470-2045(18)30094-9

Weinstein, A. (2018). *Superior customer value: Finding and keeping customers in the now economy*. Routledge. https://doi.org/10.4324/9781351214346

Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic management journal*, *5*(2), 171–180. https://doi.org/10.1002/smj.4250050207

Wesley, D. B., Schubel, L., Hsiao, C., Burn, S., Howe, J., Kellogg, K., Lincoln, A., Kim, B., & Ratwani, R. (2019). A socio-technical systems approach to the use of health IT for patient reported outcomes: Patient and healthcare provider perspectives. *Journal of Biomedical Informatics, 100*(4), 1–8. https://doi.org/10.1016/j.yjbinx.2019.100048

Wichmann, L. J., Reiff, N., Zintl, S., & Berking, M. (2021). Developing a digital assistive tool for dementia patients and their caregivers: A qualitative study on needs, potential functions, practical requirements, user acceptance, and ethical considerations. *Alzheimer's & Dementia*, *17*, e056015. https://doi.org/10.1002/alz.056015

Williams, J., Malden, S., Heeney, C., Bouamrane, M., Holder, M., Perera, U., Bates, D. W., & Sheikh, A. (2022). Optimizing Hospital Electronic Prescribing Systems: A Systematic Scoping Review. *Journal of patient safety*, *18*(2), e547. https://doi.org/10.1097%2FPTS.0000000000000867

Wilson, C., Rooshenas, L., Paramasivan, S., Elliott, D., Jepson, M., Strong, S., Birtle, A., Beard, D. J., Halliday, A., Hamdy, F. C., Lewis, R., Metcalfe, C., Rogers, C. A., Stein, R. C., Blazeby, J. M., & Donovan, J. L. (2018). Development of a framework to improve the process of recruitment to randomised controlled

trials (RCTs): the SEAR (Screened, Eligible, Approached, Randomised) framework. *Trials*, *19*(1), 1–10. https://doi.org/10.1186/s13063-017-2413-6

Wilson, G. A., & Slobodzian, A. D. (2020). Enhancing financial performance by pharmacy innovation. *Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration*, *37*(4), 459–467. https://doi.org/10.1002/cjas.1562

Wongleedee, K. (2020). Role of customer loyalty on employee performance and productivity in pharmacy business in Thailand. *Systematic Reviews in Pharmacy*, *11*(2), 631–641. https://doi.org/10.5530/srp.2019.2.04

Wongvedvanij, R., & Darawong, C. (2022). Enhancing the service quality of community pharmacies for non-prescription medicines based on the perspectives of pharmacists and patients: a qualitative study. *Journal of Communication in Healthcare*, 1–8. https://doi.org/10.1080/17538068.2022.2026057

World Health Organization (2017) WHO launches global effort to halve medication-related errors in 5 years. WHO, Geneva Available at: https://www.who.int/news-room/detail/29-03-2017-who-launches-global-effort-to-halve-medication-related-errors-in-5-years

Worlu, R., Kehinde, O. J., & Borishade, T. T. (2016). Effective customer experience management in health-care sector of Nigeria: a conceptual model. *International Journal of Pharmaceutical and Healthcare Marketing*, *10*(4), 449–466. https://doi.org/10.1108/ijphm-12-2015-0059

Xiao, C., Choi, E., & Sun, J. (2018). Opportunities and challenges in developing deep learning models using electronic health records data: a systematic review. *Journal of the American Medical Informatics Association*, *25*(10), 1419–1428. https://doi.org/10.1093/jamia/ocy068

Yarahmadi, M. M., Rafat, M., & Tayebi, S. K. (2022). Determinants of Iran's Export Diversification: Emphasis on the Cost of Entrance to Domestic and Foreign Markets. *Iranian Journal of Economic Research*, *26*(89), 131–154. https://doi.org/10.22054/ijer.2021.45275.781

Yarney, L., Adzimah-Yeboah, B., Domfeh, K. A., & Aboagye, A. Q. Q. (2021). Balancing Academia with Clinical Proficiency in the Training of Nurses at the University Level: The Case of Ghana. *International Journal of Nursing Education*, *13*(1). https://www.doi.org/10.37506/ijone.v13i1.13321

Yeung, T. (2019). Local health department adoption of electronic health records and health information exchanges and its impact on population health. *International Journal of Medical Informatics*, *128*, 1–6. https://doi.org/10.1016/j.ijmedinf.2019.04.011

Yin, R. K. (2018). *Case study research and application: Designs and methods* (6th ed.). Sage.

York, J. B., Cardoso, M. Z., Azuma, D. S., Beam, K. S., Binney Jr, G. G., & Weingart, S. N. (2019). Computerized physician order entry in the neonatal intensive care unit: a narrative review. *Applied Clinical Informatics*, *10*(03), 487–494. https://doi.org/10.1055/s-0039-1692475

Zheng, S., Tucker, A. L., Ren, Z. J., Heineke, J., McLaughlin, A., & Podell, A. (2016). The Impact of Internal Service Quality on Nurse Inefficiency and Medical Errors. *SSRN Electronics Journal*. https://doi.org/10.2139/ssrn.2784503

Appendix A: Interview Protocol

Topic: Pharmacy Manager System Implementation Strategies to Mitigate the Costs of Prescription Errors

Step 1: Introduction.

I will express my gratitude to the study participants for volunteering their time.

Step 2: Purpose of study.

Introduce that the purpose of this study is to research the strategies independent pharmacy managers use to mitigate the cost of prescription errors and increase profitability.

Step 3: Describe why the participants are participating in them.

Mention how the participant's input will help support the interviewer's partial fulfillment for the Doctor of Business Administration degree being awarded at Walden University.

Step 4: Describe the benefits of participating.

Describe how independent pharmacy managers could use the study's findings to understand sustainable leadership techniques better, enabling businesses to satisfy societal expectations more effectively.

Step 5: Discuss ethics.

For reasons of ethics and the protection of individual privacy, I will ask permission to take notes during the entire session, including the introduction and the interview.

Step 6: Discuss confidentiality.

Assure the participant that all information provided will be kept private and that study records will be stored in a password-protected database. The records will only be accessible to the researcher. Inform participants that 5 years after the research is over, all files containing the data they provided will be deleted. Any information gleaned from this meeting will be kept private and utilized solely for the study, which will be presented in the doctoral study.

Step 7: Ask if the participant has any questions.

Any other questions?

Step 8: Transition to the interview questions.

Conduct the interview by asking semistructured questions. Ask probing questions as required, observe body language, and verbal cues.

Step 9: Wrap-up.

I appreciate your time. To ensure that I have interpreted your data correctly, would a follow-up interview be okay to verify my understanding of your data? Would it be okay to get in touch with you if I needed to follow up or clarify anything?

Appendix B: Interview Questions

1. What are key strategies used in your organization to reduce prescription errors?
2. How is implementing computerized physician order entry (CPOE) beneficial?
3. What strategies do you use to overcome the barriers to medication error reduction?
4. What strategies do you use to increase profit by mitigating prescription errors?
5. How did pharmacy employee training and development complement or affect your strategies to reduce prescription errors?
6. How did the employees react to your implemented strategies?
7. What specific actions hinder proper usage of health information exchange (HIE) for technological inputs to reduce medical errors?
8. What additional information can you share to help me understand your strategies to mitigate the cost of prescription errors and increase profitability?

Appendix C: Partner Organization Permission/Agreement

Partner Organization Agreement for DBA Case Study

Xxxxxxx Xxxxxxxx
xxxxx@xxxxxxxxxxxxxxx.com
(xxx) xxx-2300
18th July 2022.

The doctoral student, [Tunde Cardozo], is conducting a case study involving our organization and is therefore approved to collect interview data from one or more of our organizations leaders (managers, directors, or decision-makers whom I will identify to the student).

INTERNAL RECORDS (OPTIONAL):
The signer of this agreement should indicate which internal documents, if any, can be shared with the researcher.

☐ Our organization cannot allow access to internal records.

■ Our organization will allow this student to analyze the following internal records that I deem appropriate ***(and shall be de-identified or redacted, as needed)****:*

■ *training materials* ■ *protocols* ■ *manuals* ☐ *reports* ☐ *agreements* ■ *operational records*
☐ *meeting minutes* ☐ *digital/audio/video documents* ☐ *other internal documents:*
_____

STUDENT RESPONSIBILITIES
I understand that, as per the student doctoral program requirements, the student will publish a scholarly report of this case study project in Proquest as a doctoral capstone (withholding the names of the organization and participating individuals), as per the following ethical standards:

a. In all reports (including drafts shared with peers and faculty members), the student is required to maintain confidentiality by removing names and key pieces of evidence/data that might disclose an organization's/individual's identity or inappropriately divulge proprietary details. If the organization itself wishes to publicize the findings of this project, that is the organization's judgment call.
b. The student will be responsible for complying with the organization's policies and requirements regarding data collection (including the need for the partner organization's internal ethics/regulatory approval, if applicable).
c. Via an Interview Consent Form, the student will describe to interviewees how the data will be used in the doctoral project and how all interviewees 'privacy will be protected.

d. The doctoral student will not use these data for any purpose other than the doctoral study outlined in this agreement.

I confirm that I am authorized to approve research activities in this setting.

Signature _____[redacted]_____

Partner Organization Leader's Name and Title
Dr. Xxxxxx Xxxxxxx (RpH, PharmD)
Pharmacy Manager