

Leadership and Strategy for Cloud Pharmacy Chain - for Better Patient Experience and Sustainability Across North America

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ABSTRACT

The final report for the thesis summarizes the dissertation completion, noting the critical milestones attained, and reporting study completed and how they have been presented. The research study aimed to investigate the barriers that limit the adoption of cloud pharmacy and identify the role of leadership in driving technological change and the adoption of cloud pharmacy.

The pharmacy sector needs to catch up to other sectors in adopting modern technologies and innovations. Research studies have cited security concerns and strict regulatory frameworks as the primary limitations to the successful adoption of the cloud. Chapter two presents the existing literature on the barriers and factors contributing to the low adoption of cloud pharmacy and the role of leaders in embracing innovations.

The research study seeks to fill the existing research gap on the application of transformational leadership in providing direction toward adopting cloud pharmacy. The research had adopted a pragmatic research methodology, which was suitable to provide flexibility in selecting research methods to have the most appropriate research design. Pragmatic research philosophy helped enable the researcher to transform the complex subject matter under investigation to understand the subject matter under investigation better. The research will use primary data acquired from stakeholders in the pharmacy sector through questionnaires, and the data was analysed through content analysis. This fourth and fifth chapters detail the analysis conducted and the results observed. The fifth chapter finishes with a comprehensive assessment of the conclusions and recommendations of the study.

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Abbreviations

ROI: Rate of Investment

TAM: Technology Adoption Model

DSCA: U.S. Drug Supply Chain Security Act

HIPPA: Health Insurance Portability and Accountability Act

R & D: Research and Development

HER: Electronic Health Record

API: Application Programming Interface

PEOU: Perceived Ease of Usefulness

PU: Perceived Usefulness

Introduction

Background of the Study

The transition and migration into the cloud have been termed as an opportunity and a risk based on the benefits and challenges of cloud-based solutions. In the pharmaceutical sector, cloud-based pharmacy solutions have significant benefits encompassing optimization of operational efficiency, protection of data, enhanced security, increased rate of investment (ROI), improved medication management, better visibility and decision-making,

and simplification of complex tasks. Cloud-based pharmacy solutions denote to the application of cloud computing technology in the pharmaceutical industry to manage and operate various aspects of the business. The solutions provide a wide variety of benefits and advantages for pharmacies and healthcare institutions. It provides optimization of operational efficiency enabling pharmacies to streamline their operations and automate many tasks, such as inventory management, data management, and prescription processing. The benefits of the optimization for pharmacies are to save time and resources, allowing them to focus on providing better care to their patients. Cloud-based solutions augment protection of data resulting in enhanced security for patient and business data, as well as enhancement of disaster recovery capabilities in the event of data loss [1]. Moreover, Cloud-based solutions provide enhanced security for patient and business data, such as encryption, and secure login and access control. It has been established that cloud-based solutions are a formula for generating Increased rate of investment (ROI) by reducing costs associated with hardware and IT maintenance and allowing for greater investment in other areas of the business that increase overall returns [2]. Cloud-based solutions leads to improved medication management by enabling pharmacies to manage their medication inventory more effectively and ensure that patients receive the right medications at the right time. Cloud

pharmacy improves the management process by providing better visibility and decision-making capabilities. For instance, cloud-based solutions provide real-time data and analytics that can help pharmacies make better informed decisions about their operations and patient care [3]. According to cloud-based solutions are utilized for simplification of complex tasks in the pharmaceutical settings through automation of complex tasks, reducing manual errors, and increasing the speed of data processing, provision of user-friendly interfaces that simplify the work of pharmacy staff and allow them to focus on providing better care to patients [4]. Therefore, cloud pharmacy helps pharmaceutical companies to enhance their operations and better serve patients by providing real-time data access, automating tasks, and securing sensitive information for integrity and credibility.

Longitudinal research studies on the adoption of cloud pharmacy underscore the major benefits creation of an interconnected platform for pharmacies, providing a comprehensive understanding of patients' full health records, handling rising demands, enhancing compliance standards, scalability of services, overcoming downtime and system failure, and streamline operations [5]. Despite the evident benefits and advantages of cloud pharmacy, pharmacies have shown reluctance to adopt cloud pharmacies citing barriers and risks associated with the migration to the cloud. The most common barriers and risks identified by pharmacies reluctant to adopt cloud pharmacy are security concerns on data confidentiality, vulnerability to security threats, limited control of data, access limitation to non-health professionals, rigidity, and restriction of local laws to data transfer, and strict regulatory framework. The primary barrier for the hesitation is the perceived lack of control over data security and privacy intrusion due to exposure of sensitive and confidential patient data [1]. Pharmacies are responsible for sensitive patient information, and many are concerned about the security of data stored in the cloud. They worry about the possibility of data breaches and unauthorized third-party access to patient information, which could lead to legal and financial consequences. Another notable barrier to the adoption of cloud pharmacy is the substantial cost and effort required to migrate data to the cloud. Pharmacies are required to purchase new software and hardware, and train staff on how to use the new technology [6]. This is a significant capital investment, and many pharmacies may not have the financial resources to make this transition. Similarly, the reluctance to migrate to cloud by pharmacies is fuelled by concerns by some pharmacies about the reliability and availability of cloud services [7]. They may be worried about the possibility of service disruptions or downtimes, which could have a significant impact on their operations. The research strives to explore the existing literature to identify the causes of the limited adoption of cloud pharmacy, highlight the benefits of cloud pharmacy and identify appropriate leadership strategies for the successful adoption of cloud pharmacy. The research will also focus on highlighting the benefits of cloud pharmacy that entail improved efficiency and cost savings, increased accessibility to patient data, and improved collaboration and communication between healthcare providers. The research will also look at identifying effective leadership strategies for successfully implementing and adopting cloud pharmacy. The focus will be on the strategies for overcoming resistance to change, effectively communicating the benefits of the technology to stakeholders, and providing adequate training and support for healthcare providers. Therefore, the research aims to provide a comprehensive understanding of the current landscape of cloud pharmacy adoption and offer practical solutions for increasing its adoption in the healthcare industry. The aim of the research is

to identify the role of leadership in driving technological change and the adoption of cloud pharmacy and recommend the most useful leadership type and traits for the successful adoption of cloud pharmacy.

Problem Statement

The business world has undergone a revolution courtesy of information technology advancements fuelled by big data analytics, machine learning, artificial intelligence, and cloud computing. The major driver of this transformation is the explosion of big data and the emergence of big data analytics. With the ability to collect, store, and process vast amounts of data, businesses are now able to gain insights and make data-driven decisions in a way that was previously not possible [3]. Another major driver of change in the business world is the advancement of machine learning and artificial intelligence. These technologies have enhanced the capacities of businesses to automate repetitive tasks, improve efficiency, make more accurate predictions, and improve the decision-making process. Cloud computing is playing a major role in the business world revolution. With the ability to access and store data and applications in the cloud, businesses are able to reduce costs, increase scalability, and access resources on-demand. The outcome of these technologies allows businesses to be more agile and responsive to changing market conditions and offer dynamic customer-driven products. The combination of these technologies is enabling businesses to transform the way they operate and compete in the global economy [6]. It is allowing them to gain new insights, create new products, and improve their operational efficiency. As a result, the business world is becoming more data-driven, automated, and connected than ever before.

Nearly all businesses have transformed their operational capabilities and optimized their productivity levels, as well as user, improved user experience, and delivery of services. However, the healthcare sector needs to catch up in the adoption and utilization of new technologies despite the guaranteed benefits of the new technologies. Cloud computing benefits organizations through scalable storage services, optimization of operational efficiencies, proper enhanced security, proper data management, improved business resiliency and agility, reduced physical I.T. infrastructure operational and maintenance cost, and the ability to access information remotely. However, despite these benefits, pharmaceutical companies have shown reluctance and perceived resistance toward the adoption of cloud pharmacy. There is a large body of literature on factors that result in the low adoption of cloud computing in the healthcare industry, with most research studies citing security and strict regulation in the industry. The healthcare industry is one of the most heavily regulated sectors in the world, with strict guidelines and laws in place to protect patient data and ensure the privacy and security of sensitive information. As a result, the adoption of cloud computing in the healthcare industry has been slow, as many healthcare organizations are hesitant to move their data to a cloud-based environment due to concerns about security and compliance.

One of the primary concerns is the potential for data breaches and cyberattacks. In the healthcare industry, patient data is highly sensitive and valuable, making it a prime target for cyber criminals. Additionally, healthcare organizations are required to comply with strict regulations such as HIPAA, which sets guidelines for the handling and protection of patient data. This can make it difficult for healthcare organizations to ensure compliance with these regulations when using cloud-based solutions.

However, other industries such as banking, finance, insurance, and energy have had to navigate a complex web of legal and regulatory frameworks in order to adopt new technologies like cloud computing. Despite these challenges, these industries have been able to successfully adopt these technologies and leverage the benefits they offer. This serves as a valuable lesson for the pharmaceutical industry, as it too must navigate a complex legal and regulatory landscape in order to adopt new technologies like cloud pharmacy. In order for the pharmaceutical industry to successfully adopt cloud pharmacy, it is essential that pharmaceutical leaders take a proactive role in enabling the adoption of this technology. The leaders have an uphill task that entails working closely with regulatory bodies to ensure that the technology is compliant with all relevant laws and regulations, and also working with industry partners to develop best practices and guidelines for the use of cloud pharmacy. The research will examine the role of pharmaceutical leaders to invest in the necessary infrastructure and resources to support the adoption of cloud pharmacy, including training and education for employees and partners. Therefore, it is essential to establish the role of pharmaceutical leaders in enabling the adoption of cloud pharmacy. The ability of the pharmaceutical industry to successfully adopt cloud pharmacy will be a key driver of its ability to remain competitive in the rapidly changing healthcare landscape and rests on the shoulders of pharmaceutical leaders. There need to be more research studies on the role played by leaders in the healthcare industry to spur change and embrace technology as a critical resource for business success and sustainability. Research on the role of leaders in the healthcare industry is crucial because it can provide insight into how leaders can drive change and adopt technology as a key resource for achieving business success and sustainability. The research will identify the leadership styles, strategies, and practices that are most effective in promoting technological innovation and adoption in healthcare organizations. It will also help identify the barriers and challenges that leaders in the healthcare industry face in adopting new technologies and suggest ways to overcome them. The research will provide guidance on how to develop the skills and knowledge needed by healthcare leaders to effectively lead digital transformation efforts. Thus, the research study aims to fill the existing research gap on the role of leadership in promoting the successful adoption of cloud pharmacy by developing new information and insights.

Aims and Objectives

The main aim of the research is to propose the most appropriate leadership traits for the successful adoption of cloud pharmacy supply chain management to improve patient experience and affordability of medication in North America.

Based on the aim of the study, the following research objectives are formulated.

1. To explore the benefits of cloud-based pharmacy software systems
2. To identify the barriers that limit the adoption of cloud pharmacy among the traditional pharmacies
3. To identify the role of leadership in driving technological change and adoption of cloud pharmacy
4. To suggest suitable leadership behaviour and traits to improve the adoption of cloud pharmacy

Research Questions

The research study investigates the role of transformational leadership in the adoption of cloud pharmacy by evaluating the barriers to the adoption. The researcher examines the benefits of cloud pharmacy and the role of transformational leadership strategies in cloud pharmacy adoption and seeks to answer the

following research questions.

1. What are the perceived benefits and advantages of cloud pharmacy?
2. What are the primary barriers and limitations to the successful adoption of cloud pharmacy?
3. What is the role of leadership in facilitating the successful adoption of cloud pharmacy?

Scope of the Study

The research study is limited to the North American geographical region to provide a narrow focus on the subject matter and due to the suitability of the region owing to its advancement in the adoption of healthcare technology. The study will only focus on the adoption of cloud pharmacy in healthcare institutions and independent pharmacies and not any other technology or cloud-based services. The limited scope allows the research to focus specifically on the implementation and usage of cloud pharmacy within these settings, providing a more in-depth understanding of the specific challenges and benefits associated with this technology. By limiting the scope of the study in this way, the researcher is able to delve deeper into the topic and provide more detailed and accurate findings. Due to financial and time constraints, the researcher will contact sixty-five respondents and utilize secondary sources. As result, the research will have a smaller sample size, which maybe potentially less representative of the total population, but will be complemented by secondary information. The researcher's limitations in terms of financial and time constraints will impact the scope and methodology of their study and may affect the generalizability and reliability of their findings.

Significance of the Study

The research study aims to fill an existing research gap by providing new information and insights on the implications of leadership on the adoption of cloud pharmacy to improve patient experience and provide medication affordability. The study will explore how leadership can impact the adoption of this technology in order to improve patient experience and increase medication affordability. This can be achieved through understanding the factors that influence leaders to adopt cloud pharmacy, the barriers they encounter, and the strategies they use to overcome these barriers. The study will also explore the impact of leadership on the implementation and successful use of cloud pharmacy, and the ways in which it improves patient experience and medication affordability. The findings of this research can be used to inform the development of policies and strategies to promote the adoption and implementation of cloud pharmacy in healthcare settings. The research finding and recommendations will contribute a new body of knowledge to cloud pharmacy and provide a progressive trajectory in the domain. The research will serve as a steppingstone for future research and progress in the field by improving the understanding and practice of cloud pharmacy and will help to guide the direction of future developments. The research study will provide valuable insights and information that can be used by healthcare leaders and policymakers to make informed decisions and improve overall healthcare delivery. It will help supply chain managers to optimize the flow of goods and services within the healthcare system, thereby improving efficiency and reducing costs. Healthcare information technology specialists will be able to use the findings to develop and implement better systems for managing and analyzing healthcare data. Pharmacists will benefit greatly from the research to improve medication management and patient outcomes. Healthcare researchers and scholars will be able to use the findings to further their own research and contribute to the body of knowledge in the field. The research will also be

beneficial to other professionals within the healthcare fraternity, such as nurses, physicians, and administrators, as it will provide them with valuable information that they can use to improve the quality of care they provide to patients. Overall, the research study will have a wide-reaching impact on the healthcare industry and the people it serves. Therefore, the research study will be beneficial to healthcare leaders and policymakers, supply chain managers, healthcare information technology specialists, pharmacists, healthcare researchers and scholars, and other professionals within the healthcare fraternity.

Structure of the Study

The study is divided into five chapters: Chapter One-Introduction, Chapter Two -Literature Review, Chapter Three Methodology, Chapter Four-Findings and Analysis, and Chapter Five-Conclusion and Recommendation. Each chapter will contain subsections with separate contents that contribute to the thesis as a whole.

Literature Review

Introduction

Chapter two of the dissertation presents a comprehensive and exhaustive review of literature related to the benefits and barriers of the adoption of cloud pharmacy and the role of transformational leadership in enhancing the adoption. The section analyzes and examines the findings of the previous research studies. The section will have a systematic review of the existing literature on the benefits of the adoption of cloud pharmacy, barriers and limitations to the adoption, and the role of transformational leadership in facilitating the successful adoption of cloud pharmacy. The last section of the chapter will present a summary of the literature review, an evaluation of the existing research gap from the findings of previous research studies, and a conclusion to sum up the chapter.

Benefits of Adopting Cloud Pharmacy

Multidimensional research studies on adopting and integrating information technology capabilities in business underscore the benefits and opportunities associated with such technologies. These studies have examined various aspects of information technology adoption and integration, including the impact on organizational performance, competitiveness, and innovation. Cloud pharmacy has a pivotal role in the pharmaceutical industry through the optimization of operations and dealing with peculiar challenges of the sector. Different scholars and authors have enumerated the benefits and opportunities associated with the successful adoption of cloud pharmacy. Information technology capabilities can help businesses to streamline operations, increase efficiency, and reduce costs. For instance, automation of certain processes and the use of data analytics can help businesses to identify areas for improvement and make more informed decisions. The research study by on the effects of cloud computing in the healthcare sector in outpatient facilities states that pharmacies can leverage cloud pharmacy to augment customer service and meet customer expectations by having an electronic health record (EHR) to understand the patient full record [8]. examined the effects of cloud computing on the healthcare sector, specifically in outpatient facilities [8]. The study found that pharmacies can greatly benefit from the use of cloud computing, also known as cloud pharmacy, in order to improve customer service and meet customer expectations.

One of the keyways in which cloud pharmacy can improve customer service is by providing access to electronic health records (EHR) for patients. By having access to a patient's

complete medical history, including previous prescriptions, allergies, and medical conditions, pharmacists can make more informed decisions about medication prescriptions and potential interactions. This can ultimately lead to better patient outcomes and increased customer satisfaction.

Furthermore, cloud pharmacy can also improve customer service by allowing patients to access their own medical records and prescriptions online. This can make it easier for patients to keep track of their medications and refill prescriptions, which can lead to better medication adherence. In addition, by allowing patients to access their medical records online, it can also reduce the need for them to visit the pharmacy in person, which can save time and increase convenience for patients.

The research study by found that cloud computing can have a positive impact on the healthcare sector, specifically in outpatient facilities [8]. By leveraging cloud pharmacy, pharmacies can improve customer service and meet customer expectations by providing access to electronic health records and making it easier for patients to access and manage their own medical information [2].

Cloud pharmacy provides an opportunity to overcome the challenges and limitations of on-premise or in-house management of data that result in an inability to meet clients' demands and expectations. One major challenge of on-premise data management is the limited storage capacity. Pharmacies often have large amounts of data to store, including patient records, medication inventory, and prescription records. On-premise systems can quickly become overwhelmed and may not have the capacity to store all of the necessary information. This can lead to data loss or corruption, which can have a significant impact on the ability of the pharmacy to meet customer demands and expectations [2]. Another challenge of on-premise data management is the lack of flexibility, which is solved by the adoption of cloud pharmacy. On-premise systems are typically inflexible and do not tend to adapt to changing business and market needs especially in the dynamic and rapidly changing business landscape.

The research shows that cloud pharmacy offers a solution to the frequent downtimes and system failures common in traditional in-house data management systems. Cloud pharmacy is not prone to downtimes or system failures like in-house systems that are vulnerable to overloads and limited capacity. Cloud pharmacy systems use cloud computing technology, which allows for distributed storage and processing of data across multiple servers in different locations. This provides increased reliability and scalability, as well as the ability to easily access and share data from any location with an internet connection [6]. This can help to reduce downtime and system failures, as well as improve overall data management efficiency. Moreover, cloud-based systems are also more cost-effective and easier to maintain as compared to in-house systems. Another research by conducted in Germany to investigate the infiltration of cloud computing systems in small and medium healthcare providers show us that cloud pharmacy provides an interconnected platform for pharmacies enabling sharing of patient information to facilitate increased collaborations [9]. For example, a pharmaceutical company with different outlets creates a central patient data depository allowing for the harmonization of data and improvement in patient service delivery. Similarly, it allows for collaboration within the pharmaceutical community leading to greater convenience for the patients by providing geographical flexibility to the patients.

Another research undertaken by to examine the security capabilities of cloud-based systems in hospitals emphasizes the significance of cloud-based systems in pharmacies as the provision of greater security compared to offsite data storage [10]. The research by suggests that cloud-based systems can provide greater security for hospitals, specifically in the context of pharmacies [10]. This is because cloud-based systems allow for data to be stored and accessed remotely, which can provide an added layer of security compared to traditional offsite data storage methods. Thus, cloud-based systems often have built-in security features, such as encryption and access controls, which can further enhance the security of the data being stored. The study highlights the potential benefits of using cloud-based systems in hospitals, particularly in terms of improving the security of sensitive information in pharmacies. The author states that cloud pharmacy guarantees the security of data by offering protection against technical issues and providing a safeguard against environmental threats such as fires and floods. Cloud pharmacy is the gateway to attaining high-level security for confidential and sensitive data in the healthcare sector. The research further established that the use of redundant servers to store data in the cloud storage provides a guarantee since the failure of one data center means that data is managed and saved by other data centres [11]. However, some research studies have acknowledged the peculiar features of the pharma industry that make the data they store sensitive and demand an extra layer of security. On the contrary, security has been termed as the single biggest barrier to the adoption of cloud-based solutions in pharmacies due to security vulnerabilities of the cloud system [11].

A research study to examine the benefits of cloud computing in the health setup in Singapore established that cloud pharmacies optimize and streamline operations in the pharmaceutical industry by improving communication and correspondence and provision of real-time information about clients [12]. The study is affirmed by a research study conducted in the U.S., identified as suitable for the pharma industry by facilitating proper data management and real-time access to data for speedy decision-making. The pharma industry generates huge amounts of data related to patients and other subsidiary processes that require proper storage and access. Similarly, cloud-based systems enhance the interlinkage between hospitals and pharmacies by easing the data retrieval process and enhancing easy accessibility for efficient data management [5]. The U.S. Drug Supply Chain Security Act (DSCA) acknowledges the need for fast, efficient, and reliable data retrieval and communication frameworks to improve the delivery of services in healthcare. Research and development (R&D), patient surveys, and clinical tests generate massive data in various departments that require further analysis to extract meaningful information from pharmaceutical companies. Cloud computing allows multi-device support where large datasets in a global network can be accessed using multiple devices simultaneously, allowing for the seamless sharing of information [5]. Cloud data storage services have easy-to-use user interfaces that enhance their usability and accessibility remotely at any geographical location.

Another research study investigating how cloud-based solutions enhance data management in institutions with large datasets found that cloud-based services are the epitome of automation and synchronization by allowing the linking up of multiple devices to access data stored in the cloud storage [9]. One of the key advantages of cloud-based services as established by the research by, is the automation and synchronization they provide [9]. By linking multiple devices to access data stored in the cloud, institutions are able to streamline their data management processes

and ensure that data is easily accessible to all users. This can improve the efficiency and effectiveness of data management in these institutions, as well as reduce the risk of data loss or errors.

Similarly, another notable benefit of cloud-based solutions is the ability to scale up or down as needed. As institutions collect and store more data, cloud-based services can easily expand to accommodate the increased storage needs. Healthcare services tend to expand due to increase in population and increased delivery of health services. This eliminates the need for expensive hardware upgrades and maintenance, making it a cost-effective solution for institutions with large datasets.

Similarly, cloud-based services also provide improved security for data stored in the cloud. Data is typically stored in multiple locations and backed up regularly, reducing the risk of data loss or breaches. This is especially important for institutions that handle sensitive or confidential data. Therefore, the research study by established that cloud-based solutions provide numerous benefits for data management in institutions with large datasets [9]. They offer automation and synchronization, scalability, and improved security, making them an ideal solution for these institutions.

It brings forth the concept of decentralization of data by allowing syncing of devices and increased data accessibility. Cloud pharmacy aims to decentralize data by allowing different devices, such as computers and smartphones, to sync and share information. It allows for increased data accessibility, as healthcare professionals and patients can access the same information from different locations [6]. This can improve communication and coordination among healthcare providers, and also allow patients to manage their own medication regimens more easily. In addition, cloud-based systems can also improve security and compliance with regulations, as well as allow for more efficient data analysis and tracking of medication usage. It is cost-efficient by reducing the costs associated with in-house data storage and management, reducing costs of sharing files, and reducing complexities in data management. Correspondingly, cloud storage is flexible and allows for scalability by increasing the storage capacity in line with the growth of a company. Cloud storage services provide backup and data recovery plans aligned to business continuity, disaster recovery, and contingency plans to guarantee business sustainability [13].

Research Gap

The existing research focuses on the diffusion and application of cloud pharmacy in the healthcare sector. Diffusion theory dominates the adoption of modern technology by underscoring the integration process. Similarly, most theories focus on role of leadership in the adoption and utilization of modern technologies. There is a research gap in the current literature on the specific role and importance of leadership in driving cloud pharmacy. Existing literature fails to directly link cloud pharmacy adoption and the role of leaders

This research aims at filling the research gap by providing new information and insights to reveal the role of transformational leaders in spearheading the adoption of the technology.

Barriers to Adoption of Cloud Pharmacy

The pharmaceutical industry is sluggish and reluctant to adopt cloud-based services despite the rapid adoption of cloud computing in other industries. The pharmaceutical industry is slower to adopt cloud-based services than other industries because of the added

compliance and regulatory requirements, and concerns about data security and privacy, and lack of specific solutions that cater to their needs [1]. The pharmaceutical industry is a highly regulated industry, and companies in this field must comply with strict laws and regulations, such as the FDA's Good Manufacturing Practices (GMP) and the EU's Good Clinical Practices (GCP). These regulations require companies to maintain strict control over their data and systems, and to be able to demonstrate compliance with the regulations in the event of an audit [4].

Cloud-based services, while offering many benefits such as scalability, flexibility and cost savings, can also introduce new risks and challenges for compliance. For instance, companies may be concerned about data security and privacy in a shared environment, and about the ability to maintain control over their data and systems. In addition, companies may be hesitant to adopt cloud-based services because of the additional costs and resources required to ensure compliance with the regulations. There exists a large body of literature attempting to ascertain the factors causing the sluggish adoption of cloud services in the pharmaceutical industry.

The greatest barrier to the adoption of cloud pharmacy has been identified as security concerns fueled by the need for privacy and confidentiality of personal health and financial information. The research study by identified that a substantial percentage of executives had shown resistance towards the adoption of cloud pharmacy, citing a strong incentive for attacks against pharmaceutical companies [14]. The magnitude and frequency of attacks against pharma and healthcare institutions are higher than in other industries, signifying executives' reluctance. A study in Canada about the peculiarities of the healthcare industry by identifies three factors that increase the vulnerability of pharmaceutical industries to greater security risks and threats [15]. One, pharmaceutical companies collect and store high-value personal and financial information such as income, career, personally identifiable numbers, and other sensitive data. Pharmaceutical companies collect and store high-value personal and financial information for a variety of reasons. One of the main reasons is to better understand their customer base and target specific demographics with marketing and advertising efforts. This information can include income levels, career information, and personally identifiable numbers such as social security numbers or driver's license numbers.

In addition to targeting marketing efforts, pharmaceutical companies may also use this information to track the effectiveness of their products and to identify potential side effects. This information can also be used to identify potential fraud and to detect any potential security breaches.

It is important to note that this sensitive information is often stored in databases that are accessible by employees and contractors of the company, which increases the risk of a data breach. This highlights the importance of proper data security protocols and regular monitoring of these databases to ensure that the information remains secure.

Furthermore, as the healthcare sector is highly regulated, pharmaceutical companies are bound by laws and regulations to protect the data they collect, such as HIPAA and GDPR. These laws and regulations require that companies have proper security measures in place to protect the sensitive information they collect and store [16].

Therefore, pharmaceutical companies collect and store high-value personal and financial information to better understand their customer base and target marketing efforts, track product effectiveness and identify potential side effects. However, this sensitive information is at risk of being accessed by unauthorized parties, making it crucial for companies to implement robust data security protocols and remain compliant with laws and regulations. Attackers have a high affinity for such personal and financial information to blackmail unsuspecting people by illegally acquiring confidential information and stealing their finances. Secondly, the pharmaceutical industry is highly regulated and subjected to rigorous scrutiny. As a result, the researchers noted that the complex legal and regulatory framework makes it difficult the adoption of new technologies due to huge cost implications and operational rigidity [16]. Thirdly, the research indicates that the operational terrain in the pharmaceutical industry requires constant data migration and transfer from one player to another for a comprehensive healthcare process to take place. For instance, the Health Insurance Portability and Accountability Act of 1996 (HIPAA) protects sensitive information in the healthcare sector and obligates healthcare stakeholders to comply with strict security and confidentiality guidelines.

The realization of the proper level of cloud security in pharma security has proven to be a doubtful task due to the multiple security, management, and sustainability concerns associated with the transition to the cloud. The leading firms' executives raised fundamental issues entail access controls, the complexity of the cloud computing systems, data ownership and protection, accountability and responsibility, infrastructure security, forensic support, incident analysis, and business continuity [17]. Another essential barrier to the adoption of cloud pharmacy is highlighted by administrators as loss of control and management of data, given that third-party entities provide the cloud services. The third-party entities that provide cloud services use proprietor application programming interfaces (APIs) based on a software-to-software interface [18]. Thus, pharmacies have increased dependence on third parties, bringing forth security, data management, and operational concerns. The research by shows that pharmacies have an obligation to protect patient data and are responsible for preventing any infiltration or compromise of such data. From a legal and ethical perspective, pharmacies are liable when third parties' access and misuse personal information [9,13].

However, despite the barriers and challenges to the adoption of cloud pharmacy, pharmacies are under significant pressure to accept new technologies to meet the rising customer demands and conform to regulations. Customers are increasingly expecting pharmacies to offer a wide range of services and products, and the use of cloud-based systems can help pharmacies to meet these demands more efficiently and effectively. As well, regulatory bodies are placing more emphasis on the use of technology to ensure patient safety and compliance with industry standards.

The adoption of cloud pharmacy is essential for pharmacies to meet the changing demands of the industry and stay compliant with regulations. While there are barriers and challenges to overcome, the benefits of cloud pharmacy far outweigh the costs and resources required to implement the technology. Pharmacies that invest in cloud pharmacy will be better equipped to meet the needs of their customers and stay competitive in the industry.

There is a high demand for effective electronic data management in compliance with HIPAA regulations, lower the costs of acquiring,

maintaining, and operating physical information technology infrastructure, have scalable information technology capabilities, and improve service delivery based on industry benchmarks [11].

Leadership and Adoption of Cloud Pharmacy

The adoption of cloud pharmacy rests in the hands of executives and organizational heads that provide organizational leadership and policy direction. Mainstream leadership theories underscore the role of leaders to initiate change, create a common target, and influence their followers to attain the collective target. Transformational and adaptive leadership theories underscore the roles of leaders as change agents by embracing changes and adapting to the changes in the environment to realize overall success [15]. Technology-oriented leaders are required to drive change, propose unconventional and disruptive approaches to transform their followers, and align them with the developments in the real-world environment. Similarly, adaptive leaders are not resistant to changes as they strive to change the status quo and bring forth new capabilities. In the adoption of cloud pharmacy, just like any other technology, leaders play a central role in embracing change, communicating with their followers, and charting a new path by motivating and inspiring others. In the context of this research, leaders in the pharmaceutical industry are perceived as the change agents required to overcome the challenges associated with the adoption of a cloud-based pharmacy software system.

Behavioural research in healthcare organizations has identified evidence-based management practices that enhance digital transformation and its sustainability. The practices are active management of the change process, delicate balancing of efficiency and productivity, involvement of employees in decision-making, promotion of trust in the organization, and utilization of knowledge management practices [19]. In the Pulitzer Prize-winning seminal study on leadership, James Burns postulates the crucial role of leadership in forming communication channels to inspire, motivate, and elevate their followers into committing to the collective objective [20]. The interconnected positive outcomes for healthcare organizations or their different departments is the attainment of patient well-being through the improvement of health parameters, patient user experience, and efficiency of all processes. Thus, researchers have sought to examine the desired end goal for transformational leadership in healthcare, narrowing the objectives to improving health, greater patient experience, and reducing costs in administering health. research indicates that transformational leadership is pegged on community engagement and the development of collaborative initiatives through an empowerment framework [21]. Similarly, mainstream postulations highlight transformational leadership as proactive rather than reactive in the sense of being aware of new developments, testing new solutions, and being ahead of the pack [22]. Further interrogation of research materials indicates that the greatest misconception of technology adoption is that new technologies replace people make create unemployment. A macroeconomic research study on structural unemployment showed that technology causes unemployment in some sectors of the economy by replacing humans [23]. However, multiple research studies have shown that technology creates more jobs and new dimensions of employment than those taken away by technological developments that replace people at the workplace. Transformational leaders have an obligation to assure employees about job security and provide direction on the usefulness of new innovations in solving existing problems. The research will explore the most suitable leadership traits to drive digital transformation in the health sector in the adoption of cloud pharmacy.

The research study by on the role of health leaders in embracing changes in the industry identifies the role of transformational leadership in managing organizational change through visionary leadership [24]. Organizational behavioural change is essential to create a culture that promotes continuous improvement, facilitates successful navigation of the ever-changing healthcare landscape, enhances cooperation between different players, and promotes efficient utilization of resources [20]. Secondly, transformational leaders in healthcare utilize charisma, compassion, and strong personality through collaborative relationships built on empathy and inspired by a shared vision. The linkage between transformational leadership attributes and the adoption of telemedicine and telehealth innovations has been extensively researched. Just like any other innovation, the adoption of cloud pharmacy requires a change of attitude and behaviour to facilitate the acceptability of changes that distort the status quo. The resistance to change has stifled numerous valuable innovations due to the fear of the unknown, uncertainties, and the desire to remain in the comfort zone [25]. Thus, this research study must examine the barriers that limit the adoption of cloud pharmacies among traditional pharmacies.

Research studies by have identified a leadership crisis in adopting technology-based solutions in various industries due to resistance to change, inflexibility, lack of competencies, and misplaced or inappropriate strategies [26]. The research affirmed the findings of the study by whose findings showed a positive correlation between leadership capabilities and the successful adoption of technology [27]. There is a wealth of literature on the correlation between leadership and innovations focusing on the development of solution-oriented innovations that solve specific problems or limitations. Researchers have extensively used the Technology Acceptance Model (TAM), the Social Cognitive Theory, the Theory of Planned Action, and the Theory of Reasoned Action to explain the leadership behaviour and traits helpful in realizing successful technology adoption. Thus, this research study will identify the leadership gap in the adoption of cloud pharmacy and identify the most useful leadership behaviour for the successful adoption of cloud pharmacy.

Theoretical Framework

The theoretical framework provides the foundational theories and postulations that substantiate the research as a scientific exercise based on facts. A greater understanding of the limitations and barriers to the adoption of cloud pharmacy will be gained through the application of technology adoption theories, diffusion theories, and technology acceptance models. The research will deploy a theoretical framework technology acceptance model and innovation resistance theories as the basis to examine the reluctance and resistance of cloud pharmacy adoption in the healthcare industry.

The Technology Acceptance Model (TAM) developed by is the most useful and applicable technology acceptance framework and has been utilized for the development of other postulations and hypotheses on the adoption of new technologies. TAM has been widely adopted in research on technology acceptance and has been applied to a wide range of technologies, including information systems, mobile devices, and e-commerce. It has also been used as a foundation for the development of other technology acceptance models and hypotheses, such as the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Theory of Planned Behaviour (TPB) [7]. TAM is an information systems theory anchored on a user's behavioural perception and intention to

accept, adopt, and use new technology. The primary parameters of the theory are perceived ease of usefulness (PEOU) and Perceived usefulness (P.U.) that determine an individual's decision to accept and use a technology [10]. The perceived ease of usefulness is defined by as the degree or the extent to which one considers a particular technology to be effortless and thus easy to use. Based on the definition, if one considers a particular technology easy to use, the users develop a positive attitude towards it and increase the likelihood of using adopting it.

On the other hand, perceived usefulness is defined as the degree to which a user perceives and believes that using (applying) a specific technology will augment or enhance their performance or productivity in a specific task and generate positive outcomes. The parameters provide the basis for the technology acceptance model by denoting how individuals arrive at the decision to accept and use technologies. Tam plays an equivalent role as the diffusion theory that is universally acknowledged as the primary theory on the adoption of technology, although with varied definitions and interpretations across various disciplines. The original diffusion theory by Rogers (1983) defined diffusion as the process through which an innovation is taken up through different channels over time by agents of a social system [7]. The research paper will focus on the perceived ease of usefulness (PEOU) and Perceived usefulness (P.U.) of new technology in examining the reluctant behaviour of leaders in the adoption of cloud pharmacy.

To enrich the theoretical framework, the researcher also focuses on innovation resistance by highlighting the unwillingness of individuals to accept certain technologies. According to failure to accept a new product or technology amounts to resistance to change, and the unwillingness to accept leads to limited adoption of such technologies [14]. suggest that when individuals or organizations do not accept a new product or technology, it can be seen as resistance to change [14]. This resistance can stem from a variety of factors, such as fear of the unknown, lack of understanding or knowledge about the technology, or a belief that the new product or technology will not meet their needs or be beneficial. When this resistance to change is present, it can lead to limited adoption of the new product or technology. This can be problematic, as it can prevent individuals and organizations from realizing the potential benefits of the new product or technology, such as increased efficiency, cost savings, and improved performance. In order to overcome this resistance to change, it may be necessary to provide education and training, address concerns and misconceptions, and demonstrate the value and benefits of the new product or technology. The focus on an unwillingness to accept change will be anchored on the diffusion theory of innovation and will be key in investigating why leadership in the pharmaceutical industry has contributed to the limited adoption of cloud pharmacy.

The diffusion theory is a leading social science theory hypothesizing how a new idea, product, or behaviour spreads out in a system over time [25]. The theory suggests that the spread of a new idea, product, or behaviour within a system or a community is not a random process, but rather follows a specific pattern. According to the theory, the spread of a new idea or innovation can be divided into five stages: knowledge, persuasion, decision, implementation, and confirmation.

The first stage, knowledge, is when an individual is first introduced to a new idea, product, or innovation. The first stage is characterized by a lack of understanding or awareness of the new idea. The second stage, persuasion, is when an individual begins to form an opinion about the new idea and is characterized by a

growing interest in the new idea, as well as a growing awareness of its benefits and drawbacks. The third stage, decision, is when an individual decides about whether to adopt the new idea or purchase a new product. The stage features a cost benefit analysis by weighing the pros and cons of the new idea, and a decision about whether to adopt it or not. The fourth stage, implementation, is when an individual begins to put the new idea into practice. This stage is characterized by a commitment to the new idea and a willingness to invest time and resources into it.

The fifth stage, confirmation, is when an individual evaluates the results of their adoption of the new idea. This stage is categorized by an assessment of the benefits and drawbacks of the new idea, and a decision about whether to continue using it or not. The theory also suggests that different individuals will adopt a new idea at different stages of the adoption process, and that the rate of adoption will vary depending on the characteristics of the system and the individuals within it. emphasized that the diffusion theory is widely used in the field of marketing and advertising, as it can help businesses understand how to effectively promote and market new products or services [25]. It can also be used in public health, education, and other fields to understand how new ideas and behaviours spread within a population.

The theory and its mutations show that people adopt new ideas or products at different rates and therefore categorize people into different groups of adopters. The categories are innovators, early adopters, early majority, late majority, and laggards. The innovators are the venturesome and risk takers that are at the forefront of developing and coming up with new ideas. Early adopters are opinion leaders who embrace change opportunities and are not comfortable with the status quo. The early majority are individuals that adopt new ideas before ordinary people do but require evidence that the new idea is beneficial. The late majority signifies people characterized by scepticism about changes and only adopt new technology after the majority in a social system has applied it. The last category is termed laggards signifying conservatives bound by tradition and showing reluctance to adopt new technology.

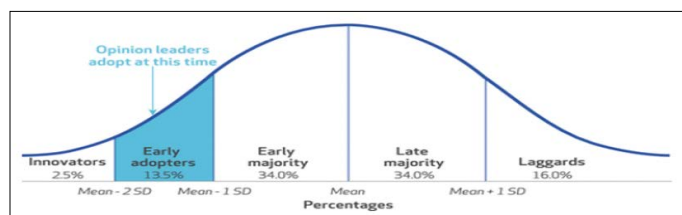


Figure 1: Diffusion of Innovations Modified from Rogers EM Meta-Review of Empirical Diffusion Studies

The objective of categorizing adopters is to ascertain the level of adoption of cloud pharmacy by pharmaceutical leaders and executives. By categorizing the adopters, the researcher will gain insights into the different levels of adoption, such as early adopters, late adopters, and non-adopters. The information will identify key trends and patterns in the adoption of cloud pharmacy, which will be used to inform future research and development efforts. Likewise, categorizing adopters can provide valuable information for pharmaceutical companies and technology providers, as it can help them understand the needs and preferences of their target market and tailor their products and services accordingly.

Categorizing adopters can also be used to identify potential barriers to adoption, such as lack of awareness, technical difficulties, or concerns about data security. By understanding these barriers,

pharmaceutical companies and technology providers can develop strategies to overcome them and encourage more widespread adoption of cloud pharmacy. Therefore, the objective of categorizing adopters is to gain a deeper understanding of the current state of cloud pharmacy adoption among pharmaceutical leaders and executives, and to use this information to inform future research and development efforts, as well as to develop strategies to overcome barriers to adoption. It will also be essential in answering the research questions and underscoring the rate of adoption of cloud pharmacy in the healthcare sector in the U.S.

Conclusion

The chapter has provided a comprehensive examination of the existing literature on the application of cloud pharmacy and the role of leadership in enabling successful adoption. The literature reviewed in the chapter includes a wide range of sources such as academic journals, articles, books, and case studies, which provide a thorough understanding of the subject matter.

The review of literature has dominantly focused on the findings of previous research studies on the benefits of cloud computing, barriers to the adoption of cloud pharmacy, and the role of leaders in making technological changes. It has also examined the challenges and barriers that organizations may face while implementing cloud pharmacy, such as lack of understanding and resistance to change.

One of the central themes that have emerged from the literature is the role of leadership in enabling successful adoption of cloud pharmacy. The literature has emphasized that the leadership of an organization plays a crucial role in driving the adoption of new technologies, such as cloud pharmacy. It has highlighted that effective leadership can help overcome resistance to change and ensure that the organization is well-prepared to implement and utilize the new technology.

The literature review has established that cloud computing has significant benefits, including scalability, optimization of operations, improved data management, and attaining a competitive edge, and the ability to access data from any place remotely. The literature has highlighted the various benefits that cloud pharmacy can offer to healthcare organizations, such as increased efficiency, cost savings, and improved patient care. The findings of the research have indicated the major barriers to the adoption of cloud pharmacy as resistance to change by industry leaders in the healthcare sector, concerns about security, the vulnerability of the industry to attackers, concerns about data management, strict regulations in the industry, and confidentiality concerns by clients. Furthermore, the literature has also discussed the importance of leadership in creating a culture of innovation and continuous improvement within the organization. This is essential for the successful implementation of cloud pharmacy, as it requires the organization to be open to change and willing to adapt to new ways of working. Similarly, the section outlined the role of leaders in embracing change and shifting from the status quo through adopting innovations. Therefore, the researcher identified an existing research gap that the existing research studies still need to explore on the barriers of cloud pharmacy adoption relating to leadership's role in embracing change. The research gap justifies the centrality of this research and sets a trajectory for finding new knowledge to fill the gap.

Lastly, the chapter has provided a comprehensive examination of the existing literature on the application of cloud pharmacy

and the role of leadership in enabling successful adoption. It has highlighted the benefits and challenges of implementing cloud pharmacy and the importance of effective leadership in driving the adoption of new technologies in healthcare organizations.

Research Methodology

Introduction

The research methodology section outlines the research design in the context of research philosophy, approach, data collection methods, and data analysis procedure. It will be divided into three parts. Part one outlines the research design and justification for the selected design, restates the purpose of the study, and outlines the research variables used in the research study. Part two will describe the participants, the data-gathering instruments, and the procedure used in the study. The last section describes the data analysis procedure. The research methodology section is essential to provide transparency and rigor to the research by allowing readers to evaluate the credibility of the findings and conclusions.

Methodology

The research study examines the leadership traits for the successful adoption of cloud pharmacy to improve patient experience and affordability of medication in North America. The study aims to examine the most suitable leadership behaviour and traits to facilitate the successful adoption of cloud pharmacy for better patient experience and sustainability and to guarantee medication affordability in North America. The research will investigate inhibiting factors and barriers that cause failure in the adoption of cloud pharmacy and propose recommendations that will guarantee the successful adoption of cloud-based pharmacy systems. The research will adopt a pragmatic research methodology, which is suitable to provide flexibility in the selection of research methods to have the most suitable research design. Pragmatic research philosophy will enable the researcher to transform the complex subject matter under investigation to better understand the issue. Similarly, the philosophy provides a real-life approach to investigating the adoption of cloud pharmacy and suggests applicable strategies and approaches improve the adoption. The research will utilize a deductive approach, which is suitable for explaining the relationships between different variables. It will be an exploratory research study focusing on the role and importance of leadership in enhancing the patient experience and guaranteeing the affordability of medication.

Methods

Participants

The study's respondents will be stakeholders and leaders in pharmaceutical companies in North America. The leaders from medium-sized pharmacies will be approached through the official channels and requested to fill in questionnaires either physically or online. Sixty-five standardized questionnaires will be dispatched after getting the consent approval and meet all ethical and other prerequisite requirements.

Data Gathering Procedures

The research study will be conducted in October and November 2022. It will utilize primary and secondary data. Primary data will be collected through questionnaires from a sample of pharmacy leaders selected through random sampling. The questionnaires will have a set of questions focusing on barriers to cloud pharmacy and possible leadership behaviour to overcome the challenge and its adoption. Secondary data will be obtained systemic review of literature from credible and peer-reviewed journals. The secondary data to be reviewed will largely focus on the theoretical leadership

models and their applications to enhance technology acceptance and adoption in the healthcare sector.

Validity and Reliability of Data Collection Instruments

Validity underlines the accuracy of a given measure to deliver results that are a true representation of the parameters being measured. Reliability is a measure of consistency and stability of a measure. The validity and reliability of the research were achieved by attaining the highest levels of credibility, objectivity, authenticity, dependability, transferability, and confirmability. The researcher will achieve reliability and validity by having longer engagements with the respondents, triangulation of sources of data, and research methods, and having a thick description of the subject area. The reliability of the research will be attained through reputational analysis, constant testing and comparison of data, use of comprehensive data, the inclusion of a greater diversity of the respondents, and restriction of the information by the respondents to minimize the possibility of personal bias and deviation.

Data Analysis Procedures

The researcher will use content analysis to analyse secondary data through a systematic approach entailing familiarization with the data, categorization, and formulation of the themes. The developed themes will be used to answer the research questions and meet the research objectives. The collected primary data will be subjected to descriptive and inferential analysis such as frequency distribution and percentages. Similarly, the primary data will be analysed through suitable statistical methods to answer the research questions.

Results and Discussions

Introduction

This chapter will provide a review of the qualitative data analysis and present the results of the questionnaire. We will also present the results and analysis of the quantitative findings of the study. This will involve reviewing the responses and identifying common themes, patterns, and variations in the data. We will then present the results of this analysis, highlighting the key insights and findings that emerged from the data. We will compare these findings to previous research and literature, highlighting any similarities or differences that may be relevant. The section segmented in various sections to simplify the data analysis, presentation of results, and analysis. The first section presents respondent's general information. The second section presents the research findings and discussion in relation with the research questions and objectives. The discussion is centred on the benefits of cloud-based pharmacy software systems, the barriers that limit the adoption of cloud pharmacy, and suitable leadership to enhance the adoption of cloud pharmacy. The chapter will provide a comprehensive review of the data analysis process and present the key findings of the study. It will give an in-depth understanding of the research findings and the insights that emerged from the data. The chapter will also be a valuable resource for researchers and practitioners in the field, providing a detailed account of the data analysis process and the key findings of the study.

Section A: General Information

Information about the respondents is presented in this section. Out of the dispatched sixty-five questionnaires, sixty (60) were fully answered and returned, three were never returned, and two were incoherently answered to the extent of not being useful in the research process. The questionnaires had a 93% return rate, which falls within the expected standards.

Gender Distribution

Fully aware about gender equality and the need for inclusivity, efforts were made to distribute the questionnaires to all genders equally to have a balanced perspective. Out of the returned questionnaires thirty-three were by males and twenty-seven by females as depicted by the diagram below.

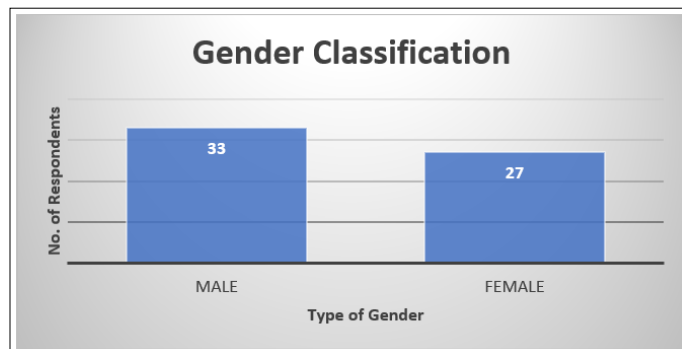


Figure 2: Respondent's Gender

Age Distribution

Based on the provided age categorization in the questionnaire, the age distribution of the respondents was as indicated in the following diagram. The majority of the respondents were in the 31-40 years and 18-30 years segments, an indication of domination of young professionals in the health industry.

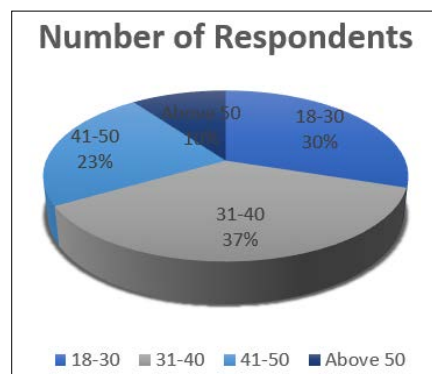


Figure 3: Respondent's age Distribution

Education Levels

The respondents were provided with options to fill their highest educational levels among secondary, diploma, bachelor's degree, and master's degree. The diagram below depicts the highest education level distribution signifying that the majority have a bachelor's degree with only 3% having secondary education as the highest educational attainment.

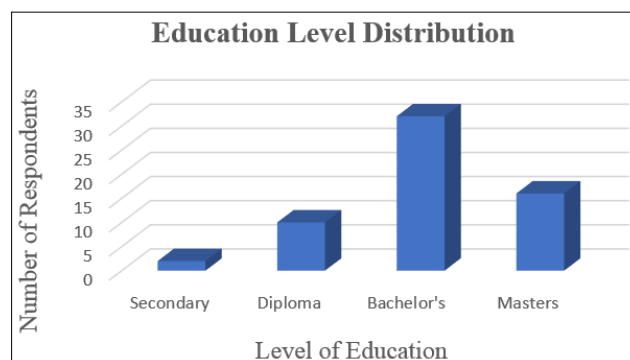


Figure 4: Respondent's Highest Level of Education

Distribution of Work Experience

The researcher intended to ascertain the work experience of the respondents to determine their suitability and relevance in answering the questions. The diagram below depicts the work experience distribution with the majority of the respondents having work experience of between five and ten years.

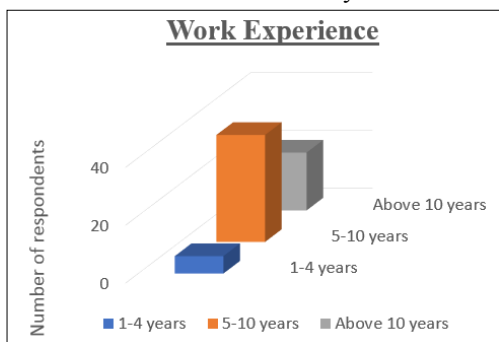


Figure 5: Respondent's work Experience

Section B: Benefits of Cloud Pharmacy

The section sought to evaluate the perspectives of the respondents regarding the benefits of cloud pharmacy by answering the following multiple questions.

Question 1: Between Cloud Pharmacy and Conventional Data Management System, Which One do you Prefer?

88% of the respondents showed a preference to cloud pharmacy while 12% preferred traditional data management over cloud pharmacy. The diagram below depicts the preference rate.

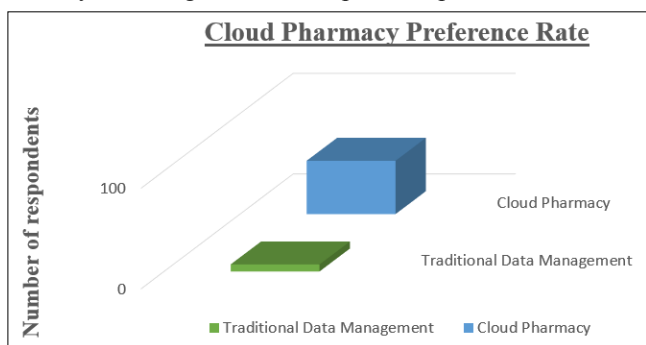


Figure 6: Respondent's Cloud Pharmacy Preference Rate

Question 2: On a Scale of 1-10, 1 being the Lowest and 10 the Highest, how Beneficial is Cloud Pharmacy to you and your Organization?

The respondents were given an opportunity to indicate how beneficial cloud pharmacy is to their job and the organization within a scale of 1 to 10. The responses were as presented in the following diagram.

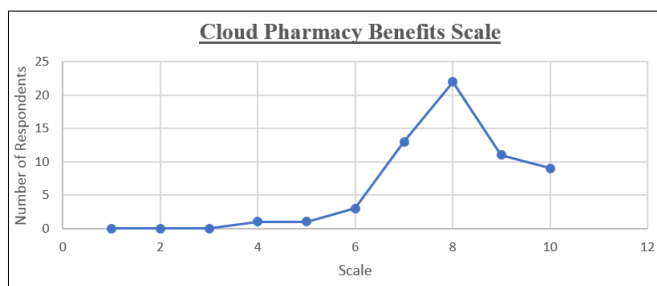


Figure 7: Cloud Pharmacy Benefits Scale

Question 3: What do you Consider the Greatest Benefit of Cloud Pharmacy?

The respondents provided varied, but related answers on what they consider as the greatest benefits of cloud pharmacy. As an open-ended question, the respondents exercised their latitude in expressing their diverse answers. The responses have been condensed and presented as follows.

Improved Efficiency: 84% of the responses indicated increased efficiency that translate to improved patient care. Cloud pharmacy increases the ability to access and manage medication information and other healthcare data from anywhere through the internet. This can be particularly useful for healthcare professionals who need to access patient information remotely, such as when treating patients remotely via telemedicine or when working on call. Cloud pharmacy allows for electronic prescribing, which can speed up the prescription process and reduce the chance of errors.

Enhanced Patient Care: With cloud pharmacy, healthcare providers can access patient records and medication histories in real-time, allowing for more informed decision-making and improved patient care.

Greater Accessibility: 75% of the answers identified the greatest benefit of Cloud pharmacy to be increased accessibility of healthcare services. One respondent indicated that it makes it easier for patients to access their medication and for healthcare providers to communicate with patients remotely. The outstanding responses focused on the improvement of the efficiency and accuracy of medication management by providing real-time updates and alerts for prescription renewals, refills, and potential drug interactions. Similarly, cloud pharmacy plays a key role to reduce the risk of errors and adverse drug events by providing access to comprehensive and up-to-date medication lists and information on drug contraindications and interactions. The higher efficiency results in increased accessibility of healthcare services largely due to higher satisfaction level. By storing patient records and medication histories on a cloud-based platform, healthcare providers can access this information in real-time from any location with an internet connection. This allows for more informed decision-making, as healthcare providers can quickly and easily view a patient's complete medical history, including any previous prescriptions, allergies, and conditions. It also allows for improved patient care, as providers can more easily coordinate with each other.

Cost Savings: Cloud pharmacy can help reduce costs for both healthcare providers and patients by streamlining processes and reducing the need for physical storage of records and medication. For healthcare providers, cloud pharmacy can reduce the costs associated with maintaining physical records and storing medication. The costs entail of paper costs, ink, and storage space, as well as the cost of hiring staff to manage these resources. Cloud pharmacy is the gateway for streamlining operations by automating tasks such as prescription refills and dosage adjustments. This will reduce the time and resources needed to manage these tasks, freeing up staff to focus on more critical tasks.

On the other hand, cloud pharmacy can also help reduce patient costs by eliminating the need to physically visit a pharmacy to pick up medication. This can save patients both time and money, as they can access their medication and medical records from the comfort of their own homes. In addition, cloud pharmacy can help patients manage their medication more effectively by providing them with real-time notifications and alerts when it's time to take

their medication, or when a refill is needed.

Cloud pharmacy can help reduce costs for both healthcare providers and patients by streamlining processes, eliminating the need for physical storage of records and medication, and providing patients with more convenient and efficient access to their medication and medical records.

Overall, the greatest benefit of cloud pharmacy is the ability to improve patient care and efficiency while also reducing costs. A respondent stated that cloud pharmacy reduces the time and effort required to process and fill prescriptions resulting in lower labor costs. Another respondent indicated that cloud pharmacy provides real-time access to accurate patient information, thus it improves patient safety, which reduces the cost of adverse drug events and other medical errors. There was a comment by one respondent stating that cloud pharmacy allows for more automation in the prescription process, which improves efficiency and reduce labor costs.

Improve the security and privacy of patient information; 67% of the respondents indicated that cloud pharmacy increased patient data security by implementing strong encryption protocols to protect sensitive information and adhering to strict regulatory guidelines such as the Health Insurance Portability and Accountability Act (HIPAA). Multiple respondents stated that cloud pharmacy uses multiple layers of security measures including firewalls, password policy, and authentication protocols, to protect patient information from unauthorized access or tampering. Firewalls act as a barrier between the cloud pharmacy system and the internet, preventing unauthorized access to the system. They also block malicious traffic and threats from reaching the system, ensuring that patient information remains secure. Password policies ensure that users have strong and unique passwords, making it difficult for hackers to gain access to the system. Authentication protocols, such as multi-factor authentication, also add an extra layer of security by requiring users to provide multiple forms of identification before accessing the system.

By implementing these security measures, cloud pharmacies can ensure that patient information remains confidential and protected from unauthorized access or tampering. This helps to maintain patient trust and integrity in the healthcare system. Additionally, it also helps to comply with industry regulations such as HIPAA and GDPR. Respondents also noted that it allows patients to control their own privacy settings and access to their personal information, information collaborated with the secondary data.

Barriers to the Adoption of Cloud Pharmacy

Question 1: On a Scale of 1-10, how would you Rate Security Concerns as a Barrier to the Adoption of Cloud Pharmacy?

The researcher sought to identify how security concern is a major barrier to the adoption of cloud pharmacy according to the respondents. Other research studies have identified security concerns as a major hindrance or barrier to the adoption of cloud pharmacy. The data collected from the respondents affirms this concern as most of the respondents cite security as a key factor that hinders adoption of cloud pharmacy. The diagram below shows the respondents' views regarding security as a major barrier in the adoption of cloud pharmacy.

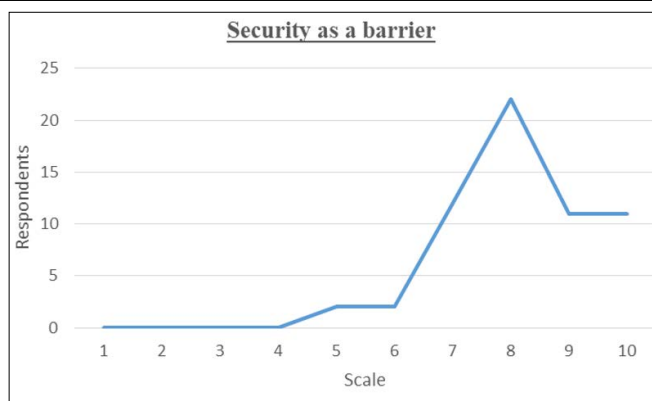


Figure 8: Data on Security Concern Being a Barrier

Question 2: Do you think that Cloud Pharmacy Improves the Privacy and Confidentiality of Personal Health and Financial Information?

42 respondents were affirmative that cloud pharmacy improves privacy and confidentiality while 18 respondents thought that cloud pharmacy does not improve privacy and confidentiality. The survey results indicate that there is a clear divide among respondents regarding the impact of cloud pharmacy on privacy and confidentiality. 42 respondents, or a majority of those surveyed, believe that cloud pharmacy improves privacy and confidentiality. This suggests that the respondents believe that the use of cloud technology in the pharmacy industry enhances the protection of sensitive patient information and ensures that it is kept confidential.

On the other hand, 18 respondents, or a minority of those surveyed, think that cloud pharmacy does not improve privacy and confidentiality. They believe that the use of cloud technology in the pharmacy industry may not be as secure as traditional methods and may not provide the same level of protection for patient information.

It is essential to note that these results do not necessarily mean that cloud pharmacy is inherently better or worse for privacy and confidentiality. On the contrary, it highlights the varying opinions and perceptions of those surveyed regarding the implications of cloud pharmacy on data security. The results are not conclusive and further research and analysis may be needed to determine the actual impact of cloud pharmacy on privacy and confidentiality.

The diagram below shows the respondent's perspectives.

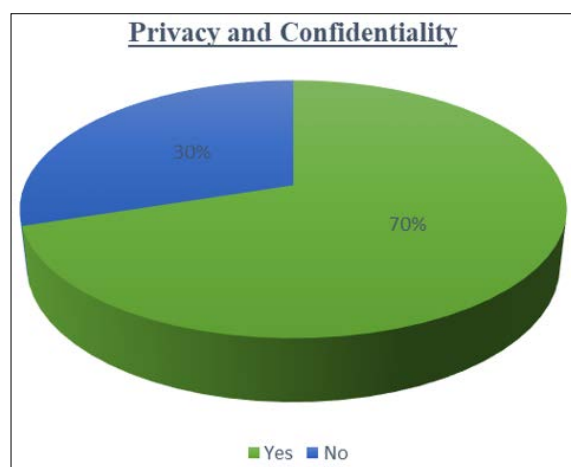


Figure 9: Data Privacy Improvement

Question 3: Do you Think Pharmacy Leaders Lose Control of Data Management to Third Parties after the Adoption of Cloud Pharmacy?

Loss of data control and management has been widely evaluated as a barrier to adoption of cloud pharmacy and an impediment that results in resistance to change. It is essential to determine how loss of control influences and contributes to the forces that resist cloud pharmacy. The results are as indicated in the diagram below.

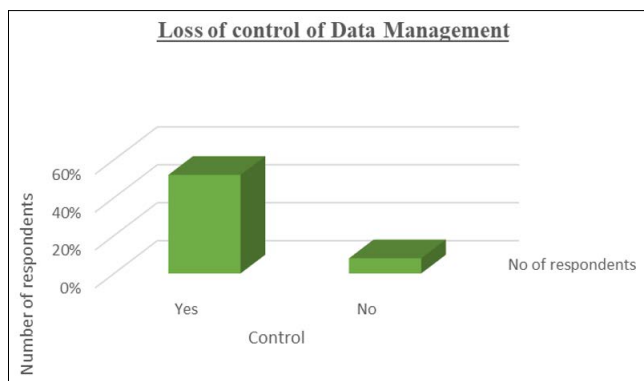


Figure 10: Data on Possible Loss of Control of Data Management

Section D: Leadership Behavior and Traits

The researcher sought to identify the role of leadership in initiating and facilitating the adoption of cloud pharmacy. The questions in this section were framed to understand the role of leaders in enabling adoption of cloud.

The collected data indicate that leadership plays a central role in initiating change, motivating employees, empathy, and provide the overall organizational direction through clear manifestation of vision and strategies.

The researcher sought to ascertain the correlation between leadership and the adoption of cloud pharmacy using correlation and regression analysis.

Correlation Analysis Results

Table 1: Correlation Analysis Results

	Leadership	Adoption of cloud pharmacy
Leadership	1	
Adoption of technology	0.748840282	1

The correlation coefficient from the results above is 0.7488 which shows that there is a strong positive relationship. Adoption of cloud pharmacy is highly dependent on leadership styles. Therefore, leaders have a major role to play in enhancing or inhibiting the adoption.

Regression Analysis Results

Table 2: Regression Analysis Results

Summary Output	
Regression Statistics	
Multiple R	0.748840282
R Square	0.560761768
Adjusted R Square	0.505856989
Standard Error	5.270846059
Observations	10

From the regression results above, the R Square is 0.56 which is a good fit. In other words, means that the 56% adoption of cloud pharmacy is explained by transformational leadership style.

Table 3: Anova

Anova	df	SS	MS	F	Significance F
Regression	1	283.7454545	283.7455	10.21335079	0.012691584
Residual	8	222.2545455	27.78182		
Total	9	506			

From the ANOVA table above, the significance F value is 0.01 which is less than 0.05. This means that there is a statistically significant relationship between leadership and adoption of cloud pharmacy.

Table 4: Computed Results

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-4.2	3.600673338	-1.16645	0.277026046	-12.5031676	4.103167606
Leadership	1.854545455	0.580301052	3.195833	0.012691584	0.516368828	3.192722081

The regression equation from the results above becomes:

$$\hat{y} = mx + c$$

$$\text{Adoption of cloud pharmacy} = 1.85 \text{ Leadership} - 4.2$$

This means that for each increase in leadership strategies and style, the chance of adoption of cloud pharmacy increases by 1.85. This is an indication that leadership is instrumental.

Conclusions and Recommendations

Introduction

This chapter will discuss the conclusions drawn from the research conducted in the previous chapters and provide recommendations for future research and practical implications. The purpose of this chapter is to summarize the findings of the study and provide suggestions for improving the topic of investigation in the future.

Conclusion

The research findings suggest that leadership plays a central role in initiating and facilitating adoption of cloud pharmacy. Leaders are responsible for setting the direction and vision for the organization, and they have the ability to influence and motivate others to follow their lead. Thus, they play a key role in identifying the benefits of cloud pharmacy, such as cost savings and improved efficiency, and communicating these benefits to stakeholders. Similarly, leaders are responsible for creating a culture of innovation and change, which is necessary for successful adoption of new technologies. This includes providing support and resources for the implementation process, as well as addressing any concerns or resistance from staff members. Generally, the research findings suggest that leadership is a critical component in the successful adoption and implementation of cloud pharmacy, and that organizations need effective leaders to guide them through this process. Cloud pharmacy has clear cut benefits entailing increased efficiency, reduction of costs, enhance of data privacy and security, increased automation in healthcare service delivery, better collaborations, and greater accessibility of health services. The respondents indicated that security concerns are a major factor that hinder adoption of cloud due to risks of privacy intrusion and loss of data management by administrators. Based on these findings, it can be concluded that the limited adoption of cloud pharmacy in is largely attributed to lack of transformational leadership that inspire change. The research findings indicate that

the reason for the limited adoption of cloud pharmacy technology in Northern America is due to a lack of transformational leadership that is able to inspire and drive change within pharmaceutical companies. However, the sample population used in the study may not be representative of the larger population, and the findings may not be generalizable to other populations. The study design may have limitations that may have affected the results, such as self-reported data or lack of control groups. Overall, the findings of the study should be considered in light of these limitations and future research should aim to address them.

Recommendations

Future research should focus on whether cloud-based pharmacy systems are as effective as the conventional data management systems in terms of accuracy, efficiency, and patient outcomes. Future research should aim to thoroughly compare and contrast the effectiveness of cloud-based pharmacy systems with that of conventional data management systems. This includes evaluating the accuracy of data entered and stored in the systems, the efficiency of the systems in terms of ease of use and time spent on tasks, and most importantly, the impact of these systems on patient outcomes.

In terms of accuracy, researchers should assess the rate of errors or inaccuracies in data input and retrieval in both types of systems. This could include comparing the number of errors made when entering medication orders or the number of times medication dosages were incorrectly calculated.

Efficiency is another important factor to consider. Researchers should look at how long it takes to complete tasks such as ordering medications or accessing patient information in both types of systems. They should also evaluate the user-friendliness of the systems and how easy they are to navigate. The most important aspect to consider is the impact on patient outcomes. Researchers should assess whether patients treated with medications ordered and managed through a cloud-based system have better outcomes than those treated through a conventional data management system. This could include evaluating the rate of medication errors, patient satisfaction, and overall health outcomes.

It is important for future research to provide a comprehensive and unbiased evaluation of cloud-based pharmacy systems in order to determine their effectiveness and potential for widespread adoption in healthcare settings. The researchers should also examine the cost-effectiveness of cloud-based pharmacy systems compared to traditional systems, including the costs of implementation, maintenance, and use. Another future research dimension should evaluate the security and privacy of cloud-based pharmacy systems and how they compare to traditional systems in terms of protecting sensitive patient data. Similarly, future studies could explore the factors that influence user acceptance of cloud-based pharmacy systems among healthcare professionals, including their attitudes, beliefs, and experiences with the technology.

Similarly due to increased security concerns and privacy threats, future researchers could examine the challenges and best practices for implementing and adopting cloud-based pharmacy systems in different healthcare settings and organizations. The findings would shed light on how cloud-based pharmacy systems can be integrated with other healthcare IT systems, such as electronic health records, to improve patient care and workflow. Another area that requires advanced research is the examination of the

regulatory and legal issues surrounding the adoption of cloud-based pharmacy systems primarily data privacy, data management and control, security, and liability.

In addition, the practical implications of the study suggest that transformational leadership should be applied to initiate and encourage the adoption of cloud pharmacy. Overall, the research conducted in this dissertation has contributed to the understanding of the role of leadership in steering the adoption of cloud pharmacy and has provided valuable insights for future research and practical applications [28-35].

Dedication

This work is dedicated with sincere appreciation and affection to my family, who have always been my support and source of strength. Thank you for your encouragement and support along this journey. This thesis is dedicated to every reader.

To my wife, my loving travel partner on my journey. Your continuous compassion and support have been a daily source of strength and inspiration. This thesis is in your honour.

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Appendix

Appendix A; Research Proposal and Plan

Appendix B; Ethics Forms

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