

1-28-2026

Pharmacy Service Quality Strategies to Mitigate Prescription-Only Medicines Stockouts

Martin Mulomba
Walden University

Follow this and additional works at: <https://scholarworks.waldenu.edu/dissertations>

This Dissertation is brought to you for free and open access by the Walden Dissertations and Doctoral Studies Collection at ScholarWorks. It has been accepted for inclusion in Walden Dissertations and Doctoral Studies by an authorized administrator of ScholarWorks. For more information, please contact ScholarWorks@waldenu.edu.

Walden University

College of Management and Human Potential

This is to certify that the doctoral study by

Martin Mulomba

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee

Dr. Warren Lesser, Committee Chairperson, Doctor of Business Administration Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

Walden University
2026

Abstract

Pharmacy Service Quality Strategies to Mitigate Prescription-Only Medicines Stockouts

by

Martin Mulomba

MSc, Glamorgan University, 2004

BA, University of Zambia, 1990

Multiple Case Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

February 2026

Abstract

Some patients in Lusaka, Zambia experience adverse health outcomes when pharmacists are not able to fill life-saving, prescription-only medications (POMs) because of supply-chain shortages. Important to pharmacists are strategies to improve POMs supply and mitigate out-of-stock occurrences. Grounded in the SERVQUAL theory as the conceptual framework, the purpose of this qualitative multiple case study was to explore the service quality strategies pharmacists employ to mitigate shortages and enhance patient care. The participants were eight pharmacists who successfully mitigated POMs shortages for improved customer service. Data were collected using semistructured interviews and publicly available documents. Data were analyzed thematically and six themes emerged: (a) pharmacists' responsiveness to customers and inventory control, (b) pharmacists' POMs sourcing strategies, (c) increasing economic benefits for POMs patient loyalty, (d) improving supplier relationships for stockout mitigation, (e) regular self-assessments for POMs shortages mitigation, and (f) pharmacy environment. A key recommendation is for pharmacists to engage reliable and performance-proven pharmaceutical suppliers to reduce POM shortages. The implications for positive social change include the potential to contribute to improved quality of life for community members.

Pharmacy Service Quality Strategies to Mitigate Prescription-Only Medicines Stockouts

by

Martin Mulomba

MSc, Glamorgan University, 2004

BA, University of Zambia, 1990

Multiple Case Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

February 2026

Dedication

I dedicate this research study foremost to God through my Lord Jesus Christ for the wisdom and power to complete the study. To my late dad and mum who would have loved to see their son become a Doctor of Business Administration. To Esther Tembo Mulomba my wife, thanks dear for your unwavering support. To Eunice, Bene, Tendai “Muna” and Luyando, my grand children, and all those who gave support.

Acknowledgments

My exceptional and boundless gratefulness to Dr. Warren Lesser, my Chair, for his tireless mentorship, without which I would not have completed this study. I will always cherish the undeterred support received during the long D.B.A journey. I will cherish those encouraging comments and attention to detail; God bless. I extend thanks to faculty, family members, and friends not mentioned in this section, God bless you all.

Table of Contents

List of Tables	iv
List of Figures	v
Section 1: Multiple Case Study Foundation	1
Background of the Problem	1
Business Problem Focus and Purpose.....	2
Research Question	3
Assumptions and Limitations	3
Assumptions.....	3
Limitations	4
Transition and Summary.....	4
Section 2: Review of the Professional and Academic Literature	6
Introduction.....	6
Application of the Applied Business Problem.....	7
Conceptual Framework.....	7
SERVQUAL Conceptual Framework.....	8
Rival Service Quality Models and Critique of SERVQUAL	9
SERVQUAL Service Dimensions	13
Patient Satisfaction and Loyalty	27
Health Care in Zambia and Prescription Medicines (POMS) Shortages	28
Pharmacists' Role as a Health Care Provider	29

Transition and Summary.....	29
Section 3: Multiple Case Study Methodology	31
Multiple Case Study Ethics.....	31
Nature of the Multiple Case Study Research.....	34
Population, Sampling, and Participants	36
Data Collection Activities.....	39
Interview Questions	41
Data Organization and Analysis Techniques	42
Reliability and Validity.....	45
Reliability.....	45
Validity	46
Transition and Summary.....	49
Section 4: Findings and Conclusions	50
Presentation of the Findings.....	50
Theme 1: Pharmacists’ Responsiveness to Customers and Inventory	
Control	50
Theme 2: Pharmacists’ POMs Sourcing Strategies	61
Theme 3: Increasing Economic Benefits for Patient Loyalty.....	67
Theme 4: Improving Supplier Relationships for Stockout Mitigation	70
Theme 5: Regular Self-Assessments for POMs Shortages Mitigation.....	72
Theme 6: Pharmacy Environment	75
SERVQUAL Conceptual Framework.....	77

Applications to Professional Practice	80
Business Contributions and Recommendations for Professional Practice	85
Recommendation 1	85
Recommendation 2	86
Recommendation 3	86
Recommendation 4	87
Recommendation 5	87
Recommendation 6	87
Implications for Social Change.....	88
Recommendations for Future Study	89
Conclusion	89
References	91
Appendix A: Invitation/Consent Form	128
Appendix B: Interview Protocol and Questions	131

List of Tables

Table 1 Literature Review Section Statistics	7
Table 2 Automated Inventory System Strategies.....	56
Table 3 POMs Potency Reduction and Date Expiry Strategies	61
Table 4 Supply Chain Data Exchange	64
Table 5 Pharmacists' POMs Supplier Selection Criteria.....	66
Table 6 Pharmacy Environment.....	77
Table 7 Servqual Quality Dimensions and Participants' Responses	78

List of Figures

Figure 1. Serqual 10 Dimensions of Quality Chart.....	18
Figure 2. Thematic Derivation from Data Analysis – Pharmacists’ Responsiveness To Customers And Inventory Control.....	51
Figure 3. Thematic Source from Data Analysis – Pharmacists’ POMs Sourcing Strategies	62
Figure 4. Thematic Source from Participant Responses – Regular Self-Assessments for POMs Shortages Mitigation Strategies	73

Section 1: Multiple Case Study Foundation

Background of the Problem

Some pharmacists in Lusaka, Zambia, might lack the service quality strategies to mitigate prescription-only medications (POMs) stockouts for patient care. The Zambia public health system faces medicine shortage challenges (Chopo & Mwanza, 2024). Pharmaceutical supply chains play a critical role in reducing medicine shortages (Postma et al., 2023). Pharmacists can ease medicine stockouts (Friday et al., 2021). Service quality for patient care depends on continuous prescription supply, and pharmacists in Zambia require a paradigm shift to focus on improved patient care (Kaiser et al., 2019; Kalungia & Kamanga, 2016). Pharmacists can mitigate medicine shortage challenges through improved service quality strategies.

Pharmacists in Zambia require effective mitigating strategies as demand for services from the communities increase. According to Chan et al. (2020), recent demand for pharmacy services in Zambia increased exponentially. There are only 294 registered pharmacies in Lusaka, Zambia (Chisanga et al. (2025). Because of the exponential demand for pharmaceutical services in Zambia, pharmacists must adopt successful service quality strategies to mitigate POMs stockouts and improve profitability and business sustainability. Patients visit pharmacists for prescription filling, and prescriptions are important revenue sources for pharmacists (Kevrekidis et al., 2018). Applying successful service quality strategies pharmacists use to mitigate POMs shortages can improve patient care and service quality in Lusaka, Zambia.

Business Problem Focus and Purpose

The specific business problem was that some pharmacists in Lusaka, Zambia, face challenges in mitigating POMs shortages so they can deliver satisfactory patient care. An inadequate supply of prescriptions affects the quality of patient care, and findings indicate that less than 80% prescriptions are available, and order refills are below 30% in Lusaka, Zambia (Kanyika et al., 2025). The general business problem was that some patients in Lusaka, Zambia, faced precocious death because some pharmacists could not supply POMs because of supply chain or process-related shortages.

The purpose of this multiple case study was to explore the service quality strategies some pharmacists use to mitigate POMs shortages so they can deliver satisfactory patient care. In this multiple case study, I collected data from eight subjects. The identified participants aligned directly with the specific business problem and purpose of this multiple case study. The key participant eligibility criteria were as follows: (a) Participants needed at least 3 years of experience applying quality strategies to reduce POMs in patient care and service; and (b) Pharmacists had to be interested in the study and willing to dedicate sufficient time to my interviews. I gained access to eight participants by visiting pharmacies and individually recruiting pharmacists as study subjects, and I did not partner with organizations.

I used the purposive sampling method to select pharmacy leaders in the Lusaka geographical area. I gathered data from participants using a semistructured interview process designed to elicit their successful work experiences for mitigating POMs shortages and improving POMs patient care and service quality. I also gathered data from

a second source, publicly available documents. To verify the existence of the problem, I reviewed scholarly academic articles and pharmacy service research findings on shortages of POMs. The conceptual framework for this multiple case study was the SERVQUAL model developed by Parasuraman et al. (1985).

Research Question

What service quality strategies do some pharmacists in Lusaka, Zambia, use to mitigate POMs shortages so they can deliver satisfactory patient care?

Assumptions and Limitations

Clarifying the study's assumptions, limitations, and delimitations can assist a broader audience in understanding the outcomes. Researchers must clearly explicate the assumptions, limitations, and delimitations for the larger audience (Theofanidis & Fountouki, 2018). I elucidated assumptions, limitations, and delimitations for a broader audience to understand the research.

Assumptions

A researcher should explicate the assumptions of a study. Assumptions are a researcher's views accepted as valid, but without concrete evidence (Ellis & Levy, 2009). My assumptions in this study were: (a) Participants will be willing to answer the questions honestly, (b) participants will possess knowledge concerning similar of phenomenon research, and (c) a purposive sample of eight or more participants was adequate for attaining data saturation.

Limitations

Limitations signify factors that may affect the purpose of the research and are beyond the control of the researcher (Tahat, 2021). Researchers indicate the study's limitations to validate their understanding of the integral weaknesses in the chosen methodology (Tahat, 2021). Limitations of this study included: (a) the short time of the study, (b) participants' personal bias when responding to interview questions, and (c) study findings may not be generalized to other pharmacies or other communities in Zambia.

Transition and Summary

In Section 1, I introduced the background of the problem. I discussed the challenges the Zambia health care system faces and the role pharmacists can play to mitigate medicine stockouts. I identified the research gap and the need to develop service quality strategies to mitigate medicine stockouts. I discussed the specific business problem and the study purpose. I listed the multiple case study research interview question. I then concluded the section by stating the assumptions and limitations of the multiple case study.

In section 2, I review the professional and academic literature, and the application of the business problem is examined. I identify the study's conceptual framework and the service quality dimensions. I provide an overview of service rival quality models. I address the patient satisfaction and loyalty in Zambian health care, as well as prescription medicines (POMS) shortages. Finally, I discuss the roles of pharmacists as health care providers, followed by a transition and summary.

In Section 3, I will examine the nature and ethical considerations of the multiple case study approach. I will address the study population, sampling strategies, participant selection, and data collection procedures. I will then present the interview questions, describe data organization and analysis methods, evaluate reliability and validity in qualitative research, and conclude with a transition and summary.

Section 2: Review of the Professional and Academic Literature

Introduction

The literature review provided data for the qualitative multiple case study on service quality strategies that pharmacists use to mitigate prescription-only medicines (POMs) shortages to enhance patient care and service. Service quality refers to the disparity between expected service levels and the actual service customers perceive (Sallam et al., 2025). Medicine shortages encompass terms such as *shortage* and *stockouts* (Aronson et al., 2023). Patients consider service quality in health care as fulfilling their expectations and perceptions (Karume et al., 2025). The literature review followed a thematic order. The research question was: What service quality strategies do some pharmacists use to mitigate POMs shortages for patient care?

I used the Walden University Library databases, Google Search, and Google Scholar to select relevant peer-reviewed and non-peer-review journal articles, which included *PubMed*, *Journal of Health Care Management*, *Journal of Health Care Quality*, *Health Services Research*, *Health*, *Journal of Health Economics*, *Journal of Pharmaceutical Health Care and Sciences*, and *International Journal of Pharmaceutical and Health Care Marketing*. I used the Ulrich Periodical Directory to validate the peer-reviewed articles.

The search keywords and Boolean operators included – *drugs shortages AND service quality AND health care or healthcare AND SERVQUAL AND service quality theories or models AND dimensions of service quality AND prescriptions stockouts AND prescriptions only medicines AND inventory systems AND pharmacists AND*

patient satisfaction/fulfillment AND patient expectations AND customer loyalty AND health care services strategies AND health care service determinants, AND pharmacy service dimensions AND stockout mitigation .

The sources I used were from peer-reviewed journals. The total reference sources for the literature review were 150. The frequencies of literature review citations are shown in Table 1. There were zero non-peer citations.

Table 1 indicates the frequencies of literature review citations in the study between 2021 to 2025. The table also shows peer-reviewed citations below 2021.

Table 1

Literature Review Section Statistics

Description	Number of citations	%
Peer-reviewed citations (2021-2025)	106	71
Peer-reviewed citations before 2021	44	29
Non-peer reviewed citations	0	0
Total	150	100

Application of the Applied Business Problem

The purpose of this multiple case study was to explore to the service quality strategies some pharmacists use to mitigate POMs shortages for patient care.

Conceptual Framework

The conceptual framework theory that I used for this multiple case qualitative research was the SERVQUAL model (Parasuraman et al., 1985). Researchers who use incorrect conceptual frameworks can encounter more difficulty in interpreting the study

results. Researchers should avoid conceptual tunnel bias (Wadams & Park, 2018).

Conceptual tunnel bias occurs when the researcher over-rationalizes the collected information to fit the conceptual framework (Wadams & Park, 2018). To avoid tunnel bias, I identified SERVQUAL as an appropriate conceptual framework that aligns with this study.

SERVQUAL Conceptual Framework

I applied the SERVQUAL model conceptual framework to structure the study, conduct data analysis, comprehend the phenomenon, and devise findings. Researchers apply conceptual frameworks to understand phenomena, structuring research, developing hypotheses, analyzing data, and interpreting results (Olowe et al., 2024).

Parasuraman et al. (1985) introduced the SERVQUAL model. Parasuraman et al. (1988) revised the SERVQUAL model by reclassifying the service dimensions into five new ones: tangibility, reliability, responsiveness, assurance, and empathy. The SERVQUAL proposed by Parasuraman et al. (1985) consisted of 10 service dimensions: access, communication, competence, courtesy, credibility, reliability, responsiveness, security, tangibility, and customer knowledge, which influence service quality.

SERVQUAL is relevant for exploring strategies pharmacists can use to mitigate POMs shortages for patient care and service quality. Studies have shown that applying SERVQUAL can enhance patient care service quality (Jonkisz et al., 2021; Karume et al., 2025). Researchers have applied SERVQUAL to measure patient expectations and perceptions of service (Jonkisz et al., 2021).

A researcher can identify and apply a conceptual framework to conduct data organization and analysis to explain factors affecting a studied phenomenon (Luft et al., 2022). I selected the SERVQUAL theory as a conceptual framework for this qualitative multiple case study to guide data organization and analysis. The SERVQUAL service quality conceptual framework was pivotal in assisting the meaningful interpretation of data. In this multiple case qualitative study, Parasuraman et al.'s (1985) SERVQUAL 10-service dimensions were applied as a conceptual framework for devising successful strategies that pharmacists use to mitigate POMs shortages and improve service quality in Lusaka, Zambia.

I applied the SERVQUAL model conceptual framework to structure the study. The SERVQUAL model was useful for conducting data analysis, comprehending the phenomenon, and devising findings. Researchers apply conceptual frameworks to understand phenomena, structuring research, developing hypotheses, analyzing data, and interpreting results (Olowe et al., 2024).

Rival Service Quality Models and Critique of SERVQUAL

I briefly differentiated service and product quality before discussing rival service quality models. Service and product quality are different concepts. Service quality delivery determines business competitiveness (Mirza et al., 2021). Service quality contrasts with product quality through intangibility, heterogeneity, and inseparability (Chikazhe et al., 2022). Customers evaluate quality service by the merits and demerits of service providers' processes (Ahmed et al., 2023). Having discussed service and product quality I discussed rival service quality models.

Some researchers have questioned the applicability of SERVQUAL dimensions in different settings. Besides the SERVQUAL model, other researchers have advanced dissimilar quality models. I discoursed SERVQUAL with rival theories SERVPERF model (Cronin & Taylor, 1992), retail service quality scale model (Dabholkar et al., 1996), Grönroos's model (Grönroos, 1984), and Kano's model (Kano et al., 1984).

According to Bachoolall and Suleman (2025), some dimensions of the SERVQUAL model may not be suitable for the health care sector. Halaweh and Salameh (2023) pointed out that a significant criticism of SERVQUAL is its limited applicability across different industries, suggesting that modifications may be necessary for various settings. Other critics have highlighted that one of the SERVQUAL's weaknesses borders on ineffectiveness measuring service quality processes (Yee & Salleh, 2022). Though SERVQUAL theory has received some criticism, researchers have applied the model in different sectors for service quality. Globally, researchers have used SERVQUAL in diverse sectors as a tool for business analysis. SERVQUAL concept remains a reliable service quality scale applied in various industries (Anabila et al., 2022). Study results showed that SERVQUAL was a valuable model for measuring the quality of entrepreneurial service (Subhani, 2022). The SERVQUAL model allows practitioners to comprehend patient expectations and permit service providers to identify service irregularities and implement corrections (Jonkisz et al., 2021). The SERVQUAL model may require modifications in specific settings (Kononiuk & Gudanowska, 2022). SERVQUAL, with modifications, may be widely used to understand customer behaviors.

SERVPERF

Cronin and Taylor (1992) proposed SERVPERF as a rival theory to SERVQUAL. Cronin and Taylor (1992) theorized that service quality was measured, as an attitude, not as the difference between expectations and actual performance. Cronin and Taylor (1992) suggested removing the expectations part of SERVQUAL and replacing expectations with performance as customers reviewed service quality as an attitude. Akdere et al. (2020) applied SERVPERF theory to study patients' perceptions of service quality and discovered that SERVPERF was relevant to organization managers for measuring and improving service quality. This study focused on the SERVQUAL 10 dimensions of service quality, so SERVPERF did not align with this study.

Grönroos Model

Grönroos (1984) was one of the pioneers of service quality based on technical (output) quality, functional (process) quality, and corporate image (Magasi et al., 2022; Su et al., 2022). Services are intangible; during buyer-seller interactions, customers perceive service quality after reviewing and evaluating the providers' service process (Grönroos, 1988). Grönroos (1984, 1988) theorized that customers understand service quality using technical, functional, and image dimensions. Grönroos (1988) proposed guidelines for the measurement of service quality are (a) professionalism and skill, (b) attitudes and behavior, (c) accessibility and trustworthiness, (d) recovery and reputation, and (e) credibility.

The limitations of the Grönroos model are (a) the challenge of evaluating the technical service of a product, (b) the application of the model in different settings, and

(c) limitations of customers to judge the technical skills of the service provider (Ramanathan et al., 2018). Although Grönroos (1988) proposed five service quality dimensions, Parasuraman et al.'s (1985) 10 SERVQUAL service dimensions helped explore strategies to mitigate POMs shortages for patient service quality.

Retail Service Quality Scale (RSQS)

Dabholkar et al. (1996) precisely proposed the retail service quality scale (RSQS) model to measure service quality in the retail context. The RSQS theory encompasses five service quality dimensions, physical aspects, reliability, personal interaction, problem-solving, and policy for retail settings. Retailers could use the RSQS as a basic retailing strategy for gaining a competitive advantage in retail settings (Musasa & Tlapana, 2023). SERVQUAL 10 dimensions provided a broader lens to explore this study phenomenon.

Kano's Theory

Kano et al. (1984) proposed Kano's theory to measure product and service quality. Researchers have applied Kano's theory to measure service and product quality in different settings (W. Dong et al., 2025). Kano et al. discovered that the relationship between customer satisfaction and performance is non-linear.

Kano's theory identifies several service dimensions: (a) performance attributes, which, if absent, lead to customer dissatisfaction, but, if present, do not exceed expectations; (b) excitement attributes, which increase satisfaction when present but do not cause dissatisfaction if missing; (c) must-be attributes, which customers take for granted and only notice if they are missing, causing dissatisfaction; (d) reverse attributes,

which can cause dissatisfaction if provided, as different customers prefer their absence; and (e) indifferent attributes, which have no effect on customer satisfaction, even when present (Zhou & Yao, 2023).

Kanos' theory critics frequently referred to the Kanos model as cumbersome and unclear (Baran & Barutçu, 2025). The weakness of the Kanos' model was product quality classification without measuring its numerical or qualitative performance (Slevitch, 2024). Kanos' theory does not explain the customers' behavioral intentions and does not clarify factors attributed to customers' perception of the specific attributes' importance (Dace et al., 2020). Kanos' model applies predominantly to product classification for improved service quality, so Kanos' model was not appropriate for this study.

SERVQUAL Service Dimensions

Parasuraman et al. (1985) developed the SERVQUAL theory with 10 service dimensions: access, communication, competence, courtesy, credibility, reliability, responsiveness, security, tangibility, and customer knowledge. Researchers have applied SERVQUAL service dimensions to improve patient care (Bachoolall & Suleman, 2025). SERVQUAL is a valuable model for measuring the expectations and perceptions of patients concerning a service (Jonkisz et al., 2021). Retail organizations can use the SERVQUAL dimensions to measure customer perceptions of service quality (Parasuraman et al., 1985). Health care practitioners have applied SERVQUAL to improve patient care (Sallam et al., 2025). In the data analysis and findings, Parasuraman et al.'s (1985) 10 service dimensions were useful in developing service quality strategies for mitigating POMs shortages for patient care and service quality.

Parasuraman et al. (1988) conducted a factor analysis study to reclassify the 10 SERVQUAL dimensions. Parasuraman et al. recast the 10 SERVQUAL dimensions into five dimensions (a) tangibility, (b) reliability, (c) responsiveness, (d) assurance, and (d) empathy. Parasuraman et al. retained tangibility, reliability, responsiveness, combined competence, courtesy, credibility, and security into assurance, access, communication, and understanding/knowing the customer into empathy. I retained the original 10 SERVQUAL dimensions for the conceptual framework to explore successful service quality strategies pharmacists use to mitigate POMs shortages for patient care in Lusaka, Zambia.

Researchers are yet to reach a consensus on the number of service quality dimensions and have suggested varying quality aspects in different settings. Despite the evolution of service quality models, there has been no consensus on the superior quality measurement model (Arabelen & Kaya, 2021). Pamucar et al. (2021) discovered that parking and Wi-Fi connection access are essential airport service quality dimensions. Chonsalasin et al. (2021) revealed seven service dimensions: security, check-in, wayfinding, airport environment, access, arrival services, and airport facilities for airport environment. Researchers discovered varying numbers of service quality dimensions, ranking according to the study context.

Researchers have differently ranked service quality dimensions according to the study environment. Customers view service quality from the perspective that service dimensions are essential (Leem & Eum, 2021). Researchers have ranked service quality indicators according to the settings. Education service quality requires responsiveness,

empathy, assurance, reliability, and tangibles (Tavakoli et al., 2019). Pharmacists rank service quality dimensions for POMs patient care according to the preferences and perspectives of patients.

The generic meaning of the 10 dimensions of service quality are:

1. Reliability: Supplier consistency of performance and dependability in delivering the exemplary service at the right time.
2. Responsiveness: Willingness or promptness of staff to deliver a service.
3. Competence: Expertise and knowledge of personnel.
4. Access: User-friendliness and ease of contact with customers.
5. Courtesy: Denotes the courtesy and approachability of the service staff.
6. Communication: Dissemination of information to customers for their benefit.
7. Credibility: Credibility and trustworthiness.
8. Security: Physical safety and financial security.
9. Understanding/knowing the customer: Understanding client necessities, knowing the customers' specific needs, providing customized care, and identifying the regular customer.
10. Tangibles: Physical evidence and representations of the service (Yarimoglu, 2015).

The contextualized SERVQUAL 10 dimensions within pharmacy settings are as follows:

1. **Accessibility:** Easy access to the pharmacist, convenient opening hours, well-displayed products in the self-service section, and pharmacist easily contacted by phone and other media innovations.
2. **Communication:** Keeping the patient well informed on POMs, non-prescription drugs, and other products used and side effects. Responding to queries raised by patients on health care matters and medications using the language that consumers understand well.
3. **Credibility:** The pharmacist's trustworthiness, honesty, and having patients' best interests at heart.
4. **Competence:** Pharmacist's competencies and knowledge to conduct duties in the pharmacy. Ideally, this signifies the pharmacist probing the patient further to gain information on medications a patient uses to dispense the POMs accurately.
5. **Courtesy:** Pharmacist's courtesy, respect, consideration, and friendliness.
6. **Reliability:** Timely, accurate dispensing of health care services and correct pricing of POMs as promised to the patient.
7. **Responsiveness:** Responsiveness could signify the pharmacist's willingness and readiness to perform the required service. Responsiveness could also mean ensuring drug availability for patients in pharmacy settings.
8. **Security:** Keeping the patient's health care information confidential and private and not disclosing the data to the public. Security also signifies keeping safe all POMs from vices such as pilferage.

9. Tangibles: The pharmacy's physical attributes include the size of premises, equipment, furnishings, and waiting rooms (for patient's convenience while waiting for prescription dispensing).
10. Understanding/knowing the customer: Pharmacists effort to understand the specific needs and give individual attention to a patient (Hedvall & Paltschik, 1991).

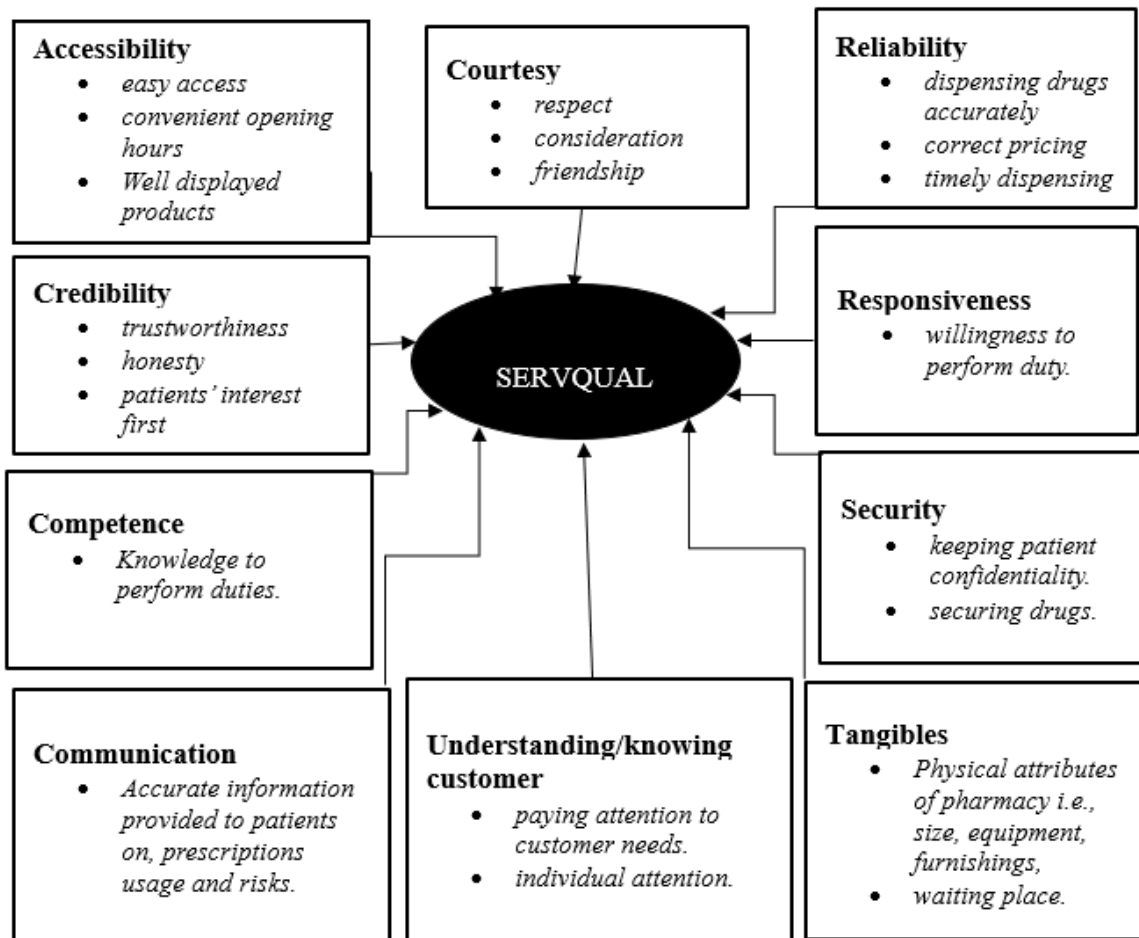
SERVQUAL 10 Dimensions of Service Quality

I selected SERVQUAL service 10 dimensions theory based on Hedvall and Paltschik's (1991) subdimensions interpretations as a conceptual framework. The mirroring of SERVQUAL service 10 dimensions assisted in framing service quality strategies successful pharmacists apply to mitigate POMs stockouts for patient care. Figure 1 shows the graphic presentation of SERVQUAL service dimensions and subdivisions.

Figure 1 depicts the SERVQUAL 10 dimensions operationalized by Hedvall and Paltschik (1991) to suit pharmacy settings. Figure 1 demonstrates the graphical exhibition of the SERVQUAL 10 dimensions of service quality. Figure 1 displays how the 10 dimensions of SERVQUAL affect service quality.

Figure 1

Serqual 10 Dimensions of Quality Chart



In this section, I discussed the SERVQUAL dimensions: access, communication, competence, courtesy, credibility, reliability, responsiveness, security, tangibility, and customer knowledge. These dimensions are essential for assessing and devising service quality strategies in business applications. I explicated the 10 SERVQUAL dimensions to facilitate identifying themes and for understanding the strategies pharmacists can use for improving service quality and addressing POMs shortages, which affect patient care.

Communication. Pharmacists need to communicate with suppliers to avoid stockouts of POMs. Prescient communication helps preclude stockouts (Bilal et al., 2024). Opportune communication among pharmaceutical supply chain members ensures stock availability (Kuo et al., 2021). Strategic pharmacists effectively communicate with suppliers to ensure the availability of medicines for patient care.

Pharmaceutical supply chain members who engage in clear, frequent, effective communication can mitigate the frequency of stockouts. Supply chain members communicate to coordinate materials flow and lower the “bullwhip” effect (Yang et al., 2021). Almomani et al. (2025) revealed that distortion of data flow upstream in the supply chain can cause the bullwhip effect, proficient pharmacists exchange data to avoid the bullwhip challenge and increase POMs stockout management. Successful pharmacists communicate effectively with supply chain members to avoid the “bullwhip” effect.

Pharmacists should use innovative communication tools to communicate with POMs suppliers. Effective communication involves using appropriate technology to create better working relationships (Lal et al., 2023). Pharmacists should use the same communication platforms other practitioners use, such as videoconferencing, phones, Facebook, and WhatsApp (Alhmod et al., 2022). Pharmacists ought apply communication innovations, including videoconferencing, phones, Facebook, and WhatsApp, to communicate with suppliers for POMs stockout mitigation.

Communication with suppliers is essential for POMs stocking. Effective communicators appropriately ask the right questions, use eye contact, apply body gestures, and are transparent (Iovan, 2021). Capable pharmacists mitigate POMs stockouts by

communicating with POMs suppliers verbally and asking the right questions, and being transparent and attentive.

Pharmacists should select POMs suppliers who can communicate. Study outcomes showed that one of the significant causes of medicine stockouts is a lack of communication between suppliers and clients (Bachoolall & Suleman, 2025). Supply chain members communicate with each other to share information and determine demand data (Mageto, 2021). Communication skills for pharmacists are: (a) Introductions, (b) establishing rapport, (c) active listening, (d) showing empathy, and (e) using simple language (Nemir et al., 2025). Successful pharmacists coordinate with POMs suppliers with communication skills to reduce POMs stockouts for patient care.

Pharmacists can effectively respond to POMs stockouts by sharing data. Proactive communication in the pharmaceutical industry can mitigate stock disruptions (Bilal et al., 2024). Lack of communication between suppliers and retailers can cause frequent product stockouts (Maluleke et al., 2021). Strategic pharmacists communicate and share POMs demand patterns, lead times, and inventory status with suppliers to avoid stockouts and improve patient care.

Responsiveness. Responsiveness signifies the willingness of a service provider to promptly assist consumers with sustained service quality (Setiono & Hidayat, 2022). Pharmacists must be responsive to the needs of patients by ensuring a steady supply of POMs. Medicine supply management is the fundamental accountability of pharmacists stockouts affect patient care (Dube & Zuma, 2022). Responsive pharmacists avoid POMs stockouts to meet patients' requirements adequately.

Pharmacists should prevent long waiting times, which affect patient care.

Efficacious pharmacists avoid patients waiting for prescription filling by ensuring POMs availability. POMs stockouts affect filling prescriptions promptly for patient health care (Zuma, 2022). Effective inventory management reduces customer dissatisfaction (Tarurhor & Osazevbaru, 2021). Health care leaders must be responsive to patient needs by ensuring access to prescriptions (Bibi et al., 2022). Responsive pharmacists prevent POMs stockouts by applying effective POMs inventory management strategies.

Pharmacists can either select the visual, periodic, or perpetual inventory methods to manage POMs stock for patient care. The visual inventory technique allows stock managers to observe stockpile size to determine its volume but is prone to errors (Mahlberg et al., 2022). Since the visual inventory method is prone to stock errors, successful pharmacists may not prefer the method. Pharmacists may use the periodic inventory method to manage POMs stocks. The periodic inventory method allows stock managers to review inventory levels at fixed intervals (Žic et al., 2024). The advantage of using the periodic method is that orders can be placed for a wide array of stock-keeping units (Žic et al., 2024). The periodic inventory method's disadvantage is that follow-up of stock is not on a day-to-day basis. Successful pharmacists avoid using the periodic method because of the POMs demand oscillations.

Pharmacists usually use the perpetual inventory method to manage stocks. Most pharmacists prefer the perpetual inventory method to control inventory stocks (Hidayat & Saleh, 2020). The perpetual inventory system unremittingly records stock transactions

(Mayarani et al., 2025). Successful pharmacists use the perpetual inventory method to control POMs because the system records stock transactions continuously.

Pharmacists should apply pertinent storage strategies for managing drug potency and date expiry. Proper storage eliminates potency reduction and the date expiry of medicines (Rezeki et al., 2022). Pharmacists use First In, First Out Method (FIFO) and First Expired First Out (FEFO) systems for storing medicines in alphabetical order (Wandira et al., 2020). Successful pharmacists store POMs alphabetically using FIFO or FEFO systems and maintain drug potency and date expiry.

Understanding patient demand patterns enables pharmacists to adequately plan for POMs stocks. Comprehending patient demand enables health providers to plan for quality care (Onifade et al., 2023). Efficient pharmacists use patient demand patterns to plan and forecast future POMs stocks.

Pharmacists should use agile supply chain members with specific characteristics. Agile supply chain members are responsive, flexible, fast, cost-effective, adaptable, and reliable (Vaka, 2024). Supply chain members network and convey products to the right customers at the right time, place, and minimum cost (Vaka, 2024). Efficient supply chains members form the backbone of quality health care services (Olutuase et al., 2022). Adaptable pharmacists coordinate with flexible, reactive, and dependable supply chain members who can convey POMs at the right time, place, and minimum delivery costs for service quality.

Access. Pharmacists must ensure adequate POMs for patient access. One of the bottlenecks to health care is medicine shortages, which can be resolved by ensuring

accessibility and a constant supply (Yarosan et al., 2024). Access to medicines can be restricted by ineffective supply chain management, leading to shortages that negatively impact health care delivery (Yarosan et al., 2024). Drug access in pharmacy settings signifies satisfying patient demands within a short period; stockouts affect patient care (Zuma, 2022). Inaccessibility to medication can result in adverse patient health outcomes (P. T. X. Dong et al., 2025). Successful pharmacists warrant adequate POMs for patient care and accessibility.

Pharmacists should espouse specific drug administering strategies including use of generic drugs for patient access. A pharmacist may dispense a generic drug instead of the doctor's branded prescription (Premanath & Kulkarni, 2024). Generic drugs mitigate patient drug shortages (Romano et al., 2022). Successful pharmacists dispense generics with branded drugs for steady supply of POMs.

Pharmacists can make savings by dispensing cheaper generics to POMs patients. Health care practitioners are encouraged to prescribe and dispense generic drugs which are cheaper than brands (Premanath & Kulkarni, 2024). The study's results showed that an average of 60% savings can be achieved using generic instead of branded medicine (Shrestha et al., 2022). Effective pharmacists dispense cheaper generic drugs instead of branded ones to mitigate POMs shortages for patient care and service quality.

Pharmacists could create buffer or safety stocks to ensure access to POMs for patient care and service quality. Supply chain members can use buffer stocks to safeguard future customers' demands in unforeseen situations (Fan et al., 2025). Buffer or safety stocks safeguard against demand uncertainty and supply interruptions which proliferate

stockouts (Bozorgi & Fahimnia, 2021). Johnson et al. (2021) study findings showed that buffer stocks could prevent medical product stockouts. Effective pharmacists keep developing safety stock policies and maintain POMs buffer stocks to attenuate stockouts.

Pharmacists could informally borrow POMs to mitigate stockouts. Mahomed and Gumede (2022) research findings indicated that borrowing drugs could assist health care practitioners in mitigating stockouts. Consistent with the findings of Panic et al. (2020), pharmacists secure medication by communicating with other pharmacies or directing patients to other pharmacies for POMs filling stockout situations. Successful pharmacists use informal borrowing to mitigate POMs stockouts for patient care and service quality.

Pharmacists should have convenient opening and closing hours to increase patient access to POMs. Patients usually want to purchase medicines anytime, so business operating hours can affect customer satisfaction in pharmacy settings (Do et al., 2021). Able pharmacists ensure patients have access to POMs by conveniently opening and closing pharmacy hours.

Reliability. Pharmacists should be reliable in meeting patient needs by providing POMs. Reliability means an organization offers services as promised (Mabini et al., 2024). Customers evaluate the level of service based on reliability (Khan et al., 2024). Reliable pharmacists meet POMs' patients needs by accurately performing a service, and consistently supplying POMs to patients.

Competence. A competent pharmacist can prevent POM shortages and increase service quality. According to Jin et al. (2025), proficiency serves as the benchmark for evaluating service quality, making it essential for pharmacists to develop specific skills

so they can succeed in their roles. Competent pharmacists are critical thinkers, problem solvers, team players, creative, understanding, and ethical (Hedvall & Paltschik, 1991). Successful pharmacists apply specific skills to prevent POM shortages and augment service quality.

Courtesy. Courteous pharmacists can affect POMs' patient care and service quality. Courtesy measures the attitude of service providers and how staff responds to customer demands (Noor et al., 2023). Pharmacists' attitude towards patients can affect patient satisfaction (Alzahrani et al., 2024). Muneeza (2024) research findings revealed that friendliness and courtesy of the pharmacy staff contributes to patient satisfaction. Successful pharmacists show courtesy and friendliness to enhance POMs' patient care, satisfaction, and service quality.

Credibility. Pharmacists should be credible to improve the perception of POMs patients and service quality. According to Jou et al. (2024), credibility refers to the provision and delivery of a quality service. Mendoza et al.'s (2023) study findings showed that credibility was an important service quality dimension that positively influences customer satisfaction. Bachri et al. (2022) argued that a business's credibility may determine the business's success. Credible pharmacists provide quality services for patient satisfaction.

Security. Pharmacists must safeguard POMs stocks against pilferage. Pilferage can decrease inventory and business profitability (Chanda & Mwanza, 2023). Theft amplifies stockouts of essential drugs affecting patient health care (Kaupa & Naude,

2021). Successful pharmacists develop measures against theft of POMs to avoid stockouts.

Understanding/knowing the customer. Pharmacists must understand POMs patient needs to enhance service quality. Understanding consumer drug demands is essential for stocking medicines (Ikekwere, 2024). Pharmacists must meet the demands of patients by stocking medicines according to their needs and delivering the products at the right time (Kolade, 2019). Pharmacists need demand data to forecast future POMs stocks. Pharmacists use customer demand statistics for requirements planning which is essential for efficient supply chain operations (Kolade, 2019). Successful pharmacists use demand data to forecast future requirements and mitigate POMs stockouts for patient care and service quality.

Tangibles. Pharmacists who optimize the pharmacy environment can actually improve the quality of care and service satisfaction for their customers. Tangibles refer to the physical environment, facilities, and the appearance of personnel (Saporna & Claveria, 2019). Drinking water, consultation rooms, setting areas are essential for pharmacy environment (Sepp et al., 2021). Customers are satisfied with a business environment that has apposite equipment, furnishings, waiting area, posters, displays, leaflets, and a clean environment; conversely uninviting environment can lead to low patient satisfaction ratings (Akinyinka et al., 2019; Hedvall & Paltschik, 1991; Latif et al., 2018; Tavakoli et al., 2019). Capable pharmacists provide excellent tangibles such as equipment, premises, furniture, and waiting facilities to POMs patients for service quality.

Pharmacists should properly store POMs at the correct temperatures to mitigate stockouts. Stocking POMs at the appropriate temperatures is essential for patient care and service quality. Storing medication at the proper temperature for efficacy, potency, and stability is appropriate (Acharya et al., 2021). Successful pharmacists use appropriate refrigerators with power backups to preserve the efficacy, potency, and stability of POMs.

Pharmacists can store drugs using dedicated refrigerators and prevent wastage. Pharmacists should store POMs within acceptable temperatures for preservation. Room temperature storage of medicines is below 25°C, and refrigerated storage is 2 to 8°C with dedicated refrigerators (Bani Issa et al., 2022). Drug storage at refrigerator temperatures of 2 to 8°C is standard (Santosa & Azam, 2020). Capable pharmacists use dedicated medicine refrigerators to store POMs at standard temperatures of 2 to 8°C and air-conditioning at room temperatures below 25°C.

Patient Satisfaction and Loyalty

Pharmacists should consistently provide POMs and service quality to create satisfied and loyal POMs patients. Quality service fosters customer satisfaction, leading to repeat patronage (Mabini et al., 2024). Prudent pharmacists mitigate stockouts and increase patient satisfaction. Pharmacists maintain steady medicine inventory through service quality (Barghouth et al., 2021). Successful pharmacists mitigate POMs stockouts and ensure that patients are satisfied. Pharmacists must identify indicators that satisfy POMs patients. Patient satisfaction reflects a patient's perception of service quality (Molla et al., 2025). Research results indicated that facilities, convenience, prescription

availability, and pricing contributed to customer satisfaction (Do et al., 2021). Visionary pharmacists envision patients' perception of facilities, medicine stocks, and pricing for improved POMs patient satisfaction.

Health Care in Zambia and Prescription Medicines (POMS) Shortages

The health care system in Zambia has many players, including pharmacists, who can contribute to patient care and service quality. In Zambia, the quality of health care services offered to citizens remained challenging (Kalungia & Kamanga, 2016). Shortages of drugs have contributed to Zambia's poor health care outcomes (World Health Organization [WHO], 2016). Demographic, epidemiological pressures, and staff shortages affect Zambia's health care system (Mwale & Makasa, 2025). The private health sector could complement the government's efforts to provide quality services to the population. Pharmacists in Zambia might significantly contribute to the public health care system (Mukosha et al., 2022). Pharmacists in Zambia can meaningfully contribute to patient care and service quality by mitigating shortages of POMs.

Pharmacists in Lusaka, Zambia, must ensure that pharmaceutical supply chain members deliver POMs for patient care and service quality. Health care delivery depends on establishing an effective and efficient supply chain system (Kaupa & Naude, 2021). Effective management of pharmaceutical supply chains can help mitigate drug stockouts and associated risks (Friday et al., 2021). Successful pharmacists choose competent supply chain members to alleviate POMs shortages.

Pharmacists' Role as a Health Care Provider

Pharmacists must embrace new roles to respond to increased POMs and patient demands. Pharmacists are essential practitioners who can provide quality health care delivery in communities. Traditionally, pharmacists provided medical supplies and treated minor sicknesses (Muscat et al., 2024). Effective management of pharmaceutical supply chains can ease drug stockouts and risks (Friday et al., 2021). Pharmacists' roles in developed countries are contemporary compared to their counterparts in developing countries (Sakeena et al., 2018). Pharmacists' enhanced service quality to POMs patients in Zambia could depend on adopting new roles.

The 21st-century pharmacists should embrace innovative roles to improve POM patient care and service quality. Pharmacists have evolved from traditional medicine compounding to focus on patient care (Urick & Meggs, 2019). Innovative pharmacists assume the following roles: (a) prescription drug monitoring programs, (b) promoting safe storage and disposal of psychoactive medications, (c) working in multi-disciplinary teams, (d) emergency medication refills, (e) minor ailments prescribing, (f) therapeutic substitution (g) prescription drug therapy initiation (Bratberg, 2019; Goode et al., 2019).

Transition and Summary

In Section 2, I discussed the review of the professional and academic literature. I explained the literature search strategy. I also detailed the application of the applied business problem covering topics such as the SERVQUAL conceptual frame and rival service quality models. I likewise reviewed the SERVQUAL quality dimensions and relevantly applied the challenges some members of the Zambia health care system face

including what actions pharmacists can take to mitigate medicine stockouts so they can provide satisfactory patient care.

In Section 3, I will explore the nature and ethical considerations of the multiple case study approach. I will discuss study population, sampling strategies, and participant selection. I will converse data collection procedures and state the interview questions. I will describe data organization and analysis methods, evaluate reliability and validity in qualitative research, and conclude with a transition and summary.

Section 3: Multiple Case Study Methodology

Multiple Case Study Ethics

It was fundamental that I realized how my ideas and prejudices could affect study results. Plagiarism, falsification, and fraud can diminish study findings and validity (Berkovich, 2018; Shaw & Satakar, 2018). In qualitative studies, the researcher often is the primary instrument for data collection (Muzari et al., 2022). As primary explorers, qualitative researchers should comprehend and avoid personal bias (Ahmed et al., 2023).

Researchers may collect data and minimize personal bias through interviews. In qualitative research, it is not entirely possible to eliminate the effect of researcher bias resulting from how questions are framed (Ormond et al., 2023). Qualitative researchers can apply open-ended questions to mitigate personal bias risks and increase research trustworthiness (Galura et al., 2022).

Past personal contact with participants could affect study outcomes. Pinnegar and Quiles-Fernández (2018) posited that a researcher can contact participants personally, but for objective research an explorer must isolate personal views. I had no personal relationships with the participants except through the recruitment process.

Researchers should have a framework for conducting research involving humans. Protecting humans from harm is essential in research (White, 2020). The *Belmont Report* includes universal principles for conducting ethical research (Redman & Caplan, 2021). The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (1979) officials in the *Belmont Report* provided ethical guidelines and principles that researchers should follow when conducting research involving human

subjects. A Walden researcher must follow the guidelines stipulated in the *Belmont Report*.

The three guiding ethical principles stated in the *Belmont Report* for human participants are: (a) Respect for persons, (b) beneficence, and (c) justice. In the Belmont Report, researchers should recruit participants who voluntarily accept participating in a study. Researchers should follow the expressions of beneficence rules (a) do not harm, (b) maximize possible benefits, and (c) minimize potential harms. Qualitative researchers' adherence to ethical guidelines in the *Belmont Report* can ethically promote and protect participants' rights. I followed the guiding ethical principles for human participants, the esteem of persons, generosity, and impartiality stated in the *Belmont Report* by ensuring that participants accessed obligatory study data to decide whether to participate.

Ethical qualitative researchers should obtain ethical review board officials' approval to safeguard against ethical flaws in a study. The aptitude for identifying, managing, and resolving ethical predicaments includes a researcher and the broader research community's consultation for advice on ethical matters (Head, 2020). I obtained Walden University's Institutional Review (IRB) authority before conducting the study. The Walden University IRB approval number is 08-06-21-0369074. The Biomedical Research Ethics Committee of Zambia and the National Health Research Authority granted the authority to conduct the study in Zambia through IRB approval number 1772-202.

Qualitative researchers typically begin interviewing participants after participants' consent. Researchers may invite participants via email and provide an informed consent form that outlines the study's objectives (Kreuter et al., 2020). In this study, the Walden University Institutional Review Board (IRB)-approved consent form (Appendix A), which I used in conjunction with explaining study objectives. Researchers may invite participants via email and explain the study's goals using an informed consent form (Kreuter et al., 2020). I sent the Walden University IRB's approved consent form to participants through email addresses. The participants that agreed to participate in the interviews had to consent enthusiastically. Participants must share personal information willingly (Bredal et al., 2024).

An essential aspect of participant consent is the right to withdraw from the study at any time. Researchers must not coerce participants to remain involved, and participants may withdraw without providing a reason (Cragg et al., 2024). The right to withdraw from a study is a well-established principle in research ethics (Kaaya, 2025). In this study, I ensured that the participants understood their rights to withdraw from the study. Researchers could pay participants for participation in a study. Participants are entitled to compensation for their research time and effort (Zaguri-Vittenberg et al., 2024). In this study, participation was voluntary, so there were no payments.

I masked the identity of the participants for confidentiality by substituting their names with Pm1 to P8m. I also did not mention the location the interviews were conducted. If I were to share the dataset with another researcher in the future, I would remove all names and identifying details before sharing; this would not involve another

round of obtaining informed consent. I will store the data securely for 5 years to protect confidentiality of participants.

Researchers should ensure that the selected participants are eligible to participate in a study. A researcher should design eligibility criteria to select a representative sample from the target population (Capili, 2021). The participants in this study were pharmacists with the following eligibility criteria: (a) The participants had a minimum of 3 years of work experience applying successful quality strategies to mitigate POMs for patient care and service quality, and (b) the pharmacists were interested in the study and willing to devote serious thought and sufficient time to my interviews.

Researchers should use appropriate sampling methods suiting study settings. Purposive sampling was appropriate for sampling eight participants with knowledge of service quality strategies for extenuating POMs shortages for patient care. Qualitative examiners can apply purposive sampling with specific criteria to select participants and gain relevant information (Campbell et al., 2020; Kurniawan et al., 2020).

As a qualitative researcher I organized and safeguarded collected data for validation. Qualitative researchers should systematically collect, secure, organize, and manage data to provide valuable information for the targeted audience (Alase, 2017; Twining et al., 2017).

Nature of the Multiple Case Study Research

Researchers select a particular research method for a study. Researchers can use qualitative, quantitative, or mixed methods to conduct a study (Strijker et al., 2020; Tomaszewski et al., 2020). Qualitative researchers may select either case study,

phenomenological, ethnography, or narrative research designs depending on study settings. In this study, I used a qualitative method with a multiple case design.

Single-case design researchers use small individual samples to measure behavior (Byun et al., 2017). The disadvantage of this method is the dissemination of findings to a broader audience (Byun et al., 2017). Multiple case study designs permit researchers to explore new phenomena in depth and create high-quality explanatory theories (Markula & Aksela, 2022). The advantage of applying multiple case studies is that they provide a broader perspective, augmenting the external validity and generalizability of study findings (Adams et al., 2022). I chose the multiple case study design to explore service quality strategies that pharmacists use to mitigate POMs stockouts because a single case study design has a limitation in establishing research validity.

Qualitative researchers could use phenomenological research design to understand participants' lived experiences. Phenomenological design researchers attempt to make logic of the participants' lived life experiences (Adeniran & Tayo-Ladega, 2024). Phenomenological research designers solicit data from participants regarding their lived experiences to comprehend a phenomenon (Adeniran & Tayo-Ladega, 2024). I did not select the phenomenological design because the objective was to explore strategies that successful pharmacists apply to mitigate POMs shortages for patient care and service quality.

Ethnography is the study of human lives in establishments, emphasizing the causal social culture and organizing processes (Risku et al., 2022). The primary advantage of applying ethnography is that a researcher can comprehend the dynamics of

complex and socially embedded dimensions of a phenomenon (FitzGerald & Mills, 2022). Ethnographic researchers engage in social science fieldwork and writing through close observation of participants in a particular social environment; and relate practical experiences to the inclusive cultural context within which they occurred (Newth, 2018). The objective of this study was not to understand the cultural experiences of the participants over time, so the ethnographic design was inappropriate. The qualitative researcher could gather stories from people and use the information to explain a particular phenomenon. Narrative research involves understanding participants' needs through narrative writing (Adeniran & Tayo-Ladega, 2024). In this exploration, the objective was not to track and process the participants' stories and experiences to gain insight through narrative writing, so the narrative design was unsuitable.

Population, Sampling, and Participants

The target population is pharmacists in Lusaka, of which I nominated eight participants through purposive sampling from different pharmacies. The targeted participants were professionals with pharmacy experience in mitigating POMs shortages. I gained access to eight participants via visiting pharmacies and individually recruiting eight participants, and I did not partner with organizations or anyone. Because of sensitivity, firms may not disclose the information (Martins et al., 2018). In this study, the limitation was gathering physical documentation from the pharmacies to support service quality practices without compromising the anonymity and privacy of the participants. I never collected service documents from or partnered with pharmacies;

instead, for methodological triangulation, I used publicly available reports from pharmacy websites to support and validate findings from the interviews.

Qualitative researchers could use purposive sampling to investigate a phenomenon. In purposive sampling, researchers collect a manageable amount of data from participants selected from a population (Nyimbili & Nyimbili, 2024). Investigators use purposive sampling to intentionally and conclusively choose the most suitable participants to respond to the research question (Ahmad & Wilkins, 2025). Qualitative researchers select samples based on the study's research questions and conceptual framework (Farrugia, 2019).

1. The sample size is adequate and the sample size is conducive for transferability to other settings.
2. The sample size selected is suitable for answering research questions.
3. The sample size is aligned with the research questions and methodological orientation (Varpio et al., 2017).

Researchers could use nonprobability sampling strategies that do not apply some form of random selection, which include convenience, snowball, and purposive sampling methods. Researchers could enlist participants who are effortlessly accessible using convenience sampling, a speedy, low-cost, and opportune method—the drawback of this strategy is limited cases or poor participation rates (Stratton, 2021). Researchers could use the snowballing sampling method. Snowballing allows a researcher to use existing participants to recruit future participants from others they know (Kennedy-Shaffer et al.,

2021). Individuals were not recruiting informants in this study; therefore, the snowballing method was not applicable.

Qualitative researchers should develop cordial working relationships with participants before, during, and after the study. In qualitative research data collection, researcher-participant relationships should reflect more on practical cooperation than personal relationships with a researcher (Mozerky et al., 2022). Researcher-participant working relationships can affect data, information gathering, analytical processes, and the quality of the study (Pinnegar & Quiles-Fernández, 2018). Trust and respect build researcher-participant working relationships (Pinnegar & Quiles-Fernández, 2018).

As part of an excellent researcher-participant working relationship, rapport with participants is requisite for quality data collection. Qualitative researchers gather rich data by maintaining neutrality, avoiding bias, and cultivating rapport with interviewees (Zhang & Okazawa, 2023). I reinvigorated the researcher-participant working relationship by providing implicit data to the participants on the benefits of applying successful service quality strategies to mitigate POMs shortages for patient care and service quality.

I ensured that the participants' characteristics aligned with the overarching project purpose. Participants should be selected based on having the knowledge and competence to answer the research question (Fusch & Ness, 2015). The selected participants were capable of responding to the research and interview questions. The pharmacists selected as participants were members of the Pharmaceutical Society of Zambia.

A sample of eight participants with experience in formulating and applying service quality strategies to mitigate POMs shortages resulted in data saturation and provided necessary evidence concerning the phenomenon. I attained data saturation by the sixth participant but continued interviewing until I reached eight participants and ensured no new themes emerged. Saturation occurs when the data results are sufficiently comprehensive to grant insights beyond the specific study (Stalmeijer et al., 2024). The purposive sample consisted of eight participants using semistructured questions until data saturation. Qualitative researchers can terminate sampling data once saturation is attained (Moser & Korstjens, 2018). I anticipated attaining data saturation after interviewing the sixth participant and confirmed data saturation by interviewing two additional subjects.

Data Collection Activities

In this multiple case study, I served as the primary researcher. A researcher can use semistructured interviews and accessible publicly reports to gather data. Qualitative researchers can collect data using interviews, documentation, observations, and focus group (Nii Laryeafio & Ogbewe, 2023). Qualitative researchers could use interview questions to collect primary and secondary sources to assemble data (Nii Laryeafio & Ogbewe, 2023; Wakelin et al., 2024). Jones et al. (2022) applied semistructured interview questions to gather valuable primary data, starting with the simple question to the complex with probes. Researchers can use documents to answer study questions and supplement other data collection methods (Mwita, 2022). As a primary data collector, I combined data from semistructured interviews and publicly available reports to analyze and explore the study phenomenon.

I used an interview protocol as a guide to collect data. Well-developed interview protocols and well-structured interview questions alleviate personal biases. Qualitative researchers use a semistructured interview protocol to analyze a phenomenon, mitigate personal bias, and increase research trustworthiness (Busetto et al., 2020). An interview protocol helps an explorer collect comprehensive information within the assigned time (Yeong et al., 2018).

I used an interview protocol (see Appendix B). Audio-recorded semistructured interviews with participants' consent typically last between 30 and 60 minutes (Guerrini et al., 2019). I used semistructured interviews, which lasted between 45 and 60 minutes. After I interviewed each participant, I transcribed the recorded data verbatim. Then I emailed a transcript summary to the interviewees to verify the content before the follow-up meeting to confirm transcription accuracy. Subsequently, I conducted member checking with each participant to verify the interview data that I recorded verbatim.

I used a smartphone with an external memory card to record interviews for transparency and interview data transcribing. To audio record interviews and focus on rapport building and data transcribing, investigators can use tape or digital audio recorders (Kakanda-Sinkala, 2024). The smartphone external memory card, participants summarized transcripts, field journal notes, and study documentation I will store in a key-lockable safe. After 5 years, the study documents, participants translated transcripts will be incinerated, and memory card data erased.

I enhanced study reliability and validity by using data triangulation and by using member checking with each participant. Case study researchers may use member

checking to enhance the trustworthiness and credibility of study findings. Member checking is important in qualitative research because it increases the accuracy and validity of results (Lloyd et al., 2024). Before conducting data analysis of interview information, I conducted member checking to confirm accurate interpretation of recorded data. Member checking comprises returning the analyzed interview data to a participant to validate and verify the results (Lloyd et al., 2024). During member checking, I used a transcript summary for each participant. I gave the participants 2 days to verify, confirm, or suggest changes to the transcript summary. I confirmed my data analysis and thematic development once the participants confirmed the correctness of the transcription summary. There was only one participant who did not respond to the invitation. I sent a reminder email to the non-responsive participant. Subsequently, after 4 days elapsed, I assumed that the prospective participant had decided not to participate. I did not recruit an additional participant after affirming data saturation.

Interview Questions

The interview questions are also shown in Appendix B.

1. How do you ensure that POMs for your patients are readily available when needed?
2. How do you assess the effectiveness of your strategies for fulfilling POMs shortages to achieve the desired outcomes?
3. What economic benefits do you provide your patients with POMs for them to patronize your pharmacy?

4. What facilities do you offer patients with POMs as they wait for medicine dispensing?
5. How do you retain POMs patients as customers when there are POMs inventory shortages?
6. What factors do you consider, other than volume alone, about which POMs you should manage with more safety stock?
7. How do you store POMs to prevent potency reduction and dating expiry?
8. What attributes are important when selecting POMs suppliers?
9. What supply chain information do you need to help you proactively prevent POMs shortages?
10. What other information is essential regarding the strategies for fulfilling POMs shortages for POMs patients' service quality?

Data Organization and Analysis Techniques

Researchers should organize and safeguard collected data for validation.

Qualitative researchers should systematically collect, secure, organize, and manage data to provide valuable information for the targeted audience (Alase, 2017; Twining et al., 2017). For participants, confidentiality and protection, copy documents, field notes, transcripts, and a password-protected flash drive related to the study will be secured and locked in a lockable safe for 5 years. Created flash drive folders, namely Pm1 to Pm8, contained individual participants' email correspondence, audio recording, consent forms, and interview transcripts for easy identification. After 5 years, the flash drive will be formatted to erase data and hard copy documents incinerated for confidentiality.

Conceptual frameworks play an important role in data analysis. Investigators select appropriate conceptual frameworks to understand phenomena, structure a study, analyze data, and interpret research results (Olowe et al., 2024). Conceptual frameworks are valuable for linking emerging data themes to comprehend a phenomenon (Hamilton et al., 2018). In this research, I applied SERVQUAL's 10 dimensions to structure this study. I linked the emergent themes, analyzed data, and the interpretation of the findings to the conceptual framework.

Researchers can gather information from different perspectives to gain valuable insights into a phenomenon, and by comparing new data patterns with the conceptual framework, a researcher could understand the phenomenon (Varpio et al., 2017). A researcher can use a conceptual framework for data analysis and clarifying factors affecting a study's phenomenon (Luque et al., 2020). I analyzed the data through the conceptual framework lens and meaningfully explained pharmacists' successful service quality strategies to mitigate POMs shortages for patient care in Lusaka, Zambia. I conducted my data analysis by (a) uploading transcripts into ATLAS.ti for coding and analysis, (b) analyzing ATLAS.ti-generated codes, patterns, and themes networks for inference, and hierarchical relationships, and (c) removing any splits in the data patterns observed.

Researchers can apply qualitative data analysis software (QDAS) for information processing. Researchers use software tools like ATLAS.ti, MAXQDA, and NVivo to transform their data analysis and report writing into a compelling narrative (Kalpokas & Radivojevic, 2022). I selected ATLAS.ti software to generate codes, memos, visual word

clouds, conceptual frameworks, and reports, which were instrumental in data analysis and interpretation, and presentation of findings. ATLAS.ti abilities include creating codes, memos, visual word clouds, conceptual frameworks, and reports (Kalpokas & Radivojevic, 2022).

Regarding my role as the researcher using ATLAS.ti, I followed the five data analysis steps recommended by Castleberry & Nolen (2018), which included (a) compiling, (b) disassembling, (c) reassembling, (d) interpreting, and (e) concluding (Castleberry & Nolen, 2018).

First, a researcher compiles data by transcribing the collected information for clarity, then disassembling the data by dissecting the information to generate meaningful groupings through coding (Castleberry & Nolen, 2018). Second, the researcher reassembles the codes to which each concept is mapped and put into context to create themes, and finally interprets data by conjecturing analytical suppositions from the data presented as codes and themes (Castleberry & Nolen, 2018).

To investigate the study phenomenon, I used thematic data analysis. I compiled and downloaded the transcript verbatim based on interview questions into ATLAS.ti software. I coded the recurrent terminology and arguments used by each participant. I created theme alliances to produce meaningful groupings through coding. I then reassembled the data to create networks or conceptual frameworks to depict the theme's relationships. I then analyzed the theme networks to interpret the data and finally made study conclusions.

The thematic data analysis process included contrasting ATLAS.ti results with the literature review and conceptual framework. A researcher uses a conceptual framework for data organization and analysis (Luque et al., 2020). The SERVQUAL's 10 dimensions set the reference point for thematic data analysis, interpretation, and conclusion. I meaningfully interpreted the strategies pharmacists successfully apply to mitigate POMs stockouts for patient care and service quality after comparing the ATLAS.ti analysis outcomes, literature review conclusions, and conceptual framework. The final thematic data analysis stage involved theoretical explanations of the phenomenon and generalizations for future research.

Reliability and Validity

Qualitative researchers employ triangulation to enhance the reliability and validity of a study. Triangulation provides multiple perspectives for investigating a phenomenon (Donkoh & Mensah, 2023). Academic articles, reports, and interviews may be utilized to increase credibility and validity (Abdalla et al., 2018; Moon, 2019; Natow, 2020; Schlunegger et al., 2024).

Reliability

Reliability in qualitative research research augments legitimacy of study findings. To strengthen reliability and ensure a study's trustworthiness, researchers may use triangulation (Papavasileiou & Dimou, 2025). Specifically, by drawing on multiple data sources, triangulation compensates for the weaknesses of individual sources (Schlunegger et al., 2024). Within-method triangulation involves addressing divergent sub-issues through a semistructured interview tool to obtain comprehensive perceptions of the

dominant subjects (Wiredu, 2022). In this study, I applied methodological triangulation (a within-method triangulation type) to enhance reliability, using primary (interview) data and publically available documents.

Validity

Credibility or Validity refers to the study's accuracy or internal consistency (Prosek & Gibson, 2021). Qualitative researchers could help ensure study credibility through member-checking. Researchers can validate findings through member checking (William, 2024). I took necessary steps to validate the study findings through member checking. Member checking is: (a) First, a researcher may ask the participants to appraise the transcripts and ascertain whether the words match the intended meanings; and (b) Participants could be requested to assess the initial or final data analyses to validate the researchers' understanding of the data (Varpio et al., 2017).

I conducted member checking using transcript summaries and draft findings for validation in this research. I emailed the eight participants a copy of their transcripts to verify the phrases and confirm transcription accuracy. I indicated number of the participants agreeing with the transcript verbatim and those not accepting. I emailed draft findings to the participants for verification as part of the member checking.

Qualitative researchers triangulate data for study trustworthiness and rationality. Triangulation minimizes investigators' bias and provides multiple lenses of the phenomenon under study (Donkoh & Mensah, 2023). The triangulation technique is applied to increase credibility and validity and ensure the study's conclusions are as

inclusive and precise as conceivable—triangulation sources comprise academic articles, reports, and interviews (Abdalla et al., 2018; Moon, 2019; Natow, 2020).

Researchers should select an appropriate strategy for data validation; in this study, methodological triangulation was valid. Multiple data sources in triangulation compensates for the weaknesses of individual sources (Schlunegger et al., 2024). To verify data accuracy and increase study validity, I applied methodological triangulation (within-method triangulation) by comparing the consistency of the interview data with publicly available data; I did not find inconsistencies. The methodological triangulation method allows a researcher to use different data sets to understand the study phenomenon and validate results (Donkoh & Mensah, 2023).

Researchers can strengthen research findings using between-method triangulation. The investigators may use between-method triangulation, combining both qualitative and quantitative approaches in a single study to enhance the comprehensiveness of the findings (Schlunegger et al., 2024). The between-method triangulation was not applicable in this exploration because this was a qualitative, not quantitative, study. The other types of triangulation methods researchers are (a) theoretical triangulation, (b) researcher triangulation, and (c) data triangulation (Abdalla et al., 2018), which I did not apply.

Transferability enriches the acceptability of research findings. Transferability involves connecting research outcomes to the existing theory (Stalmeijer et al., 2024). *Transferability* refers to study outcomes applicable to people other than the researchers or individuals who participated in the study (McGinley et al., 2020). Transferability can be demonstrated through (a) providing detailed contextual information to enable readers to

assess the transferability of findings, and (b) showing the sampling process and criteria to justify the potential transferability of the findings (Ahmed et al., 2023). In this study, transferability was demonstrated by the sample applied. The purposive sampled pharmacists who answered the research question adequately. The participants had a minimum of 3 years of work experience in pharmacy. The pharmacists were capable of implementing successful quality strategies to mitigate POMs for patient care and service quality.

Researchers should address the issue of confirmability of research results to a targeted audience. *Confirmability* refers to the assurance that the findings are reflective of participants, not the perspectives of the researchers, with enough description provided for replicability (Prosek & Gibson, 2021). Confirmability may be enhanced through engaging with subject experts to review interpretations and findings, and permitting participants to review findings (Ahmed et al., 2023). Examiners can achieve confirmability by providing quotes from participants depicting support for each theme (Sellberg et al., 2020). Researchers could record interviews for confirmability (Shayestefar et al., 2025). For confirmability, I audio-recorded interviews and extensively quoted participants' responses to support emergent themes.

A researcher should explain the process of attaining data saturation. Data saturation means no new themes emerge with an investigation of the subsequent interview (Naeem et al., 2024). The researcher ascertains that the data has reached saturation when the research process has either completely or almost filled a gap in the existing theory (Naeem et al., 2024). Data saturation indicated no new emergent themes as interviews

progressed. I stated at what point data saturation was attained after interviewing the participants; however, I continued interviewing two more participants to ensure no new themes emerged.

Transition and Summary

In Section 3 of the proposal, I addressed the ethical considerations and overall design of the multiple case study. I discussed the population, sampling methods, participants, and data collection activities. I also listed the interview questions and explained the data organization and analysis techniques. Finally, I discussed the importance of ensuring the validity and reliability of research results.

In Section 4, I will state the principal study question, present findings, and discuss business contributions. I will discuss the recommendations for professional practice, the implications of the findings, social change, recommendations for action, and finally, recommendations for further research and conclusion.

Section 4: Findings and Conclusions

Presentation of the Findings

The purpose of this qualitative multiple case study was to explore the service quality strategies some pharmacists use to mitigate POMs shortages for patient care. Eight pharmacists in Lusaka, Zambia, were purposively recruited. The qualitative research question was: What service quality strategies do some pharmacists use to mitigate POMs shortages for patient care?

The six themes that emerged were the pharmacists' responsiveness to customers and inventory control, pharmacists' POMs sourcing strategies, increasing economic benefits for POMs patient loyalty, improving supplier relationships for stockout mitigation, regular self-assessments for POMs shortages mitigation, and the pharmacy environment.

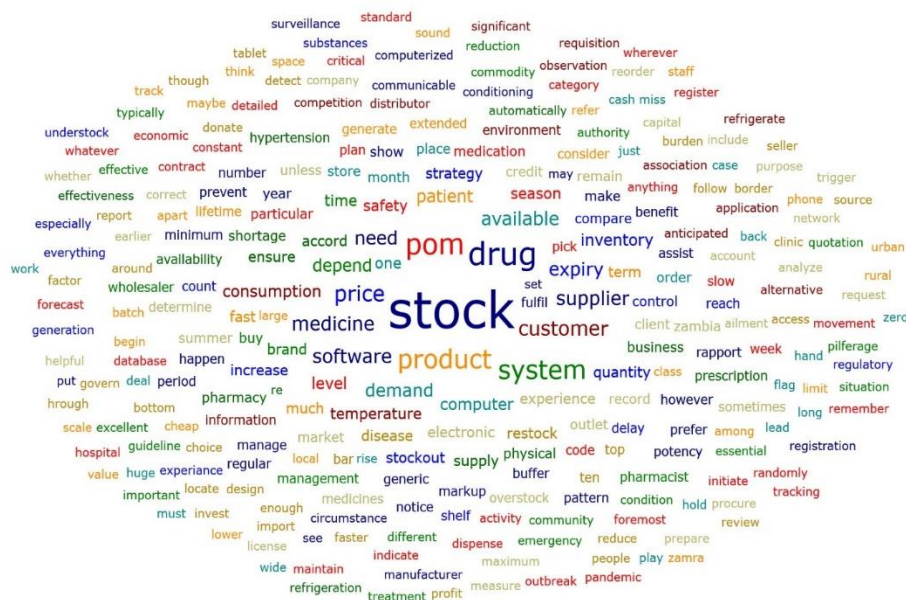
Theme 1: Pharmacists' Responsiveness to Customers and Inventory Control

Theme 1 arose from data analysis. Pharmacists' responsiveness means ensuring drug availability for patients and preparedness to deliver service quality (Hedvall & Paltschik, 1991). The related sub-themes to pharmacists' responsiveness to customers and inventory control are: Inventory management, computerized inventory, and POMs storage.

In figure 2, the Atlas.ti 9-word cloud shows participants' frequent words for pharmacist' responsiveness. The figure demonstrates that participants frequently used the term stock. Other terms include customers, inventory, system, medicine, POMs, and price.

Figure 2

Thematic Derivation from Data Analysis – Pharmacists’ Responsiveness To Customers And Inventory Control



Inventory Management

The findings of this study showed that data on patient drug demand patterns were essential for mitigating POMs stockouts. This finding is in tandem with Baloch and Gzara (2020) that customer demand data were important for improved service quality. RP-1 Pm1, RP-2 Pm2, and RP-6 Pm6 singled outpatient demands information as necessary for inventory planning to mitigate POMs stockouts. RP-1 Pm1 observed, “I have been in the market for POMs for many years, and from experience, POMs stocking depends on what customers need.” P-2 Pm2 purported, “We stock our medication according to what our customers need. We stock more according to demand, but for

others, we stock less.” RP-6 Pm6 gave this insight, “When stocking POMs, we look at consumption, season, and prescriptions from the doctors.”

The participants’ deliberations and data analysis showed that buffer or safety stock plays a decisive role in mitigating POMs stockout risks. This discovery is analogous to that of Gonçalves et al. (2020), who revealed that buffer stocks insure against product stockouts and increase service levels in times of demand volatility. RP-4 Pm4 suggested: “Safety stocks play an important role in fulfilling customers’ demand in the event of stockouts.” RP-5 Pm5 opined, “We manage POMs with more safety stock, other than volume alone.” P-6 Pm6 advocated: “Depending on the season, we increase the safety stocks for some drugs.”

Participants’ discussions indicated that POMs prices influence business competitiveness, health care, and patient affordability. Participant RP-2 Pm2 discoursed, “Generally, our POMs prices are low compared to other pharmacists to allow more customers to buy from us.” RP-5 Pm5 suggested, “For patients who use regular medicines like diabetes and hypertension, we stock such products with low price markups!” Participant RP-6 Pm6 advised, “We can afford to provide clients quality products at affordable prices by cutting go-betweens involved in procuring specific generic or branded POMs by sourcing directly from primary wholesalers or distributors.”

Pharmacists’ observations of stock movements can contribute to efficient inventory management. RP-1 Pm1 observed, “We know what POMs move and what does not move through the experience of the clients and based on the experience of what customers want and the daily movements of POMs, we stock POMs.” Participant RP-2

Pm2 summed their actions: “So, we stock POMs for patients as follows: The medications that move faster we store more, those which move once in 3 months a bit less, and in some categories, we do not own stock at all.” Participant RP-3 Pm3 emphasized, “They should be proper consideration of stock movements, like stock consumptions.”

The findings indicated that pharmacists could use generic drugs to mitigate POMs stockouts depending on existing laws. Panic et al. (2020) research findings confirmed that pharmacists could apply generic drugs to mitigate medicine stockouts. Terrizzi and Meyerhoefer (2020) research findings show that pharmacists could use generics instead of branded drugs, depending on pharmacy laws. RP-7 Pm7 mentioned that generic drugs helped solve POMs shortages.

RP-7 Pm7 stated:

If we do not have a prescribed drug, we work within a class of generics available to replace the drug that was prescribed. The law mandates a pharmacist to exchange prescriptions when unavailable with equivalents. The pharmacist may change the prescription when not available with the consent of the patient and doctor.

Computerized Inventory

The sub-theme computerized inventory system emerged from the data analysis. Pharmacists apply manual or computerized inventory systems for managing POMs stock. Failure to select an appropriate POMs inventory method can attenuate stockouts—pharmacists favor automated inventory management systems over cumbersome manual systems (Oladele et al., 2021).

The findings indicated that inventory automation contributes to POMs stockout mitigation. Manual inventory systems are arduous compared to electronic, which ease tracking and updating stocks (Musana et al., 2020). P-8 Pm8 explained that:

We have an electronic inventory system that allows tracking of how much stock is available. It is quite a tedious business [stocking] because these products may be in thousands, even running to more than 4000 stock lists per shop, so we do not have to stock much. If the consumption is not too much, we stock less.

Participants showed why they preferred computerized POMs inventory systems. RP-3 Pm3 stated, “We use an electronic inventory system to check on available stocks in other outlets.” RP-4 Pm4 voiced, “Firstly, we have a computerized system. Our computer system is designed so that when we fall below a specific limit or quantity, it begins to alert us to re-stock.”

The findings showed that successful pharmacists invest in computerized inventory software to minimize POMs stockouts, over-stocking, and secure savings for future POMs purchases. In conformity with with the findings of Jobira et al. (2021), pharmacists must strike a balance between stockouts and overstock, which cause financial loss, and a decrease in the quality of patient care.

RP-7 Pm7 asserted:

We invested in inventory, and cash sales software, which generates detailed monthly reports showing stock sold, stock at hand, and drug expiry date. The software indicates overstocked products, so we do not hold our capital. The

software assists us in knowing how many POMs we have and what level we can buy to restock and what we should not restock.

Computerized inventory systems can assist pharmacists in POMs' stock monitoring, tracking, and forecasting. RP-4 Pm4 observed, "Through our computer system (which shows worst and best sellers), we know that non-communicable diseases like diabetes and hypertension increase, lead to high demand for drugs, while in the cold season, drugs demand drops." RP-4 Pm4 further stated, "So we use our computer system to forecast stocks and experience to ensure that POMs are available for our customers. RP-8 Pm8 elucidated, "[We] need sound systems in place, whether using computer software to detect what stocks are needed automatically, what expires or in access, POMS understock or overstock."

None of the participants mentioned applying visual or periodic inventory methods for POMs stock control. Consistent with the findings of Karamshetty et al. (2021), inventory management was inferior when staff only used their experience. The findings showed that the participants applied the automated (or perpetual) inventory method, which allowed the monitoring, generating of stock reports, and re-restock alerts. According to Oladele et al. (2021) research findings, inventory managers use computerized inventory applications to update stocks and generate reports for decision-making. Similarly, Shukar et al. (2021) revealed that effective reporting and tracking systems permit generation of reports on drug shortages.

Table 2 summarizes themes desirable for an efficacious automated inventory system. Additionally, the table shows the analysis of terms participants used for the automated inventory system.

Table 2

Automated Inventory System Strategies

Sub-Theme	Participants Used Terms	Analysis
Computerized inventory system	<ul style="list-style-type: none"> • Check on available balance/Alerts 	Before POMs stockouts, the system flags and alerts the pharmacist to restock.
	<ul style="list-style-type: none"> • Showing worst and bestsellers 	Using the automated inventory system, a pharmacist can identify the POMs' worst and best sellers and plan for restocking.
	<ul style="list-style-type: none"> • Forecasting 	An important aspect for avoiding stockouts and ensure POMs availability.
	<ul style="list-style-type: none"> • Tracking/Flags 	Tracking stock movements assists in knowing stock depletion rates.
	<ul style="list-style-type: none"> • Stock analysis/reviewing stocks 	Stock analysis assists in identification of stockout challenges.

Note. Table 2 was designed based on discussions with participants to reveal automated inventory system strategies.

POMs Storage

The analysis and findings indicated that successful pharmacists store POMs at appropriate temperatures to avoid potency reduction. The WHO (2011) report on

guidelines on good pharmacy practice (GPP) stipulated that a pharmacist should safeguard drugs by using suitable storage facilities. Pharmacists maintain drug efficacy using refrigerators with power backup (Shah et al., 2016).

Participant RP-6 Pm6 declared, “For potency reduction, following standard operating procedures is important, especially store management.” RP-1 Pm1 proclaimed, “Tablets or medicines are kept under room temperature to maintain potency.” RP-2 Pm2 enunciated, “There are various things to do to prevent a medicine from deteriorating. The medicine should be under a specific temperature and not direct light. The room temperature should be between 18°C and 24°C. RP-3 Pm3 stated, “We follow the storage guidelines to maintain the potency of the medicines.”

Successful pharmacists use air conditioners, thermometers, and refrigerators for POMs stocking and avoid potency reduction. RP-1 Pm1 stated: “We have a thermometer that measures the room temperature of the pharmacy to keep the drugs under a controlled temperature.” RP-4 Pm4 highlighted that “First and foremost, we ensure that our air conditioning system is working; that is very important to prevent potency reduction.” RP-3 Pm3 emphasized, “We have air conditions and room thermometers to make sure the temperatures are to the standards.” RP-6 Pm6 explicated: “We use the thermometer to measure the air conditioner’s temperature and compare it to the thermometer reading.” RP-7 Pm7 posited: “We have an air conditioner in the pharmacy to keep the temperature within required conditions for drugs to remain potent.

Some participants disclosed the procedures used to maintain pharmacy room temperature. For example, RP-5 Pm5 exposed, “We use charts to keep track of

temperatures so that you are still within the room temperatures recommended in case of a power outage.” RP-4 Pm4 clearly stated, “We check our temperature three times a day and record. If we notice that the temperatures are too high, especially in summer, we control that.” RP-6 Pm6 announced that “We keep the temperature record on the chart to know whether the air conditioner works properly, which helps maintain particular drugs’ potency.” RP-8 Pm8 unveiled that “We have thermometers, and we record temperatures twice, morning and afternoon, to see any variations. RP-8 Pm8 elucidated, “There are standards for storage to operate a pharmacy for maintaining drug potency. The temperature should be well-monitored and drugs kept under room or refrigerator temperature.”

Air conditioners and refrigerators should work on a backup system in case of a power outage. RP-8 Pm8 perceived that:

For maintaining temperatures, we have a backup power system for our outlets. All our outlets have solar systems with a complete package of batteries and invertors. We are safe to get out of the national grid of electricity and run power safely because we know what power cuts can do to air conditioners and fridges.

POMs require storage under specific temperatures. The medicines refrigerator is suitable for storing specific prescription drugs between 2°C and 8°C temperatures (Hatchett, 2017). RP-1 Pm1, RP-3 Pm3, and RP-5 Pm5 appeared to confirm Hatchett’s (2017) findings that storage temperatures for POMs range between +2°C and +8°C temperatures. RP-1 Pm1 stated that “If refrigeration of drugs is needed, we refrigerate 2°C to 8°C.” While RP-3 Pm3 echoed that “We store the drugs in the refrigerator

between 2°C to 8°C for medicines requiring temperatures 25°C.” RP-5 Pm5 illuminated, “Each drug has storage conditions. We store vaccines in a refrigerator at temperatures of 0°C or below, others at 8°C and 15°C; all these need specific refrigerators.”

Managing POMs’ date expiry is essential to avoid POMs stockouts. RP-2 Pm2 explained that: “Based on sales, we know which drugs expire early; if we see a drug expires after a month, we sell the drugs to avoid selling expired drugs: We do not experiment on our customers; We wholly throw out experiments.” Pm2 exposed that “If the drug should be getting to expire, either give it to the hospital before it expires.”

RP-2 Pm2 revealed:

If the drug is going to get expired and suppose there has been a regular customer for the past six months or one year, and we know very well the drug is expiring in the next month or two months, we will tell the customer to buy for one month, and we will give for free for the next month, instead of throwing in the dust bin, and it reduces the cost of disposing of the drugs because there is a cost for disposing of expired drugs.

RP-3 Pm3 delineated that:

When it comes to storage, we store POMs in alphabetical order, and there is a policy of First Expiry First Out (FEFO). We ensure that drugs expiring within three months are labeled and tracked depending on the expiry month to avoid drug expiries.

RP-4 Pm4 disclosed: “We use FEFO to dispense whatever is expiring earlier because it is a huge loss for drugs to expire. We do monthly restock of what is expiring.”

RP-5 Pm5 detailed:

In terms of the expiries, we store drugs according to the expiry dates. We stock products with longer expiry dates behind, and those with shorter expiry stocked in front so that every time a product with a shorter expiry date is picked first instead of the one with a more extended expiry date, we follow the FEFO.

RP-6 Pm6 explained that:

In terms of expiries, we have two ways we do it, we use First Expiry First Out (FEFO), and the system we use follows that. If we want to know how many products are about to expire in the next 3 months, by going into our inventory system and running a report, we can forecast how many products will expire and then decide how to use them.

RP-7 Pm7 confided:

On the expiry of drugs, we use the First Expiry First Out (FEFO) policy. Apart from that, we do monthly physical counts during which we can discover drugs that are expiring within a few months and ensure that we dispense first to reduce the drugs expiring on the shelves.

RP-4 Pm4 emphasized, “Sometimes if the quantities are too much, we apply to clinics within the community to donate to them, as they can to move larger volumes.”

Pharmacists can use various mitigating strategies to maintain POMs potency and prevent date expiry as shown in Table 3.

Table 3 summarizes the essential perceptions generated from the respondents' interviews for storage of POMs and stockout reduction. Table 3 shows penitent strategies that pharmacists should undertake to mitigate potency reduction and date expiry risks.

Table 3

POMs Potency Reduction and Date Expiry Strategies

	Strategy
POMs potency reduction	Control room temperature by: <ul style="list-style-type: none"> • Air conditioners (backed with power packs) • Thermometers • Refrigerators (backed with power packs) • Temperature monitoring charts • POMs' standards storage guides
Date expiry	Avoid POMs date expiry by: <ul style="list-style-type: none"> • Monitoring date expiry for each product • First Expiry First Out (FEFO) - Store POMs in alphabetical order • Store POMs according to date expiry • Physical counts and verification • Donations to hospitals/clinics

Theme 2: Pharmacists' POMs Sourcing Strategies

Theme 2 - The pharmacists' POMs sourcing strategy with sub-themes (a) POMs supply chains and (b) POMs supplier selection arose from data analysis. Pharmacists must manage POMs suppliers and supply chains efficiently to mitigate POMs shortages

opined that “We need to know the approximate lead time and date frame from the supplier or manufacturer when the medicine will arrive.”

Pharmacists should share correct stock data with supply chain members for steady POMS supply and patient care. Sharing flawed stock data with supply chain members can diminish the bullwhip effect. The bullwhip effect escalates demand discrepancy in ordering quantities in supply chains (Dolgui et al., 2020). The findings showed that capable pharmacists share accurate patient POMs demand patterns with suppliers and avoid the bullwhip effect. RP-2 Pm2 opined, “We share data on drug consumption and disease burden with suppliers to understand our stocking needs! We provide forecast stock data on the requirements so the suppliers can plan for our purchases.”

RP-4 Pm4 mentioned that “The supply chain information we need from suppliers to help us proactively prevent POMs stockouts includes: Updated monthly stock levels, a monthly newsletter of products, product prices, and new products.” RP-5 Pm5 observed, “We need lead-time supply chain information: How long it will take the supplier to supply the medicine ordered.” RP-6 Pm6 exclaimed, “We share data on drug consumption and disease burden with suppliers to understand our stocking needs! We provide forecast stock data on the requirements so that the suppliers can plan for our purchases.” Table 4 shows essential supply chain data for exchange among pharmacists and suppliers.

Table 4 indicates the information pharmacists and supply chain members exchange. Table 4 illustrates generic data required by supply chain members—furthermore, analysis and findings on supply chain data exchange.

Table 4*Supply Chain Data Exchange*

Participants preferred supply chain information	Supply chain information (Ojha et al., 2019)	Analysis and Findings
Lead time	Lead time	From the participants' discussions, lead time seems essential information pharmacists share with supply chain members. The participants' ideas on lead time confirm Ojha et al.'s (2019) findings that lead time information was important when focusing primarily on improved customer service.
Updated monthly stocks/ Consumption	Inventory status,	
Forecast data	Stock delay challenges	
Monthly newsletter of products	Demand patterns	
Product prices	Market patterns	
New products		
Product availability		

Pharmacists' POMs Suppliers Selection Strategy

The selection of suppliers plays a significant role in the POMs supply chain. Proper supplier selection allows a firm to make savings and involves a plethora of criteria, not just scanning and comparing price lists (Badi & Pamucar, 2020). The findings were that POMs quality, price, and delivery consistency were important POMs supplier choice criteria. Product quality, price, and delivery remained essential supplier selection criteria (Jain & Singh, 2020).

RP-4 Pm4 revealed:

Because we are in business and want to profit, we look at the price, how much they are selling their product, and the suppliers' terms. We go with the ones that give the best term of conditions; Some give 30- or 60-days credit. We also look at

the product's expiry date: Can you sell it within its shelf life? You do not want to buy a product expiring in 6 months unless the demand is high and you can move it fast.

RP-1 Pm1 highlighted, "We select our POMs wholesalers or suppliers who stock more POMs on our stock list. We also select wholesalers or suppliers with the ability to meet our POMs' stock requirements. We also look at the effectiveness of the supplier." RP-2 Pm2 voiced that "The medicine quality is number one. We also get medicines from suppliers who consistently supply a particular product." RP-3 Pm3 explicated, "The first factor we consider is the safety profile of a company where we are sourcing the medicines. We ensure that we are getting from a reputable company following all the guidelines to avoid substandard drugs."

RP-3 Pm3, RP-4 Pm4, and RP-6 Pm6 agreed that registration with relevant health care authorities was a requisite for POMs supplier selection. RP3 Pm3 comprehended that "We get medicines from a company that follows Good Manufacturing Practice (GMP) and is registered to supply medicines in Zambia." RP-4 Pm4 expressed that "Pharmacists are governed by the Medicines Allied and Substances Act. Every supplier we deal with must be registered and licensed as a distributor by Zambia Medicines Regulatory Authority (ZAMRA), and their products have batch and registration numbers unique to Zambia." RP-6 Pm6 explained, "We also look at the past business transactions with them. Are they registered with Zambia Medicines Regulatory Authority? Do they have import or manufacturing licenses?"

Selected POMs suppliers must exhibit reliability, which is service quality. RP-5 Pm5 explicated that “One attribute we look at when selecting a POMs supplier is reliability. Apart from reliability, we look at consistency.” RP-6 Pm6 exclaimed, “We review their performance and ask them to apply before putting them on our register. We have created relationships with credible pharmaceutical wholesalers and drug distributors with registered products on the market to avoid counterfeit and unkept well drugs.” RP-8 Pm8 expressed, “We look at the following when selecting suppliers (a) reputable manufacturers, (b) cost-effective, and (c) good reputation with their customers.” Table 5 highlights the criteria pharmacists use to select POMs suppliers.

Table 5
Pharmacists’ POMs Supplier Selection Criteria

Pharmacist POMs Supplier Selection Criteria	Generic Supplier Selection Criteria (Taherdoost & Brard, 2019)	Analysis and Findings
Supplier’s capability	Capability	The analysis and findings indicated that participants' preference criteria for selecting pharmacy suppliers essentially confirm Taherdoost and Brard's (2019) supplier selection criteria. Criteria drug expiry date, GMP, and registration with health care authorities seem unique to the health care sector.
Price	Price	
Quality	Quality	
Ability (capability)	Capability	
Problem-solving	Professionalism	
Past Performance	Performance history	
Safety record	Supplier’s profile	
Business perspective	Commercial	
Reliability	Reliability	
Reputable	Reputable	
Cost	Cost	
Drug expiry dating	Repair service	
GMP	Service	
Registered (with Health care authorities)	Social Responsibility	
Performance	Communication Social responsibility Delivery	

Theme 3: Increasing Economic Benefits for Patient Loyalty

Theme 3 emerged from data analysis. The economic benefits/incentives provisions pharmacists offer POMs patients were interpreted by the participants differently. Participants RP-1 Pm1, RP-3 Pm3, and RP-4 Pm4 explained that economic benefits/incentives to POMs patients include patient briefings and counseling. The main objective of increasing economic benefits to patients is to create customers loyal to the pharmacist even in POMs stockout situations. RP-1 Pm1 indicated that offering explanations to patients was a customer service benefit by stating:

Giving good suggestions, advice, and brief explanations are extra benefits to customers. When customers come, we briefly explain what medicines they are taking. We do not just give them a product, but we explain some excellent information about health care: This will make the customer come back.

Successful pharmacists create loyal POMs patients by explaining and counseling.

RP-4 Pm4 stated that:

You have to tell them [patients] about the medicine they are taking, the possible side effects, and how long it will take to start working. They [patients] will verbalize, saying, “You know why I come back here because you do ABCD, you tell us ABCD.” If they were to spend somewhere else, they always want to spend at the pharmacy because of that added service such as counseling and any required assistance.

Counseling brings satisfaction to POMs patients. RP-4 Pm4 reiterated:

Unfortunately, you do not get the value right there, but one thing I have noticed through my years of experience is that these clients always come back. One benefit we usually give our clients is to take the time to counsel them. So, I counsel my patients on their lifestyle and how the drug will work; I noticed that it has always brought back the clients.

Economic pricing plays a role in POMs patients' service quality. Participants RP-2 Pm2, RP-5 Pm5, RP-6 Pm6, and RP-8 Pm8 identified price as an economic benefit to POMs patients. RP-2 Pm2 voiced, "Keeping POMs prices low is one of the economic benefits provided to our patients. To avoid losing regular customers, we maintain low POMs prices."

RP-5 Pm5 discussed:

If we sell products at a high price, the association can be one-off. When the prices are low, we will have a lifetime customer getting the product, and these customers can give a good credit and account about the pharmacy.

RP-5 Pm5 opined, "When the prices are low, we will have a lifetime customer getting the product, and these customers can give a good credit and account about the pharmacy."

RP-6 Pm6 explicated, "We give our patients quality products at affordable prices as an economic benefit. We can afford to provide clients with quality products at affordable prices by cutting go-betweens."

POMs quality is part of the economic benefits for patients. RP-3 Pm3 stated that "We ensure that the medicines stocked are of a high standard for patients" maximum benefit despite sometimes being on the higher side." RP-8 Pm8 exclaimed, "As opposed

to only making a profit, our business model is to offer quality service and constantly attract clients, this attracts customers to the pharmacy by default.” RP-8 Pm8 discussed, “We offer quality service with improved outcomes to clients because they are our first service priority and focus.”

Other economic benefits include extra pharmacists’ services at no cost and extended pharmacy operating hours. RP-7 Pm7 noted, “We provide pharmacists’ services at no cost, while patients only pay for the prescribed drug.” Pharmacy operating hours form part of economic benefits. RP-8 Pm8 echoed, “We have an extended hour operating system from 0700 to 2200 hours. The extended hours of operation allow our clients or patients to access our services when other pharmacies are closed.”

Good *word-of-mouth* can grow a pharmacy business. Satisfied and dissatisfied consumers spread positive or negative comments about purchased products using word-of-mouth (Li et al., 2018). Good service is an economic benefit that patients appreciate. A participant discussed how quality service could help the pharmacy business expand and create customer loyalty. RP-5 Pm5 opined, “When the prices are low, we will have a lifetime customer getting the product, and these customers can give a good credit and account about the pharmacy.” RP-3 Pm3 emphasized the importance of service quality and revealed that:

We provide service quality to our customers for them to return. By service quality, we ensure that when clients come, we assess them and develop the proper need for the drugs; this adds to patients’ economic benefits.

Theme 4: Improving Supplier Relationships for Stockout Mitigation

Theme 4 emerged from data analysis. Drug stockouts present challenges to health care practitioners (Bam et al., 2017). Pharmacists should have appropriate supplier relationships to mitigate POMs stockouts.

Stockouts cause patients to react as follows:

1. Purchase the out-of-stock product from a different store.
2. Delay purchase.
3. Substitute the product.
4. Leave the store without purchasing the item (Ovezmyradov & Kurata, 2019).

The findings showed that pharmacists could mitigate POMs stockouts through improved supplier relations. RP-1 Pm1 revealed pharmacists could mitigate POMs stockouts by directly contacting POMs wholesalers and suppliers. Established pharmacist-supplier relationships could allow pharmacists to make prompt requests for POMs restocking. The findings of this study were that pharmacists with established supplier connections raise their pharmacy's priority for medicine delivery. This is consistent with the findings of Panic et al. (2020). RP-1 Pm1 stated, "When customers come, and the stock is unavailable, we contact the wholesalers or suppliers. We get the customers' phone numbers to contact them when the stock is available."

Pharmacists should have good relationships with other pharmacists to borrow POMs when stockouts occur. RP-2 Pm2, RP-3 Pm3, and RP-5 Pm5 discussions indicated that pharmacists could informally borrow POMs from other pharmacists to mitigate stockouts. A pharmacist could contact other pharmacies to restock out-of-stock

medication (Panic et al., 2020). RP-2 Pm2 exposed, “If we do not have medicine available, we send the customer where it is available: We can communicate with other pharmacies in Lusaka or the pharmacists’ groups if they have the stock available.”

RP-3 Pm3 stated, “When a client visits the pharmacy with a prescription out of stock, we contact other outlets. We can advise the customer to buy and collect the drug from the outlet or obtain the medicine on their behalf.” RP-5 Pm5 elucidated, “We request our drug suppliers and ensure that the medicine supply is within the shortest possible time. Once the medicine arrives, we communicate to our patients using their contacts to collect the medicine.”

Pharmacists should build good working relationships with POMs patients and communicate effectively in POMs stockout situations. Researchers have shown that good communications allow leaders to take proactive actions and manage situations (Shukar et al., 2021). Improved communication is necessary to alleviate drug stockouts in health care (Kuwawenaruwa et al., 2020). The findings show that pharmacists could successfully contact patients for POMs refills using contact details from prescription registers and sending reminders to replenish.

RP-4 Pm4 said, “I used to note clients' prescriptions in a book to manage stockouts when I previously owned a pharmacy. Before the patient runs out of drugs, I would alert the patient to refill. RP-6 Pm6 deliberated, “When stockouts or shortages occur, we communicate to the patient that the drug is out of stock. RP-7 Pm7 advised, “If we do not have a prescribed drug, we work within a class of drugs available to replace it.

The law mandates a pharmacist to exchange prescriptions when unavailable with equivalents.”

I used field journal notes to validate study findings on how pharmacists communicate with POMs patients. I observed and noted in the field journal that the participants communicated with politeness and respect—the participants’ behavior might reflect and decipher how pharmacists communicate with POMs patients for service quality. In line with Ilardo and Speciale (2020) research findings, pharmacists improve service quality and patient care through politeness.

RP-1 Pm1 and RP-2 Pm2 sentiments showed that respect, care, and politeness were bulwarks of pharmacists’ good service. RP-1 Pm1 discussed, “How you attend to a customer also matters to make customers come back. Respect and how you treat customers is the motto that will make customers come.” While RP-2 Pm2 said, “We do not experiment on our customers; We wholly throw out experiments.”

Kim et al.'s (2020) study findings showed that pharmacists apply appropriate communication skills to improve patient care. Kim et al. revealed that pharmacists create rapport with patients through explaining, and making suggestions. Consistent with the findings of (Ilardo & Speciale, 2020), effective communication involves explaining, rapport, and offering patient advice. RP-1 Pm1 mentioned, “Giving good suggestions, advice, and brief explanations are extra benefits to customers.”

Theme 5: Regular Self-Assessments for POMs Shortages Mitigation

Pharmacists require regular assessment of strategies to mitigate POMs shortages. *Self-assessment* refers to reviewing one’s processes to make modifications that deepen

The findings were that successful pharmacists regularly conduct self-assessments to question strategies' effectiveness, increase attentiveness, expose fundamental stockout risks, and ensure POMs availability. Participants RP-1 Pm1, RP-3 Pm3, and RP-8 Pm8 revealed that regular self-assessments increase attentiveness, expose fundamental stockout roots, question strategies' effectiveness, and allow pharmacists to revise stockout strategies.

RP-1 Pm1 stated, “By knowing what people are asking for and meeting their needs, we know that our strategies of POMs stocking are effective.” RP-3 Pm3 elaborated that:

By questioning the strategies, you can know the root cause of stock imbalances, which can help you develop strategies that will give you optimal stocks. In instances where stocks are low or high, you have to question your strategies, indicating that your strategies are not achieving the expected outcomes. By questioning the stocking strategies, you go into details to assess where the problem or stocking challenges originate? Why do we have too many or few stocks?

RP-8 Pm8 emphasized, “To help us assess the effectiveness of strategies for fulfilling POMs, we have allowed our clients to call us using the contacts on our pharmacy doors and signages if they have any challenges or complaints.”

Stock status can assist a pharmacist in assessing the effectiveness of POMs strategies. RP-3 Pm3 discoursed, “Ok, so this is assessed according to the stock status of the product. To ensure that the POMs systems or strategies are effective: You must

ensure that the POM stock is always available.” RP-5 Pm5, RP-6 Pm6, and RP-7 Pm6 seemed to agree that stockouts indicated ineffectiveness of strategies. P-5 Pm5 claimed, “We utilize the stockout list to assess the effectiveness of the strategies for stocking POMs. While RP-6 Pm6 exclaimed, “The stockouts will indicate to us how effective the strategies for fulfilling POMs are.” Further RP-6 Pm6 voiced, “If we have stockouts, something is lacking, or there is a gap within the system. For example, a system gap could be sending a reorder level report to a supplier late.”

Participant RP-7 Pm7 talked about a stockout register. RP-7 Pm7 elaborated that:

We keep a register at the pharmacy for recording and noting POMs stockouts as an assessment tool for measuring the effectiveness of strategies for fulfilling POMs shortages. Every month, we review the POMs’ stockouts status and interrogate why some POMs were out of stock.

RP-3 Pm3 discussed that stock status indicated the effectiveness of strategies. RP-3 Pm3 discoursed that “Ok, so this is assessed according to the stock status of the product. To ensure that the POMs systems or strategies are effective: You must ensure that the POM stock is always available.” The study research findings for strategies for regular self-assessments for POMs shortages mitigation are (a) checking on stock status, (b) stock availability, (c) questioning the stock strategies, (d) analyzing stockouts, and (e) use of stockout registers.

Theme 6: Pharmacy Environment

Theme 6 emerged from data analysis and findings. Participants revealed items required for an improved pharmacy environment. The results were that reading materials,

chairs, stools, drinks, free weight checks, diabetes tests, brochures, flyers, magazines, and waiting rooms enhance the pharmacy environment. Similarly, Sepp et al. (2021) study findings in Estonia showed that consultation rooms, seating areas, and drinking water for administering medicine were necessary to enhance the pharmacy environment and patient care.

RP-1 Pm1 stated, “We provide something people can read while they wait for dispensing POMs.” RP-3 Pm3 explained, “The services we offer include ... brochures to read, and some clinical services because we run a clinic at the pharmacy.” While RP-7 Pm7 retaliated, “We offer education flyers and magazines, which are displayed at the pharmacy for different conditions for patients while waiting for dispensing.”

RP-2 Pm2 articulated that:

Previously, we had a chair for patients inside, but we removed it because we do not have many customers at a particular time. If there many customers, we have a stool or a chair which we put outside as they wait, and if the medicine is not yet available, we can even offer a customer a drink as they wait for the medicine.

While RP-4 Pm4 emphasized, “We have chairs where our clients sit as they wait for their medicine. RP-6 Pm6 cited, “We have a bench where patients can sit as they wait for their drugs. RP-7 Pm7 elaborated, “We have a TV set and a bench where patients sit, awaiting the pharmacist’s attendance.” RP-8 Pm8 mentioned, “Depending on the patient’s status, we have a waiting space not too ample, but we provide at least two seats for our clients as they wait if it requires them to sit as they wait for their medicine.” The tabulated Table 6 indicates requirements for an excellent pharmacy environment.

Table 6 shows a summary of the conducive pharmacy environment for patients. Some of the requirements for a conducive pharmacy environment can be generalized to other settings, while others are specific to health care settings. Table 6 shows a pharmacy environment suitable for patient satisfaction.

Table 6

Pharmacy Environment

	Items
Pharmacy Environment	<ul style="list-style-type: none"> • Chairs • Stools • Soft drinks • Free weight checks • Brochures • Flyers • Magazines • Waiting for space • Sugar testing equipment

SERVQUAL Conceptual Framework

Apart from identifying themes, further analysis and findings indicated the SERVQUAL theory conceptual framework's usefulness in developing strategies for mitigating POMs shortages for patients' service quality. The interviews, analysis, and findings revalidated the Parasuraman et al.s' (1985) servqual theory applicability in pharmacy settings. Mostly, all participants discussed servquals' theory dimensions, signifying that pharmacist could use the theory in pharmacy settings to mitigate POMs

shortages for patient care. Researchers use servqual to discover essential service quality dimensions in different settings (Kodom et al., 2019). Explorers studying service quality challenges could apply the servqual as the conceptual framework to gain insight into a phenomenon. The study findings indicated that servqual tenants linked with participants' responses on strategies to mitigate POMs shortages for patient care (see Table 7).

Table 7 demonstrates participants responses aligned with servquals' service dimensions. Table 7 indicates participants selected phrases that matched servquals' 10 service quality dimensions.

Table 7

Servqual Quality Dimensions and Participants' Responses

Servqual Quality Dimensions (Parasuraman et al., 1985)	Participants' Responses
Accessibility	RP-8 Pm8 - We have an extended hour operating system. We are not yet on 24 hours service which we desire, but we operate from 0700 hours to 2200 hours that's the maximum spectrum.
Courtesy	RP-1 Pm1 - Respect and how you treat customers is the motto that will make customers come. RP-2 Pm2 - If there are many customers, what we do is we say to them, please just wait a bit, I will attend to you in few minutes, say 2 minutes. RP-4 Pm4 - Your prescription will be ready on such a date; please refill.
Competence	RP-7 Pm7 - We pride ourselves on having a full-time pharmacist during the pharmacy operating hours. RP-8 Pm8 - To run a pharmacy you require pharmacists, pharmacy technologists, and other qualified staff in other areas, including animal health, which attracts a heavy wage bill.

Servqual Quality Dimensions (Parasuraman et al., 1985)	Participants' Responses
Communication	<p>RP-8 Pm8 - The aims of business determine why we have shortages and competency or incompetent staff level to do consumption calculations also affect whether we shall have a continuous supply of products on the market.</p> <p>RP-8 Pm8 - Competent staff should know what particular warehouse stock level should warrant subsequent order placement, considering that the products may have an extended lead time.</p>
Credibility	<p>RP-1 Pm1 - Based on what people ask or do not ask, we plan for POMs stocks.</p> <p>RP2- Pm2 - The customers should not just stand; at least we have to tell them something.</p> <p>RP-3 Pm3 - Additionally, prompt or timely sending of the information to the source of the product or suppliers ensures POMs' availability for patients.</p> <p>RP-2 Pm2 - if we do not have medicine available, we send the customer where it is available: We can communicate with other pharmacies in Lusaka or the pharmacists.</p>
Reliability	<p>RP-4 Pm4 - In short, we have a loyal customer: If they were to spend somewhere else, they always want to spend at the pharmacy because of that added service.</p> <p>RP-1 Pm1 - We know what the customers want and are familiar with the people of this area, so based on the experience of what customers want and the daily movements of POMs, we stock POMs.</p>
Responsiveness	<p>RP-2 Pm2 - Generally, our POMs prices are low compared to other pharmacists to allow more customers to buy from us.</p> <p>RP-5 Pm5 - So every time the client would come into the store to get the medicine, they would be readily available because of the network system we have in place.</p> <p>RP-5 Pm5 - For patients who use regular medicines like diabetes and hypertension, we stock such products with low price markups.</p>

Servqual Quality Dimensions (Parasuraman et al., 1985)	Participants' Responses
Security	<p>RP-6 Pm6 - We can afford to provide clients quality products at affordable prices by cutting go-betweens involved in procuring specific generic or branded POMs by sourcing directly from primary wholesalers or distributors.</p> <p>RP-7 Pm7 - On top of using the software, we do physical stock control counts to see the physical stock remaining not just depending on software numbers because pilferage that happened not recorded in the software and remember the software picks the quantities through the bar codes so you can miss picking up bar code and not record.</p>
Tangibles	<p>RP-2 Pm2 - If there are many customers, we have a stool or a chair which we put outside as they wait, and if the medicine is not yet available, we can even offer a customer a drink as they wait for the medicine.</p> <p>RP-6 Pm6 - We have a bench where patients can sit as they wait for their drugs.</p> <p>RP-7 Pm7 - We offer education flyers and magazines, which are displayed at the pharmacy for different conditions for patients while waiting for dispensing.</p>
Understanding/Knowing Customer	<p>RP-1 Pm1 - I have been in the market for POMs for many years, and from experience, POMs stocking depends on what customers need.</p> <p>RP-2 Pm2 - We stock our medicines according to what customers want and regular usage of that medicine.</p> <p>RP-6 Pm6 - We have a bench where patients can sit as they wait for their drugs.</p>

Applications to Professional Practice

The purpose of this qualitative multiple case study was to explore the service quality strategies some pharmacists use to mitigate POMs shortages for patient care. Six

themes emerged from data analysis: (a) Pharmacists' responsiveness to customers and inventory control. (b) pharmacists' POMs sourcing strategies, (c) increasing economic benefits for POMs patient loyalty, (d) improving supplier relationships for stockout mitigation, (e) regular self-assessments for POMs shortages mitigation, and (f) pharmacy environment.

Table 8 presents the Atlas.ti 9 code document showing the frequency of participants' quotations for each identified theme and ranking. In the Table, the pharmacist's responsiveness is ranked first.

Table 8

Atlas.ti 9 Generated Code-Document Showing Participants' Quotations Frequencies

Themes	Participants								Totals
	RP-1 Pm1	RP-2 Pm2	RP-3 Pm3	RP-4 Pm4	RP-5 Pm5	RP-6 Pm6	RP-7 Pm7	RP-8 Pm8	
Pharmacists' Responsiveness to Customers and Inventory Control	5	10	9	15	12	9	8	17	85
Pharmacists' POMs Sourcing Strategy	4	4	4	5	5	5	1	7	35
Increasing Economic Benefits for POMs Patients Loyalty	5	3	1	2	2	1	3	11	28
Improving Supplier Relationships for Stockout Mitigation	1	6	2	4	3	3	3	2	24
Regular Self-Assessments for POMs Shortages Mitigation	1	-	7	4	3	3	2	2	22
Pharmacy Environment	1	1	1	1	1	1	1	1	8
Totals	17	24	24	31	26	22	18	40	202

Among the themes, pharmacists' responsiveness to customers and inventory control ranked first, pharmacists' POMs sourcing strategy second, while pharmacy environment ranked the least. Akdere et al. (2020) studied patients' perceptions of service quality in Turkish hospitals. The findings showed that patients found responsiveness to be the most essential service quality dimension, while the least was tangibles. However, service quality dimensions vary according to customers' perceived quality (Liu et al., 2017), so pharmacists should work within the identified service quality framework. Pharmacists should be ready and willing to perform according to patient demands and ensure medicine stock availability for service quality (Hedvall & Paltschik, 1991).

The applications for professional practice would be first for the pharmacist to use the pharmacists' responsiveness to customers and inventory control strategy to mitigate POMs shortages. Specifically, pharmacists should computerize POMs inventory to mitigate stockouts. Computerized inventory systems can reduce stockouts for firms between 40% to 60% (Avlijas et al., 2021). Benefits of a computerized inventory system include stock checks and tracking, stockout alerts, sales trends (worst and bestsellers), POMs forecasting, and stock analysis/reviewing.

Ineffective stock management can cause drug stockouts, potency reduction, and increased mortality rates (Hagen et al., 2020). POM's potency reduction requires a temperature-controlled environment. Pharmacists maintain temperatures within tolerable levels through routine checks using thermometers and charts to preserve POMs. Successful pharmacists use air conditioners and refrigerators with power backups to

preserve POMs. Adverse storage conditions reduce POMs potency and increase stockout risks, which affect patient health care.

Capable pharmacists manage POMs stocks by reducing costs associated with date expiry. Pharmacists should check the date expiry of drugs for the safety of patients and avoid the expiry of medicine on the shelf (Keuler et al., 2021). These study findings indicated that participants favored the First Expiry First Out (FEFO) technique to manage POMs' expiry date. Successful pharmacists monitor drug expires monthly.

The applications for professional practice would be secondly for the pharmacist to have a POMs sourcing strategy. Findings showed that pharmacists share lead time information with supply chain associates. Researchers have indicated that lead time information was essential when focusing primarily on customer service (Ojha et al., 2019). Monthly stocks updates, consumption forecast data, product prices, and new product sharing among supply chain members can ensure patient stock access. In selecting POMs suppliers, pharmacists should consider the criteria stated in Table 4. The unique POMs supplier selection criteria in health care include choosing suppliers offering long drug expiry, good manufacturing practice (GMP), supplier registration with health care authorities.

Increasing economic benefits for POMs patient loyalty can enhance patients' service quality. The findings showed that counseling enhances service quality. Another economic benefit that satisfies patients is low-priced POMs. The study findings showed that improving supplier relationships assist pharmacists' prompt response to stockout challenges. Pharmacists can proficiently mitigate POMs' stockout risks by establishing

exceptional patient and supplier relationships. Research findings showed that developing and maintaining clear communication channels can create better information flow, potentially managing the medicine stockouts (Ndzamela & Burton, 2020). When stockouts occur, pharmacists who have relationships with other pharmacists either purchase or borrow POMs. Participants RP-2 Pm2 and RP-3 Pm3 suggested informal borrowing from other pharmacists in stockout situations. Pharmacists use eccentric borrowing of drugs from other pharmacists to resolve stockouts (Panic et al., 2020). Ideally, this can happen with buttressed pharmacist and supplier relationships. A pharmacist could use specific regular self-assessments for POMs shortages mitigation. Health care leaders evaluate and implement strategies because of pharmaceutical supply chains risks (Wang & Jie, 2020). The study research findings for strategies for regular self-assessments for POMs shortages mitigation are (a) checking on stock status, (b) stock availability, (c) questioning the stock strategies, (d) analyzing stockouts, and (e) use of stockout registers.

Regarding ranking the six identified themes, participants rated pharmacy environment the least. Study results in health care settings indicated that patients ranked tangibles lowest (Akdere et al., 2020). Research results in the transport sector showed that tangibles ranked the least among service quality dimensions' reliability, responsiveness, assurance, and empathy (Meidutė-Kavaliauskienė et al., 2020). Though listed last, one finding from this study indicated that pharmacy environment items chairs, stools, soft drinks, brochures, flyers, magazines, and waiting for space could improve POMs' patient care and service quality.

Business Contributions and Recommendations for Professional Practice

The Zambian public health care system is overwhelmed with POMs stockouts, which affect patient care and service quality. Kalungia and Kamanga (2016) discovered that when pharmacy services are satisfactory, patient care quality is substantially improved. POMs stockouts can affect pharmacists' service quality to POMs patients: In this study, I explored service quality strategies for mitigating POMs shortages that some pharmacists successfully use for patient care. From the study findings, the following recommendations could assist pharmacists in mitigating POMs' stockouts for patient care and service quality:

Recommendation 1

Pharmacists' responsiveness to customers and inventory control strategy coupled with inventory management, computerized inventory, and POM storage can assist in reducing POMs stockouts. Pharmacists' success in inventory management means understanding patient demands patterns, applying buffer/safety stocks, pricing, and monitoring POMs stock. Pharmacists' evolution from manual to automated inventory systems enhances POMs' stock management. Inventory software should include stock balance checks and alerts, display worst and bestsellers, forecasts, and stock analysis. Pharmacists should take care of POMs stocks not just for potency reduction and date expiry, leading to POMs stockouts, but patients' health care. Pharmacists must preserve POMs potency using air conditioners and refrigerators (backed with power packs), thermometers, control charts, and POMs' standards storage guides.

Recommendation 2

Pharmacists' POMs sourcing strategy plays a significant role in the supply of POMs. Pharmacists should have proper strategies for selecting POMs suppliers. Efficient supplier selection could promptly assist pharmacists in stocking quality POMs (Badi & Pamucar, 2020). Pharmacists should select POMs suppliers based on the following criteria: (a) suppliers' capability, (b) price, (c) quality, (d) past performance, (e) safety record, (f) business perspective, (g) reliability, (h) reputation, (i) good manufacturing practice (GMP), and (j) registered suppliers with health care regulation boards.

Pharmacists and supply chain members should share valuable information for POMs' stock availability. Pharmacists and suppliers should exchange POMs stock data and lead time to avoid stockouts. Product lead time data is necessary for quality customer service (Ojha et al., 2019). POMs supplier chain members should share essential data on updated monthly stocks/consumption and forecast, the monthly newsletter of products and prices, products availability, and new drugs on the market.

Recommendation 3

Pharmacists should increase economic benefits for POMs patient loyalty. Pharmacists' economic incentives include patient counseling and correct POMs pricing for patient satisfaction. Successful pharmacists offer quality products, extended working hours, and good service to POMs patients for loyalty.

Recommendation 4

Pharmacists and patients will benefit from strong supplier relationships. Establishing working relationships with suppliers could assist the pharmacist in resolving POMs' stockout challenges. Good working relationships with patients can assist pharmacists in explaining stockout situations, while improved suppliers' relationships can assist pharmacists in promptly restocking POMs. Research findings showed that developing and maintaining clear communication channels create better information flow, potentially managing drug stockouts (Ndzamela & Burton, 2020).

Recommendation 5

Regular self-assessments for POMs shortages mitigation strategies allow pharmacists to ensure that the strategy employed works as planned. By periodic self-assessments of POMs stocks challenges, pharmacists can identify gaps in supply chain and stockouts. Leaders in health care should evaluate and implement the strategies to manage the risks in the pharmaceutical supply chain (Wang & Jie, 2020). From the data analysis, regular self-assessments for POMs shortages mitigation strategies vary. Pharmacists should evaluate the efficiency of systems for mitigating POMs shortages by checking on POMs status and availability, questioning the stock strategies, analyzing stockouts, and implementing stockout registers.

Recommendation 6

An attractive pharmacy environment is essential for POMs patient care from the data analysis. Capable pharmacists offer appreciable pharmacy environments for augmented POMs patients' service quality. Successfully practitioners increase patients'

perception of service quality and raise patients' satisfaction by providing better-quality tangibles (Akinyinka et al., 2019; Tavakoli et al., 2019). Creating an appealing pharmacy environment includes providing chairs, soft drinks, free weight checks, brochures, flyers, magazines, waiting for space, and diabetes testing equipment to enhance patients' perception of service quality.

I will disseminate my findings through publications in ProQuest and possibly in other peer-reviewed journals. I intend to share the research's summary and findings by public speaking with pharmacists in their annual general conferences to comprehend successful service quality strategies for mitigating POMs shortages for patient care.

Implications for Social Change

The objective of this qualitative multiple case study was to explore pharmacists' service quality strategies in mitigating POMs shortages for patient care. Pharmacists in Lusaka, Zambia or globally may adopt and use the knowledge acquired to efficiently manage POMs so that stockouts are infrequent. Fewer POMs stockouts will facilitate positive social change because patients will be able to receive the medicines they need, *when* they need them, which could result in improved health and longevity.

Pharmaceutical medicine shortages can lead customers to seek alternative sources, potentially impacting the profitability of the pharmacy business. Ensuring the availability of POMs can expand the customer base and augment pharmacy profitability. Through increased revenue, pharmacy leaders can engage in social responsibility activities such as sponsoring community programs and providing more indigent care. Positive social changes from enhanced pharmacists' service quality strategies to mitigate POMs

stockouts include improved patient health care outcomes and the resultant enhanced economic productivity of the Lusaka community.

Recommendations for Future Study

I applied a multiple case qualitative study to identify strategies for mitigating POMs shortages. Eight participants were purposively identified and interviewed using semistructured questions. The first recommendation for future studies is to increase the participant sample size to gain broader insights into pharmacists' tactics for extenuating POMs stockouts. A larger number of participants may enable researchers to broaden the generalization findings to other pharmacists in Zambia and beyond. Future researchers who study POMs shortages could correlate interviews with observations to reveal supplementary insights on how to manage POMs stocks. In this study, the quantitative method was not applied. One future recommendation is for researchers to use a mixed-methods approach, which would include both qualitative and quantitative methods. By combining qualitative and quantitative methods, a study can be broadened (Apuke, 2017). Further research is needed to explore undetected causes of stockouts through the POMs supply chain affecting pharmacies.

Conclusion

This qualitative research provided evidence on service quality strategies that some pharmacists in Lusaka, Zambia, use to mitigate prescription-only medicines (POMs) shortages so they can deliver satisfactory patient care. There was a research gap regarding the existence of successful service quality strategies among pharmacists in Zambia, especially for patients with POMs shortages. However, the meaningful outcomes from

this study can help fulfill that literature research gap. To bolster the validity and reliability of this study, data were collected through semistructured interviews with eight successful pharmacist-participants, and for the purpose of data triangulation, I also garnered data from publicly available documents. Using thematic analysis, six themes were identified: pharmacists' responsiveness to customers and inventory control, pharmacists' POMs sourcing strategies, increasing economic benefits for POMs patient loyalty, improving supplier relationships for stockout mitigation, regular self-assessments for POMs shortages mitigation, and pharmacy environment. The six themes identified can be helpful to pharmacists for managing POM stockouts, which can improve patient care and service quality. Furthermore, the study findings showed that SERVQUAL's 10 service quality dimensions were applicable for defining strategies that pharmacists can use to reduce POMs shortages, and therefore improve customer service quality and patient health care outcomes.

References

- Abdalla, M. M., Oliveira, L. G. L., Azevedo, C. E. F., & Gonzalez, R. K. (2018). Quality in qualitative organizational research: Types of triangulation as a methodological alternative. *Administration: Teaching and Research*, 19(1), 66–98.
<https://doi.org/10.13058/raep.2018.v19n1.578>
- Acharya, K. P., Ghimire, T. R., & Subramanya, S. H. (2021). Access to and equitable distribution of COVID-19 vaccine in low-income countries. *npj Vaccines*, 6(1), 1–3. <https://doi.org/10.1038/s41541-021-00323-6>
- Adams, C. R., Barrio Minton, C. A., Hightower, J., & Blount, A. J. (2022). A systematic approach to multiple case study design in professional counseling and counselor education. *Journal of Counselor Preparation and Supervision*, 15(2), 1–16.
<https://research.library.kutztown.edu/jcps/vol15/iss2/24>
- Adeniran, A. O., & Tayo-Ladega, O. (2024). Critical analysis of phenomenological research design in a qualitative research method. *Management analytics and social insights*, 1(2), 186–196. <https://doi.org/10.22105/ad3338t15>
- Ahmad, M., & Wilkins, S. (2025). Purposive sampling in qualitative research: A framework for the entire journey. *Quality & Quantity*, 59(2), 1461–1479.
<https://doi.org/10.1007/s11135-024-02022-5>
- Ahmed, S., Al Asheq, A., Ahmed, E., Chowdhury, U. Y., Sufi, T., & Mostofa, M. G. (2023). The intricate relationships of consumers' loyalty and their perceptions of service quality, price and satisfaction in restaurant service. *The TQM Journal*, 35(2), 519–539. <https://doi.org/10.1108/TQM-06-2021-0158>

- Akdere, M., Top, M., & Tekingündüz, S. (2020). Examining patient perceptions of service quality in Turkish hospitals: The SERVPERF model. *Total Quality Management & Business Excellence*, 31(3–4), 342–352.
<https://doi.org/10.1080/14783363.2018.1427501>
- Akinyinka, M. R., Oluwole, E. O., & Odusanya, O. O. (2019). Community perception of quality of health care received and client satisfaction in Lagos, Nigeria. *Journal of Community Medicine and Primary Health Care*, 31(2), 47–65.
<https://doi.org/10.1101/541565>
- Alase, A. (2017). The interpretative phenomenological analysis (IPA): A guide to a good qualitative research approach. *International Journal of Education and Literacy Studies*, 5(2), 9–19. <http://dx.doi.org/10.7575/aiac.ijels.v.5n.2p.9>
- Alhmoud, E., Al Khiyami, D., Barazi, R., Saad, M., Al-Omari, A., Awaisu, A., El Enay, R., & Al Hail, M. (2022). Perspectives of clinical pharmacists on the provision of pharmaceutical care through telepharmacy services during COVID-19 pandemic in Qatar: A focus group. *PLoS One*, 17(10), 1–19.
<https://doi.org/10.1371/journal.pone.0275627>
- Almomani, H., AlAlawin, A., Al Meanazel, O., & Obaidat, M. (2025). Developing a systemic framework to reduce the bullwhip effect in the construction industry: Empirical insights and practical implications. *F1000Research*, 14, 1–28.
<https://doi.org/10.12688/f1000research.171946.1>
- Alzahrani, A. M., Rambo, R., Alotain, F., Naeem, A., Alzhrani, R. M., Albaradi, M. A., Althubiani, S., Sharaf, S. E., Alwadie, A. F., Alzahrani, M. S., AlSebahh, N. T.,

- Ainosah, R. H., & Alzahrani, Y. A. (2024). Determinants of patient satisfaction with discharge pharmacy services at a tertiary care center in Jeddah, KSA. *Integrated Pharmacy Research and Practice*, 155–164.
<https://doi.org/10.2147/IPRP.S477216>
- Anabila, P., Ameyibor, L. E. K., Allan, M. M., & Alomenu, C. (2022). Service quality and customer loyalty in Ghana's hotel industry: The mediation effects of satisfaction and delight. *Journal of Quality Assurance in Hospitality & Tourism*, 23(3), 748–770. <https://doi.org/10.1080/1528008X.2021.1913691>
- Andrade, H. L. (2019). A critical review of research on student self-assessment. *In Frontiers in Education*, 4(87), 1–13. <https://doi.org/10.3389/feduc.2019.00087>
- Apuke, O. D. (2017). Quantitative research methods: A synopsis approach. *Kuwait Chapter of Arabian Journal of Business and Management Review*, 33(5471), 1–8.
<https://doi.org/10.12816/0040336>
- Arabelen, G., & Kaya, H. T. (2021). Assessment of logistics service quality dimensions: A qualitative approach. *Journal of Shipping and Trade*, 6(1), 1–13.
<https://doi.org/10.1186/s41072-021-00095-1>
- Aronson, J. K., Heneghan, C., & Ferner, R. E. (2023). Drug shortages. Part 1. Definitions and harms. *British Journal of Clinical Pharmacology*, 89(10), 2950–2956.
<https://doi.org/10.1111/bcp.15842>
- Avlijas, G., Vukanovic Dumanovic, V., & Radunovic, M. (2021). Measuring the effects of automatic replenishment on product availability in retail stores. *Sustainability*, 13(3), 1–14. <https://doi.org/10.3390/su13031391>

- Bachoolall, R., & Suleman, F. (2025). Community pharmacists' perceptions and experiences of medicine shortages in disruptive situations: a qualitative study. *International Journal of Clinical Pharmacy*, 47(1), 210–217.
<https://doi.org/10.1007/s11096-024-01799-7>
- Bachri, N., Siregar, W. V., Bahri, S., & Febriansyah, S. (2022). Indonesian Islamic bank credibility and customer loyalty: does customer satisfaction really serve as a mediator variable?. *International Journal of Business and Society*, 23(3), 1692–1704. <https://doi.org/10.33736/ijbs.5196.2022>
- Badi, I., & Pamucar, D. (2020). Supplier selection for steelmaking company by using combined Grey-MARCOS methods. *Decision Making: Applications in Management and Engineering*, 3(2), 37–48.
<https://doi.org/10.31181/dmame2003037b>
- Baloch, G., & Gzara, F. (2020). Capacity and assortment planning under one-way supplier-driven substitution for pharmacy kiosks with low drug demand. *European Journal of Operational Research*, 282(1), 108–128.
<https://doi.org/10.1016/j.ejor.2019.09.007>
- Bam, L., McLaren, Z. M., Coetzee, E., & Von Leipzig, K. H. (2017). Reducing stock-outs of essential tuberculosis medicines: A system dynamics modelling approach to supply chain management. *Health Policy and Planning*, 32(8), 1127–1134.
<https://doi.org/10.1093/heapol/czx057>
- Bani Issa, A. A. M., Pergantis, E. N., Brehm, J. K., Groll, E. A., & Ziviani, D. (2022). Modeling of an ultra-low temperature refrigeration system for independent

vaccines and medical supplies storage, 80(4), 1–6.

<https://doi.org/10.1016/j.annemergmed.2022.05.001>

Baran, T., & Barutçu, S. (2025). Identifying key features of Islamic mobile apps through fuzzy Kano's model. *Journal of Islamic Marketing*, 1–20.

<https://doi.org/10.1108/JIMA-05-2024-0213>

Barghouth, D., Al-Abdallah, G. M., & Abdallah, A. B. (2021). Pharmacy service factors and pharmacy performance: The role of patient satisfaction in community pharmacies. *International Journal of Pharmaceutical and Healthcare Marketing*, 15(3), (410–428). <http://doi.org/10.1108/IJPHM-03-2020-0017>

Berkovich, I. (2018). Beyond qualitative/quantitative structuralism: The positivist qualitative research and the paradigmatic disclaimer. *Quality and Quantity*, 52(5), 2063–2077. <https://doi.org/10.1007/s11135-017-0607-3>

Bibi, M., Haq, N. U., Kareem, A., Ullah, H., Baloch, N., Rehman, G., & Nasim, A. (2022). Evaluation of availability, prices, and affordability of selected essential medicines in balochistan, Pakistan. *International Journal of Public Health*, 67, 1–8. <https://doi.org/10.3389/ijph.2022.1604375>

Bilal, A. I., Bititci, U. S., & Fenta, T. G. (2024). Effective supply chain strategies in addressing demand and supply uncertainty: A case study of Ethiopian pharmaceutical supply services. *Pharmacy*, 12(5), 1–18.

<https://doi.org/10.3390/pharmacy12050132>

- Bozorgi, A., & Fahimnia, B. (2021). Transforming the vaccine supply chain in Australia: Opportunities and challenges. *Vaccine*, 39(41), 6157–6165.
<https://doi.org/10.1016/j.vaccine.2021.08.033>
- Bratberg, J. (2019). Pharmacy: Addressing substance use in the 21st century. *Substance abuse*, 40(4), 421–434. <https://doi.org/10.1080/08897077.2019.1694618>
- Bredal, A., Stefansen, K., & Bjørnholt, M. (2024). Why do people participate in research interviews? Participant orientations and ethical contracts in interviews with victims of interpersonal violence. *Qualitative Research*, 24(2), 287–304.
<https://doi.org/10.1177/14687941221138409>
- Busetto, L., Wick, W., & Gumbinger, C. (2020). How to use and assess qualitative research methods. *Neurological Research and Practice*, 2(14), 1–10.
<https://doi.org/10.1186/s42466-020-00059-z>
- Byun, T. M., Hitchcock, E. R., & Ferron, J. (2017). Masked visual analysis: Minimizing type I error in visually guided single-case design for communication disorders. *Journal of Speech, Language, and Hearing Research*, 60(6), 1455–1466.
https://doi.org/10.1044/2017_JSLHR-S-16-0344
- 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*, 1–10.
<https://doi.org/10.1177/1744987120927206>
- Capili, B. (2021). Selection of the study participants. *AJN The American Journal of Nursing*, 121(1), 64–67. <https://doi.org/10.1097/01.NAJ.0000731688.58731.05>

- Castleberry, A., & Nolen, A. (2018). Thematic analysis of qualitative research data: Is it as easy as it sounds? *Currents in Pharmacy Teaching and Learning*, 10(6), 807–815. <https://doi.org/10.1016/j.cptl.2018.03.019>
- Chan, A. H. Y., Rutter, V., Ashiru-Oredope, D., Tuck, C., & Babar, Z. U. D. (2020). Together we unite: the role of the Commonwealth in achieving universal health coverage through pharmaceutical care amidst the COVID-19 pandemic. *Journal of Pharmaceutical Policy and Practice*, 13(1), 1–7. <https://doi.org/10.1186/s40545-020-00214-6>
- Chanda, C., & Mwanza, B. G. (2023). Evaluating the significant sources of inventory shrinkage at a Zambian Department Chain Store. *Management Journal for Advanced Research*, 3(6), 30–36. <https://doi.org/10.54741/mjar.3.6.4>
- Chikazhe, L., Makanyeza, C., & Kakava, N. Z. (2022). The effect of perceived service quality, satisfaction and loyalty on perceived job performance: Perceptions of university graduates. *Journal of Marketing for Higher Education*, 32(1), 1–18. <https://doi.org/10.1080/08841241.2020.1793442>
- Chisanga, K., Simpemba, E., Chunga, C., Chalwe, V., Kapona, O., Nyirenda, W., Mwanza, J., & Biemba, G. (2025). Over-the-counter antimicrobial dispensing in Lusaka Province retail pharmacies, Zambia. *JAC-Antimicrobial Resistance*, 7(3), 1-7. <https://doi.org/10.1093/jacamr/dlaf092>
- Chonsalasin, D., Jomnonkwao, S., & Ratanavaraha, V. (2021). Measurement model of passengers' expectations of airport service quality. *International Journal of*

Transportation Science and Technology, 10(4), 342–352.

<https://doi.org/10.1016/j.ijtst.2020.11.001>

Chopo, G., & Mwanza, B. G. (2024). *Analysis of challenges of the medical supply chain in Zambia-A case of Zambia Medicines and Medical Supplies Agency*. Available at SSRN 4938170. <http://dx.doi.org/10.2139/ssrn.4938170>

Cragg, W. J., Bishop, L., Gilberts, R., Gregg, M., Lowdon, T., Mancini, M., & Wheatstone, P. (2024). How can we support research participants who stop taking part? Communications guidance developed through public-researcher collaboration. *Research Involvement and Engagement*, 10(1), 1–12.

<https://doi.org/10.1186/s40900-024-00572-4>

Cronin, J. J., & Taylor, S. A. (1992). Measuring service quality: A reexamination and extension. *Journal of Marketing*, 56(3), 55–68. <https://doi.org/10.2307/1252296>

Dabholkar, P. A., Thorpe, D. I., & Rentz, J. O. (1996). A measure of service quality for retail stores: Scale development and validation. *Journal of the Academy of Marketing Science*, 24(1), 3–16. <https://doi.org/10.1177/009207039602400101>

Dace, E., Stibe, A., & Timma, L. (2020). A holistic approach to manage environmental quality by using the Kano model and social cognitive theory. *Corporate Social Responsibility and Environmental Management*, 27(2), 430–443.

<https://doi.org/10.1002/csr.1828>

Do, T. X., Foulon, V., Thuy, L. T., Tien, L., & Anderson, C. (2021). Factors impacting on customer satisfaction with community pharmacies in Vietnam. *Pharm Sci Asia*, 48(2), 164–174. <https://doi.org/10.29090/psa.2021.02.19.080>

- Dolgui, A., Ivanov, D., & Rozhkov, M. (2020). Does the ripple effect influence the bullwhip effect? An integrated analysis of structural and operational dynamics in the supply chain. *International Journal of Production Research*, 58(5), 1285–1301. <https://doi.org/10.1080/00207543.2019.1627438>
- Dong, P. T. X., Pham, V. T. T., Nguyen, T. T., Nguyen, H. T. L., Hua, S., & Li, S. C. (2025). Unintentional medication discrepancies at admission among elderly inpatients with chronic medical conditions in Vietnam: A single-centre observational study. *Drugs-Real World Outcomes*, 9(1), 141–151. <https://doi.org/10.1007/s40801-021-00274-3>
- Dong, W., Qi, R., Wang, D., Zhang, W., & Liu, X. (2025). Service quality assessment and optimization of high-speed railway waiting halls using a Kano model and multidimensional questionnaire analysis. *Buildings*, 15(8), 1–36. <https://doi.org/10.3390/buildings15081212>
- Donkoh, S., & Mensah, J. (2023). Application of triangulation in qualitative research. *Journal of Applied Biotechnology and Bioengineering*, 10(1), 6–9. <https://doi.org/10.15406/jabb.2023.10.00319>
- Dube, E. M., & Zuma, S. M. (2022). Professional nurses' challenges regarding drug supply management in the primary health care clinics. *International Journal of Africa Nursing Sciences*, 16, 1–7. <https://doi.org/10.1016/j.ijans.2022.100398>
- Ellis, T. J., & Levy, Y. (2009). Towards a guide for novice researchers on research methodology: review and proposed methods. *Issues in Informing Science & Information Technology*, 6, 323–337. <https://doi.org/10.28945/1062>

- Fan, L., Song, Z., Mao, W., Luo, T., Wang, W., Yang, K., & Cao, F. (2025). Change is safer: a dynamic safety stock model for inventory management of large manufacturing enterprise based on intermittent time series forecasting. *Journal of Intelligent Manufacturing*, 36(6), 3983–4003.
<https://doi.org/10.1007/s10845-024-02442-y>
- Farrugia, B. (2019). WASP (write a scientific paper): Sampling in qualitative research. *Early Human Development*, 133, 69–71.
<https://doi.org/10.1016/j.earlhumdev.2019.03.016>
- FitzGerald, J., & Mills, J. (2022). The importance of ethnographic observation in grounded theory research [33 paragraphs]. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 23(2), 1–15.
<https://doi.org/10.17169/fqs-22.2.3840>.
- Friday, D., Savage, D. A., Melnyk, S. A., Harrison, N., Ryan, S., & Wechtler, H. (2021). A collaborative approach to maintaining optimal inventory and mitigating stockout risks during a pandemic: Capabilities for enabling health-care supply chain resilience. *Journal of Humanitarian Logistics and Supply Chain Management*, 11(2), 248–271. <https://doi.org/10.1108/JHLSCM-07-2020-0061>
- Fusch, P. I., & Ness, L. R. (2015). Are we there yet? Data saturation in qualitative research. *The Qualitative Report*, 20(9), 1408–1416. <https://doi.org/10.46743/2160-3715/2015.2281>
- Galura, S. J., Horan, K. A., Parchment, J., Penoyer, D., Schlotzhauer, A., Dye, K., & Hill, E. (2022). Frame of reference training for content analysis with structured teams

- (FORT-CAST): A framework for content analysis of open-ended survey questions using multidisciplinary coders. *Research in Nursing & Health*, 45(4), 477–487. <https://doi.org/10.1002/nur.22227>
- Gonçalves, J. N., Carvalho, M. S., & Cortez, P. (2020). Operations research models and methods for safety stock determination: A review. *Operations Research Perspectives*, 7, 1–14. <https://doi.org/10.1016/j.orp.2020.100164>
- Goode, J. V., Owen, J., Page, A., & Gatewood, S. (2019). Community-based pharmacy practice innovation and the role of the community-based pharmacist practitioner in the United States. *Pharmacy*, 7(3), 1–17. <https://doi.org/10.3390/pharmacy7030106>
- Grönroos, C. (1984). A service quality model and its marketing implications. *European Journal of Marketing*, 18(4), 36–44. <https://doi.org/10.1108/EUM0000000004784>
- Grönroos, C. (1988). Service quality: The six criteria of good perceived service. *Review of Business*, 9(3), 10–13. <https://doi.org/10.4236/wsn.2014.62003>
- Guerrini, L., Parenti, O., Angeloni, G., & Zanoni, B. (2019). The bread making process of ancient wheat: A semi-structured interview to bakers. *Journal of Cereal Science*, 87, 9–17. <https://doi.org/10.1016/j.jcs.2019.02.006>
- Hagen, N., Khuluza, F., & Heide, L. (2020). Quality, availability and storage conditions of oxytocin and misoprostol in Malawi. *BMC Pregnancy and Childbirth*, 20(1), 1–18. <https://doi.org/10.1186/s12884-020-2810-9>

- Halaweh, M., & Salameh, F. F. (2023). Using social media data for exploring healthcare service quality. *International Journal of Healthcare Information Systems and Informatics (IJHISI)*, 18(1), 1–13. <https://doi.org/10.4018/ijhisi.325064>
- Hamilton, C. B., Hoens, A. M., Backman, C. L., McKinnon, A. M., McQuitty, S., English, K., & Li, L. C. (2018). An empirically based conceptual framework for fostering meaningful patient engagement in research. *Health Expectations*, 21(1), 396–406. <https://doi.org/10.1111/hex.12635>
- Hatchett, R. (2017). The medicines refrigerator and the importance of the cold chain in the safe storage of medicines. *Nursing Standard*, 32(6), 53–62. <http://doi.org/10.7748/ns.2017.e10960>
- Head, G. (2020). Ethics in educational research: Review boards, ethical issues and researcher development. *European Educational Research Journal*, 19(1), 72–83. <https://doi.org/10.1177/1474904118796315>
- Hedvall, M. B., & Paltschik, M. (1991). Intrinsic service quality determinants for pharmacy customers. *International Journal of Service Industry Management*, 2(2), 38–48. <https://doi.org/10.1371/journal.pone.0304930>
- Hidayat, R., & Saleh, I. (2020). The Importance of inventory management in pharmaceutical practice. *Open Access Indonesia Journal of Social Sciences*, 3(1), 80–84. <https://doi.org/10.37275/oaijss.v3i1.22>
- Ikekwere, E. A. (2024). Enhancing supply chain resilience: A comparative study of predictive analytics and advanced technologies in healthcare and retail sectors.

International Journal of Modern Science and Research Technology, 2(11), 66–78.

<https://doi.org/10.5281/zenodo.14181221>

Ilardo, M. L., & Speciale, A. (2020). The community pharmacist: Perceived barriers and patient-centered care communication. *International Journal of Environmental Research and Public Health*, 17(2), 1–16. <https://doi.org/10.3390/ijerph17020536>

Iovan, M. (2021). Development of the magistrate's intime conviction in the context of non-verbal communication. *Journal of Legal Studies*, 27(41), 83–97.

<https://doi.org/10.2478/jles-2021-0007>

Jain, N., & Singh, A. R. (2020). Sustainable supplier selection criteria classification for Indian iron and steel industry: A fuzzy modified Kano model approach. *International Journal of Sustainable Engineering*, 13(1), 17–32.

<https://doi.org/10.1080/19397038.2019.1566413>

Jin, X., Yuan, Y., Chang, C., Wu, X., Tan, X., & Liu, Z. (2025). Telemedicine in China: Effective indicators of telemedicine platforms for promoting health and well-being among healthcare consumers. *Digital Health*, 11, 1–14.

<https://doi.org/10.1177/20552076251341163>

Jobira, T., Abuye, H., Jemal, A., & Gudeta, T. (2021). Evaluation of pharmaceuticals inventory management in selected health facilities of West Arsi Zone, Oromia, Ethiopia. *Integrated Pharmacy Research & Practice*, 10, 1–11.

<https://doi.org/10.2147/IPRP.S298660>

Johnson, A., Peter, K., & Shital, M. (2021). Inventory management practices and supply chain performance of antiretroviral medicines in public hospitals in Nyamira

- County, Kenya. *Rwanda Journal of Medicine and Health Sciences*, 4(2), 257–268. <https://dx.doi.org/10.4314/rjmhs.v4i2.5>
- Jones, B., Hunt, A., Hewlett, S., Harcourt, D., & Dures, E. (2022). Rheumatology patients' perceptions of patient activation and the patient activation measure: a qualitative interview study. *Musculoskeletal Care*, 20(1), 74–85. <https://dx.doi.org/10.1002/msc.1555>
- Jonkisz, A., Karniej, P., & Krasowska, D. (2021). SERVQUAL method as an “Old New” tool for improving the quality of medical services: A literature review. *International Journal of Environmental Research and Public Health*, 18(20), 1–10. <https://doi.org/10.3390/ijerph182010758>
- Jou, Y. T., Saflor, C. S., Mariñas, K. A., Manzano, H. M., Uminga, J. M., Verde, N. A., & Dela Fuente, G. (2024). An integrated multi-criteria decision analysis and structural equation modeling application for the attributes influencing the customer's satisfaction and trust in e-commerce applications. *Sustainability*, 16(5), 1–21. <https://doi.org/10.3390/su16051727>
- Kaaya, E. J. (2025). Right to withdraw consent from biobank research—A weak right wrapped in empty promises?. *Research Ethics*, 1–22. <https://doi.org/10.1177/17470161251389163>
- Kaiser, A. H., Hehman, L., Forsberg, B. C., Simangolwa, W. M., & Sundewall, J. (2019). Availability, prices and affordability of essential medicines for treatment of

diabetes and hypertension in private pharmacies in Zambia. *PLoS One*, 14(12), 1–18. <https://doi.org/10.1371/journal.pone.0226169>

Kakanda-Sinkala, N. (2024). Upholding informed consent: Experiences of note-taking without audio recording of in-depth individual interviews in a qualitative study on the implementation of the pregnancy reentry policy in Zambia. *International Journal of multidisciplinary research and analysis*, 7(5), 1941–1944. <https://doi.org/10.47191/ijmra/v7-i05-15>

Kalpokas, N., & Radivojevic, I. (2022). Bridging the gap between methodology and qualitative data analysis software: A practical guide for educators and qualitative researchers. *Sociological Research Online*, 27(2), 313–341. <https://doi.org/10.1177/13607804211003579>

Kalungia, A. C., & Kamanga, T. (2016). Patients' satisfaction with outpatient pharmacy services at the university teaching hospital and Ndola central hospital in Zambia. *Journal of Preventive and Rehabilitative Medicine*, 1(1), 16–21. <https://doi.org/10.21617/jprm.2016.0101.3>

Kano, N., Seraku, N., Takahashi, F., & Tsuji, S. (1984). Attractive quality and must-be quality. *Journal of the Japanese Society for Quality Control*, 41, 39–48. https://doi.org/10.20684/quality.14.2_147

Kanyika, A., Metudenda, S., Daka, V., Kaonga, N., Mbao, C., Mwaba, D. K., & Matafwali, S. K. (2025). Effectiveness of logistics management information system (LMIS) in improving the availability of essential medicines and medical

- supplies in public hospitals in Zambia: A cross-sectional study. *Pharmacology & Pharmacy*, 16(2), 61–72. <https://doi.org/10.4236/pp.2025.162005>
- Karamshetty, V., Harwin De Vries, H. D., Wassenhove, L. N. V., Dewilde, S., Minnaard, W., Ongarora, D., Kennedy Abuga, K., & Yadav, P. (2021). Inventory management practices in private healthcare facilities in Nairobi County. *Production and Operations Management*, 31(2), 828–846. <https://doi.org/10.1111/poms.13445>
- Karume, A. K., Nyongesa, K., Okutoyi, L., & Kinuthia, J. (2025). Patient's expectations and perceptions on quality of care; An evaluation using SERVQUAL gap in Kenya. *PloS One*, 20(3), 1–27. <https://doi.org/10.1371/journal.pone.0315910>
- Kaupa, F., & Naude, M. J. (2021). "Critical success factors in the supply chain management of essential medicines in the public health-care system in Malawi." *Journal of Global Operations and Strategic Sourcing*, 14(3), 454–476. <https://doi.org/10.1108/JGOSS-01-2020-0004>
- Kennedy-Shaffer, L., Qiu, X., & Hanage, W. P. (2021). Snowball sampling study design for serosurveys early in disease outbreaks. *American Journal of Epidemiology*, 190(9), 1918–1927. <https://doi.org/10.1093/aje/kwab098>
- Keuler, N., Bouwer, A., & Coetzee, R. (2021). Pharmacists' approach to optimise safe medication use in paediatric patients. *Pharmacy (Basel, Switzerland)*, 9(4), 1–11. <https://doi.org/10.3390/pharmacy9040180>
- Kevrekidis, D. P., Minarikova, D., Markos, A., Malovecka, I., & Minarik, P. (2018). Community pharmacy customer segmentation based on factors influencing their

- selection of pharmacy and over-the-counter medicines. *Saudi Pharmaceutical Journal: SPJ*, 26(1), 33–43. <https://doi.org/10.1016/j.jsps.2018.11.002>
- Khan, M. R., Pervin, M. T., Arif, M. Z. U., & Hossain, S. K. (2024). The impact of technology service quality on Bangladeshi banking consumers' satisfaction during the pandemic situation: Green development and innovation perspective in banking service. *Innovation and Green Development*, 3(2), 1–10. <https://doi.org/10.1016/j.igd.2023.100120>
- Kim, M. G., Lee, N. E., & Sohn, H. S. (2020). Gap between patient expectation and perception during pharmacist–patient communication at community pharmacy. *International Journal of Clinical Pharmacy*, 42(2), 677–684. <https://doi.org/10.1007/s11096-020-01014-3>
- Kodom, M., Owusu, A. Y., & Kodom, P. N. B. (2019). Quality healthcare service assessment under Ghana's national health insurance scheme. *Journal of Asian and African Studies*, 54(4), 569–587. <https://doi.org/10.1177/0021909619827331>
- Kolade, J. O. (2019). Demand forecasting and measuring forecast accuracy in a Pharmacy. *Acta Universitatis Danubius. OEconomica*, 15(3), 157–169. <https://journals.univ-danubius.ro/index.php/oeconomica/article/view/5779/4946>
- Kononiuk, A., & Gudanowska, A. E. (2022). The application of the customized SERVQUAL model for career guidance training: Industry 4.0 challenges. *Journal of Business Economics and Management*, 1–20. <https://doi.org/10.3846/jbem.2022.16643>

- Kreuter, F., Haas, G. C., Keusch, F., Bähr, S., & Trappmann, M. (2020). Collecting survey and smartphone sensor data with an app: Opportunities and challenges around privacy and informed consent. *Social Science Computer Review*, 38(5), 533–549. <https://doi.org/10.1177/0894439318816389>
- Kuo, S., Ou, H. T., & Wang, C. J. (2021). Managing medication supply chains: Lessons learned from Taiwan during the COVID-19 pandemic and preparedness planning for the future. *Journal of the American Pharmacists Association*, 61(1), e12–e15. <https://doi.org/10.1016/j.japh.2020.08.029>
- Kurniawan, W., Pathoni, H., Muliawati, L., Kurniawan, D. A., Romadona, D. D., Ningsi, A. P., & Dari, R. W. (2020). Relationship of science process skills and critical thinking of students in physics subject. *Universal Journal of Educational Research*, 8(11), 5581–5588. <https://doi.org/10.13189/ujer.2020.081162>
- Kuwawenaruwa, A., Wyss, K., Wiedenmayer, K., Metta, E., & Tediosi, F. (2020). The effects of medicines availability and stock-outs on household's utilization of healthcare services in Dodoma region, Tanzania. *Health Policy and Planning*, 35(3), 323–333. <https://doi.org/10.1093/heapol/czz173>
- Lal, B., Dwivedi, Y. K., & Haag, M. (2023). Working from home during Covid-19: Doing and managing technology-enabled social interaction with colleagues at a distance. *Information Systems Frontiers*, 25(4), 1333–1350. <https://doi.org/10.1007/s10796-021-10182-0>
- Latif, A., Waring, J., Watmough, D., Boyd, M. J., & Elliott, R. A. (2018). 'I expected just to walk in, get my tablets and then walk out': On framing new community

- pharmacy services in the English healthcare system. *Sociology of Health & Illness*, 40(6), 1019–1036. <https://doi.org/10.1111/1467-9566.12739>
- Leem, B. H., & Eum, S. W. (2021). Using text mining to measure mobile banking service quality. *Industrial Management & Data Systems*, 121(5), 993–1007. <https://doi.org/10.1108/IMDS-09-2020-0545>
- Li, J., Liu, L., Hu, H., Zhao, Q., & Guo, L. (2018). An inventory model for deteriorating drugs with stochastic lead time. *International Journal of Environmental Research and Public Health*, 15(12), 1–20. <https://doi.org/10.3390/ijerph15122772>
- Liu, W. K., Lee, Y. S., & Hung, L. M. (2017). The interrelationships among service quality, customer satisfaction, and customer loyalty: Examination of the fast-food industry. *Journal of Foodservice Business Research*, 20(2), 146–162. <https://doi.org/10.1080/15378020.2016.1201644>
- Lloyd, N., Hyett, N., & Kenny, A. (2024). To member check or not to member check? An evaluation of member checking in an interpretive descriptive study. *International Journal of Qualitative Methods*, 23, 1–10. <https://doi.org/10.1177/16094069241301383>
- Luft, J. A., Jeong, S., Idsardi, R., & Gardner, G. (2022). Literature reviews, theoretical frameworks, and conceptual frameworks: An introduction for new biology education researchers. *CBE—Life Sciences Education*, 21(3), 1–10. <https://doi.org/10.1187/cbe.21-05-0134>

- Luque, A., De Las Heras, A., Ávila-Gutiérrez, M. J., & Zamora-Polo, F. (2020). ADAPTS: An intelligent sustainable conceptual framework for engineering projects. *Sensors*, 20(6), 1–28. <https://doi.org/10.3390/s20061553>
- Mabini, S. P., Narsico, L. O., & Narsico, P. G. (2024). Service quality, patient satisfaction, and improvement indicators. *International Journal of Multidisciplinary: Applied Business and Education Research*, 5(4), 1331–1345. <http://dx.doi.org/10.11594/ijmaber.05.04.18>
- Magasi, C., Mashenene, R. G., & Dengenesa, D. M. (2022). Service quality and students' satisfaction in Tanzania's higher education: A re-examination of SERVQUAL Model. *International Review of Management and Marketing*, 12(3), 18–25. <https://doi.org/10.32479/irmm.13040>
- Mageto, J. (2021). Big data analytics in sustainable supply chain management: A focus on manufacturing supply chains. *Sustainability*, 13(13), 210–217. <https://doi.org/10.3390/su13137101>
- Mahlberg, J. A., Manish, R., Koshan, Y., Joseph, M., Liu, J., Wells, T., Jeremy McGuffey, J., Habib, A., & Bullock, D. M. (2022). Salt stockpile inventory management using LiDAR volumetric measurements. *Remote Sensing*, 14(19), 1–16. <https://doi.org/10.3390/rs14194802>
- Mahomed, F., & Gumede, E. Z. (2022). The effects of antiretroviral stockout on primary health care nurses in the Ethekewini and Ilembe districts, KwaZulu-Natal. *F1000Research*, 11, 1–10. <https://doi.org/10.12688/f1000research.128131.1>

- Maluleke, K., Musekiwa, A., Kgarosi, K., Gregor, E. M., Dlangalala, T., Nkambule, S., & Mashamba-Thompson, T. (2021). A scoping review of supply chain management systems for point of care diagnostic services: Optimising COVID-19 testing capacity in resource-limited settings. *Diagnostics, 11*(12), 1–29. <https://doi.org/10.3390/diagnostics11122299>
- Markula, A. E., & Aksela, M. (2022). The key characteristics of project-based learning: how teachers implement projects in K-12 science education. *Disciplinary and interdisciplinary science education research, 4*, Article 4:2. <https://doi.org/10.1186/s43031-021-00042-x>
- Martins, F. S., Cunha, J. A. C., & Serra, F. A. R. (2018). Secondary data in research - Uses and opportunities. *PODIUM Sport, Leisure and Tourism Review, 7*(3), I–IV. <https://doi.org/10.5585/podium.v7i3.316>
- Mayarani, S., Safrizal, S., & Masril, M. (2025). Analysis of merchandise inventory accounting system: calculation method. *Rashid: Journal of Economic, 1*(1), 13–22. <https://doi.org/10.65065/kj04n328>
- McGinley, S., Wei, W., Zhang, L., & Zheng, Y. (2020). The state of qualitative research in hospitality: a 5-year review 2014 to 2019. *Cornell Hospitality Quarterly, 62*(1), 8–20. <https://doi.org/10.1177/1938965520940294>
- Meidutė-Kavaliauskienė, I., Vasilienė-Vasiliauskienė, V., & Vasiliauskas, A. V. (2020). Identification of sectoral logistics service quality gaps by applying SERVQUAL method. *Transport, 35*(4), 419–434. <https://doi.org/10.3846/transport.2020.13879>

- Mendoza, X. L. D., Pichay, S. B., & Tadeo, J. B. (2023). Utilization of modified SERVQUAL model in crafting strategies among courier services. *International Journal of Multidisciplinary: Applied Business and Education Research*, 4(3), 701–712. <http://dx.doi.org/10.11594/ijmaber.04.03.03>
- Mirza, F., Younus, S., Waheed, N., & Javaid, A. (2021). Investigating the impact of product-related and service quality attributes on re-purchase intention: Role of customer characteristics and customer satisfaction. *International Journal of Research in Business and Social Science (2147-4478)*, 10(3), 24–35. <https://doi.org/10.20525/ijrbs.v10i3.1107>
- Molla, S., Moges, G., Toleha, H. N., Bayked, E. M., & Workneh, B. D. (2025). Patient satisfaction with pharmacy services and associated factors in Ethiopia: A systematic review and meta-analysis. *BMC Health Services Research*, 25(1), 971. <https://doi.org/10.1186/s12913-025-12980-7>
- Moon, M. D. (2019). Triangulation: A method to increase validity, reliability, and legitimation in clinical research. *Journal of Emergency Nursing*, 45(1), 103–105. <https://doi.org/10.1016/j.jen.2018.11.004>
- Moser, A., & Korstjens, I. (2018). Series: Practical guidance to qualitative research. Part 3: Sampling, data collection and analysis. *European Journal of General Practice*, 24(1), 9–18. <https://doi.org/10.1080/13814788.2017.1375091>
- Mozersky, J., Friedrich, A. B., & DuBois, J. M. (2022). A content analysis of 100 qualitative health research articles to examine researcher-participant relationships

- and implications for data sharing. *International Journal of Qualitative Methods*, 21, 1–9. <https://doi.org/10.1177/16094069221105074>
- Mukosha, M., Zingani, E., Kalungia, A. C., Mwila, C., Mwanza, J., Mweetwa, B., Mwalungali, G., Chigunta, M., Kaonga, P., M. Akapelwa, T., & Munkombwe, D. (2022). Level of job satisfaction among pharmacists in public and private health sectors in Zambia: A preliminary study. *International Journal of Pharmacy Practice*, 30(4), 360–366. <https://doi.org/10.1093/ijpp/riac044>
- Muneeza, C. Y. (2024). Patient reported experience measures: an assessment of the out-patient pharmacy in a tertiary care teaching hospital. *International Journal of Community Medicine and Public Health*, 11(12), <https://dx.doi.org/10.18203/2394-6040.ijcmph20243661>
- Musana, E., Okello, W., & Basaza-Ejiri, A. H. (2020). Real time inventory tracking model in the distribution supply chain of Airtel airtime. *International Journal of New Technology and Research*, 6, 46–53. <https://doi.org/10.31871/IJNTR.6.7.27>
- Musasa, T., & Tlapana, T. (2023). Assessing the significance of retail service quality on shopping frequency: an adaptation of retail service quality (RSQS) model. *European Journal of Management Studies*, 28(2), 135–1472. <https://doi.org/10.1108/EJMS-10-2022-0072>
- Muscat, N. A., Sinclair, P., Zapata, T., Connolly, D., Pinto, G. S., & Kniazkov, S. (2024). Embracing pharmacists' roles in health-care delivery. *The Lancet Regional Health–Europe*, 46, 1–2. <https://doi.org/10.1016/j.lanepe.2024.101088>

- Muzari, T., Shava, G. N., & Shonhiwa, S. (2022). Qualitative research paradigm, a key research design for educational researchers, processes and procedures: A theoretical overview. *Indiana Journal of Humanities and Social Sciences*, 3(1), 14–20. <https://doi.org/10.32642/ncpdje.v5i0.1251>
- Mwale, G., & Makasa, M. (2025). Health crisis within a crisis: Effect of COVID-19 on STI services for young adults in Lusaka, Zambia. *PLOS Global Public Health*, 5(7), 1–15. <https://doi.org/10.1371/journal.pgph.0004891>
- Mwita, K. (2022). Factors influencing data saturation in qualitative studies. *International Journal of Research in Business and Social Science (2147-4478)*, 11(4), 414–420. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4880488
- Naeem, M., Ozuem, W., Howell, K., & Ranfagni, S. (2024). Demystification and actualisation of data saturation in qualitative research through thematic analysis. *International Journal of Qualitative Methods*, 23, 1–17. <https://doi.org/10.1177/16094069241229777>
- 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-the-belmont-report/index.html>
- Natow, R. S. (2020). The use of triangulation in qualitative studies employing elite interviews. *Qualitative Research*, 20(2), 160–173. <https://doi.org/10.1177/1468794119830077>

- Ndzamela, S. N., & Burton, S. B. (2020). Patients and healthcare professionals' experiences of medicine stock-outs and shortages at a community healthcare centre in the Eastern Cape. *SA Pharmaceutical Journal*, 87(5), 37–37.
<https://scispace.com/pdf/patients-and-healthcare-professionals-experiences-of-3qp541to5i.pdf>
- Nemir, A., Reardon, J., & Wilbur, K. (2025). Bringing the patient voice into workplace-based assessment of pharmacy learners: An interpretive description study. *American Journal of Pharmaceutical Education*, 89(2), 1–7.
<https://doi.org/10.1016/j.ajpe.2024.101353>
- Newth, J. (2018). “Hands-on” vs “arm’s length” entrepreneurship research. *International Journal of Entrepreneurial Behavior & Research. International*, 24(3), 683–696.
<https://doi.org/10.1108/IJEER-09-2016-0315>
- Nii Laryeafio, M., & Ogbewe, O. C. (2023). Ethical consideration dilemma: systematic review of ethics in qualitative data collection through interviews. *Journal of Ethics in Entrepreneurship and Technology*, 3(2), 94–110.
<https://doi.org/10.1108/JEET-09-2022-0014>
- Noor, I., Alhidayatullah, A., & Amal, M. K. (2023). Dimensions of service quality in influencing customer satisfaction. *Adpebi International Journal of Multidisciplinary Sciences*, 2(2), 189–197.
<https://doi.org/10.54099/aijms.v2i2.656>
- Nyimbili, F., & Nyimbili, L. (2024). Types of purposive sampling techniques with their examples and application in qualitative research studies. *British Journal of*

Multidisciplinary and Advanced Studies: English Lang., Teaching, Literature, Linguistics & Communication, 5(1), 90–99.

<https://doi.org/10.37745/bjmas.2022.0419>

- Ojha, D., Sahin, F., Shockley, J., & Sridharan, S. V. (2019). Is there a performance tradeoff in managing order fulfillment and the bullwhip effect in supply chains? The role of information sharing and information type. *International Journal of Production Economics*, 79, 529–543. <https://doi.org/10.1016/j.ijpe.2018.12.021>
- Oladele, T. O., Ogundokun, R. O., Adegun, A. A., Adeniyi, E. A., & Ajanaku, A. T. (2021). Development of an inventory management system using association rule. *Indonesian Journal of Electrical Engineering and Computer Science*, 21(3), 1868–1876. <https://doi.org/10.11591/ijeecs.v21.i3.pp1868-1876>
- Olowe, K. J., Edoh, N. L., Zouo, S. J. C., & Olamijuwon, J. (2024). Conceptual frameworks and innovative biostatistical approaches for advancing public health research initiatives. *International Journal of Scholarly Research in Medicine and Dentistry*, 3(2), 11–21. <https://doi.org/10.56781/ijsrmd.2024.3.2.0035>
- Olutuase, V. O., Iwu-Jaja, C., Akuoko, C. P., Adewuyi, E. O., & Khanal, V. (2022). Medicines and vaccines supply chains challenges in Nigeria: A scoping review. *BMC Public Health*, 22, 1–15. <https://doi.org/10.1186/s12889-021-12361-9>
- Onifade, A. Y., Dosumu, R. E., Abayomi, A. A., Agboola, O. A., & George, O. O. (2023). Advances in healthcare marketing analytics for patient demand forecasting and service line optimization. *Journal of Frontiers in*

Multidisciplinary Research, 4(1), 321–332.

<https://doi.org/10.54660/JFMR.2023.4.1.321-332>

Ormond, M. J., Clement, N. D., Harder, B. G., Farrow, L., & Glester, A. (2023).

Acceptance and understanding of artificial intelligence in medical research among orthopaedic surgeons. *Bone & Joint Open*, 4(9), 696–703.

<https://doi.org/10.1302/2633-1462.49.BJO-2023-0070.R1>

Ovezmyradov, B., & Kurata, H. (2019). Effects of customer response to fashion product stockout on holding costs, order sizes, and profitability in omnichannel retailing. *International Transactions in Operational Research*, 26(1), 200–222.

<https://doi.org/10.1111/itor.12511>

Pamucar, D., Yazdani, M., Montero-Simo, M. J., Araque-Padilla, R. A., & Mohammed, A. (2021). Multi-criteria decision analysis towards robust service quality measurement. *Expert Systems with Applications*, 170, 1–17.

<https://doi.org/10.1016/j.eswa.2020.114508>

Panic, G., Yao, X., Gregory, P., & Austin, Z. (2020). How do community pharmacies in Ontario manage drug shortage problems? Results of an exploratory qualitative study. *Canadian Pharmacists Journal/Revue des Pharmaciens du*

Canada, 153(6), 371–377. <https://doi.org/10.1177/1715163520958023>

Papavasileiou, E. F., & Dimou, I. (2025). Evidence of construct validity for work values using triangulation analysis. *EuroMed Journal of Business*, 20(5), 98–115.

<https://doi.org/10.1108/EMJB-10-2023-0287>

- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. *Journal of marketing*, 49(4), 41–50. <https://doi.org/10.2307/1251430>
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64(1), 12–40. <https://www.marketeurexpert.fr/wp-content/uploads/2023/12/servqual.pdf>
- Pinnegar, E., & Quiles-Fernández, E. (2018). A self-study of researcher relationships with research participants. *Studying Teacher Education*, 14(3), 284–295. <https://doi.org/10.1080/17425964.2018.1541287>
- Postma, D. J., Notenboom, K., De Smet, P. A., Leufkens, H. G., & Mantel-Teeuwisse, A. K. (2023). Medicine shortages: Impact behind numbers. *Journal of Pharmaceutical Policy and Practice*, 16(1), 1–12. <https://doi.org/10.1186/s40545-023-00548-x>
- Premanath, M., & Kulkarni, P. (2024). Generic Drugs or Branded Generics, which one you prefer to prescribe? *APIK Journal of Internal Medicine*, 12(3), 1951–96. https://doi.org/10.4103/ajim.ajim_119_23
- Prosek, E. A., & Gibson, D. M. (2021). Promoting rigorous research by examining lived experiences: a review of four qualitative traditions. *Journal of Counseling & Development*, 99, 167–177. <https://doi.org/10.1002/jcad.12364>
- Ramanathan, U., Win, S., & Wien, A. (2018). A SERVQUAL approach to identifying the influences of service quality on leasing market segment in the German financial

sector. *Benchmarking: An International Journal*, 25(6), 1935–1955.

<https://doi.org/10.1108/BIJ-12-2016-0194>

Redman, B. K., & Caplan, A. L. (2021). Should the regulation of research misconduct be integrated with the ethics framework promulgated in The Belmont Report? *Ethics & Human Research*, 43(1), 37–41. <https://doi.org/10.1002/eahr.500078>

Rezeki, D. S., Girsang, E., Silaen, M., & Nasution, S. R. (2022). Evaluation of drug storage using FIFO/FEFO methods in Royal Prima Medan hospital pharmacy installation. *International Journal of Health and Pharmaceutical (IJHP)*, 2(1), 9–17. <https://doi.org/10.51601/ijhp.v2i1.8>

Risku, H., Hirvonen, M., Rogl, R., & Milošević, J. (2022). Ethnographic research. In *The Routledge handbook of translation and methodology*, 324–339.

<https://doi.org/10.4324/9781315158945>

Romano, S., Guerreiro, J. P., & Rodrigues, A. T. (2022). Drug shortages in community pharmacies: Impact on patients and on the health system. *Journal of the American Pharmacists Association*, 62(3), 791–799.

<https://doi.org/10.1016/j.japh.2021.12.017>

Sakeena, M. H. F., Bennett, A. A., & McLachlan, A. J. (2018). Enhancing pharmacists' role in developing countries to overcome the challenge of antimicrobial resistance: A narrative review. *Antimicrobial Resistance and Infection Control*, 7(1), 1–11. <https://doi.org/10.1186/s13756-018-0351-z>

Sallam, M., Oliver, A., Allam, D., & Kassem, R. (2025). Leadership style and lean management capabilities in improving pharmacy practice and service quality:

- Insights from mediclinic Parkview Hospital, United Arab Emirates. *Pharmacy Practice*, 25(3), 1–38. <https://doi.org/10.18549/PharmPract.2025.3.3263>
- Santosa, Y. A., & Azam, S. F. (2020). Conceptualisation of service quality, lean management and patients' satisfaction among dental hospitals in Indonesia. *European Journal of Economic and Financial Research*, 3(6), 12–136. <http://doi.org/10.5281/zenodo.3713895>
- Saporna, G. C., & Claveria, R. A. (2019). Service quality dimensions as correlates of customer satisfaction and behavioral intentions: The case of fast food restaurants in Subang Jaya, Selangor, Malaysia. *Asian Journal of Economics, Business and Accounting*, 11(1), 1–10. <https://doi.org/10.9734/AJEBA/2019/v11i130117>
- Schlunegger, M. C., Zumstein-Shaha, M., & Palm, R. (2024). Methodologic and data-analysis triangulation in case studies: A scoping review. *Western Journal of Nursing Research*, 46(8), 611–622. <https://doi.org/10.1177/01939459241263011>
- Sellberg, M., Skavberg Roaldsen, K., Nygren-Bonnier, M., & Halvarsson, A. (2020). Clinical supervisors' experience of giving feedback to students during clinical integrated learning. *Physiotherapy Theory and Practice*, 13(1), 1–10. <https://doi.org/10.1080/09593985.2020.1737996>
- Sepp, K., Cavaco, A. M., Raal, A., & Volmer, D. (2021). Profession driven improvement of the quality of pharmacy practice—Implementation of community pharmacy services quality guidelines in Estonia. *In Healthcare*, 9(7), 1–24. <https://doi.org/10.3390/healthcare9070804>

- Setiono, B. A., & Hidayat, S. (2022). Influence of service quality with the dimensions of reliability, responsiveness, assurance, empathy and tangibles on customer satisfaction. *International Journal of Economics, Business and Management Research*, 6(09), 330–341. <http://dx.doi.org/10.51505/ijeblr.2022.6924>
- Shah, S. S. A. M., Naqvi, B. S., Fatima, M., Khaliq, A., Sheikh, A. L., & Baqar, M. (2016). Quality of drug stores: Storage practices & regulatory compliance in Karachi, Pakistan. *Pakistan Journal of Medical Sciences*, 32(5), 1071–1076. <http://doi.org/10.12669/pjms.325.9705>
- Shaw, D., & Satalkar, P. (2018). Researchers' interpretations of research integrity: A qualitative study. *Accountability in Research*, 25(2), 79–93. <https://doi.org/10.1080/08989621.2017.1413940>
- Shayestefar, M., Asgari, M. R., Jahanfar, S., & Babamohamadi, H. (2025). Adjustment strategies among Iranian pregnant nurses in continuing nursing care: A qualitative content analysis. *BMC nursing*, 24(1), 1–10. <http://doi.org/10.1186/s12912-025-03538-3>
- Shrestha, R., Shrestha, S., Sapkota, B., Thapa, S., Ansari, M., Khatiwada, A. P., Roien, R., & Ozaki, A. (2022). Generic medicine and generic prescribing in Nepal: An implication for policymakers. *Journal of Multidisciplinary Healthcare*, 365–373. <https://doi.org/10.2147/JMDH.S348282>
- Shukar, S., Zahoor, F., Hayat, K., Saeed, A., Gillani, A. H., Omer, S., Hu, S., Babar, Z., & Yang, C. (2021). Drug shortage: Causes, impact, and mitigation

strategies. *Frontiers in pharmacology*, 12, 1–18.

<https://doi.org/10.3389/fphar.2021.693426>

Slevitch, L. (2024). Kano model categorization methods: Typology and systematic critical overview for hospitality and tourism academics and practitioners. *Journal of Hospitality & Tourism Research*, 49(3), 449–479.

<https://doi.org/10.1177/10963480241230957>

Stalmeijer, R. E., Brown, M. E., & O'Brien, B. C. (2024). How to discuss transferability of qualitative research in health professions education. *The Clinical Teacher*, 21(6), 1–7. <https://doi.org/10.1111/tct.13762>

Stratton, S. J. (2021). Population research: convenience sampling strategies. *Prehospital and disaster Medicine*, 36(4), 373–374.

<https://doi.org/10.1017/S1049023X21000649>

Strijker, D., Bosworth, G., & Bouter, G. (2020). Research methods in rural studies: Qualitative, quantitative and mixed methods. *Journal of Rural Studies*, 78, 262–270. <https://doi.org/10.1016/j.jrurstud.2020.06.007>

Su, D. N., Nguyen-Phuoc, D. Q., Duong, T. H., Dinh, M. T. T., Luu, T. T., & Johnson, L. (2022). How does quality of mobile food delivery services influence customer loyalty? Gronroos's service quality perspective. *International Journal of Contemporary Hospitality Management*, 34(11), 4178–4205.

<https://doi.org/10.1108/IJCHM-08-2021-1039>

- Subhani, A. (2022). The quality of entrepreneurship development service vocational high school: Assesment with SERVQUAL Model. *Journal of Educational and Social Research*, 12(2), 126–126. <https://doi.org/10.36941/jesr-2022-0039>
- Tahat, G. (2021). Innovation management to sustain competitive advantage: A qualitative multi-case study. *Business Management and Strategy*, 12(2), 107–132. <https://doi.org/10.5296/bms.v12i2.18829>
- Taherdoost, H., & Brard, A. (2019). Analyzing the process of supplier selection criteria and methods. *Procedia Manufacturing*, 32, 1024–1034. <https://doi.org/10.1016/j.promfg.2019.02.317>
- Tarurhor, E. M., & Osazevbaru, H. O. (2021). Inventory management and customers satisfaction in the public health sector in Delta State, Nigeria: Marketing analysis. *Innovative Marketing*, 17(2), 69–78. [https://doi.org/10.21511/im.17\(2\).2021.07](https://doi.org/10.21511/im.17(2).2021.07)
- Tavakoli, N., Yadegarfar, G., Bagherian, H., & Ghasri, F. (2019). Assessing the educational services quality of health information technology students. *Journal of Education and Health Promotion*, 8, 1–7. https://doi.org/10.4103/jehp.jehp_409_18
- Terrizzi, S., & Meyerhoefer, C. (2020). Estimates of the price elasticity of switching between branded and generic drugs. *Contemporary Economic Policy*, 38(1), 94–108. <https://doi.org/10.1111/coep.12430>
- Theofanidis, D., & Fountouki, A. (2018). Limitations and delimitations in the research process. *Perioperative Nursing*, 7(3), 155–163. <http://doi.org/10.5281/zenodo.2552022>

- Tomaszewski, L. E., Zarestky, J., & Gonzalez, E. (2020). Planning qualitative research: Design and decision making for new researchers. *International Journal of Qualitative Methods*, *19*, 1–7. <http://doi.org/10.1177/1609406920967174>
- Twining, P., Heller, R. S., Nussbaum, M., & Tsai, C. C. (2017). Some guidance on conducting and reporting qualitative studies. *Computers & Education*, *106*, 1–9. <https://doi.org/10.1016/j.compedu.2016.12.002>
- Urick, B. Y., & Meggs, E. V. (2019). Towards a greater professional standing: Evolution of pharmacy practice and education, 1920–2020. *Pharmacy*, *7*(3), <https://doi.org/10.3390/pharmacy7030098>
- Vaka, D. K. (2024). Enhancing supplier relationships: critical factors in procurement supplier selection. *Journal of Artificial Intelligence, Machine Learning and Data Science*, *2*(1), 229–233. <https://doi.org/10.51219/JAIMLD/dilip-kumar-vaka/74>
- Varpio, L., Ajjawi, R., Monrouxe, L. V., Brien, B. C., & Rees, C. E. (2017). How do we know? Shedding the cobra effect: Problematizing thematic emergence, triangulation, saturation and member checking. *Medical Education*, *51*(1), 40–50. <https://doi.org/10.1111/medu.13124>
- Wadams, M., & Park, T. (2018). Qualitative research in correctional settings: Researcher bias, western ideological influences, and social justice. *Journal of Forensic Nursing*, *14*(2), 72–79. <https://doi.org/10.1097/JFN.0000000000000199>
- Wakelin, K. J., McAra-Couper, J., & Fleming, T. (2024). Using an online platform for conducting face-to-face interviews. *International Journal of Qualitative Methods*, *23*, 1–9. <https://doi.org/10.1177/16094069241234183>

- Wandira, B. A., Suarayasa, K., & Kristiawan, K. V. (2020). Management of post-disaster medicine logistics at the pharmacy installation of Regional Public Hospital Undata of Central Sulawesi Province. *Journal La Medihealtico*, 1(2), 21–25. <https://doi.org/10.37899/journallamedihealtico.v1i2.116>
- Wang, M., & Jie, F. (2020). Managing supply chain uncertainty and risk in the pharmaceutical industry. *Health Services Management Research*, 33(3), 156–164. <https://doi.org/10.1177/0951484819845305>
- White, M. G. (2020). Why human subjects research protection is important. *Ochsner Journal*, 20(1), 16–33. <https://doi.org/10.31486/toj.20.5012>
- William, F. K. A. (2024). Mastering validity and reliability in academic research: Meaning and significance. *International Journal of Research Publications*, 144(1), 287–292. <https://doi.org/10.47119/IJRP1001441320246160>
- Wiredu, G. O. (2022). Organizing digital platforms and customer needs for digital service innovation. *The African Journal of Information Systems*, 14(2), 137–164. <https://digitalcommons.kennesaw.edu/ajis/vol14/iss2/3>
- World Health Organization. (2011). International Pharmaceutical Federation, Joint FIP/WHO Guidelines on Good Pharmacy Practice: Standards for Quality of Pharmacy Services, *WHO Technical Report Series*, No. 961, 2011; Annex 8: 310–323. <https://www.who.int/docs/default-source/medicines/norms-and-standards/guidelines/distribution/trs961-annex8-fipwhoguidelinesgoodpharmacypractice.pdf>

- World Health Organization. (2016). Medicines shortages: Global approaches to addressing shortages of essential medicines in health systems. (*WHO Drug Information* Vol. 30, No. 2, 2016) (6 pages).
https://www.who.int/medicines/publications/druginformation/WHO_DI_30-2_Medicines.pdf?ua=1
- Yang, Y., Lin, J., Liu, G., & Zhou, L. (2021). The behavioural causes of bullwhip effect in supply chains: A systematic literature review. *International Journal of Production Economics*, 236, 1–18. <https://doi.org/10.1016/j.ijpe.2021.108120>
- Yarimoglu, E. K. (2015). A review of service and e-service quality measurements: Previous literature and extension. *Journal of Economic & Social Studies (JECOSS)*, 5(1), 169–200. <https://doi.org/10.14706/JECOSS115110>
- Yaroson, E. V., Quinn, G., & Breen, L. (2024). Medicines shortages reporting systems (MSRS): An exploratory review of access and sustainability. *Research in Social and Administrative Pharmacy*, 20(6), 72–83.
<https://doi.org/10.1016/j.sapharm.2024.02.010>
- Yee, C. J., & Salleh, M. I. (2022). “How” and “What” service quality influence passenger’s satisfaction in Grab, Ride-hailing service, Malaysia. *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, 7(5), 1–21.
<https://doi.org/10.47405/mjssh.v7i5.1482>
- Yeong, M. L., Ismail, R., Ismail, N. H., & Hamzah, M. I. (2018). Interview protocol refinement: Fine-tuning qualitative research interview questions for multi-racial

populations in Malaysia. *The Qualitative Report*, 23(11), 2700–2713.

<https://doi.org/10.46743/2160-3715/2018.3412>

Zaguri-Vittenberg, S., Weintraub, N., & Tal-Saban, M. (2024). “It feels as though I need to exert more effort than others”: the experience of daily participation of young adults with developmental coordination disorder (DCD)—a qualitative study. *Disability and Rehabilitation*, 46(15), 3332–3341.

<https://doi.org/10.1080/09638288.2023.2246376>

Zhang, T., & Okazawa, R. (2023). Managing neutrality, rapport, and antiracism in qualitative interviews. *Qualitative research*, 23(6), 1689–1713.

<https://doi.org/10.1177/14687941221110183>

Zhou, K., & Yao, Z. (2023). Analysis of customer satisfaction in tourism services based on the Kano model. *Systems*, 11(7), 1–20.

<https://doi.org/10.3390/systems11070345>

Žic, J., Žic, S., Đukić, G., & Dabić-Miletić, S. (2024). Exploring green inventory management through periodic review inventory systems—a comprehensive literature review and directions for future research. *Sustainability*, 16(13), 1–17.

<https://doi.org/10.3390/su16135544>

Zuma, S. M. (2022). Assessment of medicine stock-outs challenges in public health services. *Africa's Public Service Delivery & Performance Review*, 10(1), 1–6.

<https://doi.org/10.4102/apsdpr.v10i1.578>

Appendix A: Invitation/Consent Form

(edits not permitted)

CONSENT FORM

You are invited to take part in a research study about Pharmacy Service Quality Strategies for Fulfilling Prescription-Only Medicines (POMs) Shortages. The location of this study is Lusaka, Zambia. I am inviting potential participants who have a minimum of 3 years' work experience in utilizing successful Pharmacy Service Quality Strategies for Fulfilling Prescription-Only Medicines Shortages. Please note that only adults above 18 years old are eligible. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part.

This study is being conducted by a researcher named Martin Mulomba, who is a doctoral student at Walden University.

Background Information:

The purpose of this study is to explore the Pharmacy Service Quality Strategies for Fulfilling Prescription-Only Medicines Shortages that some pharmacists use for POMs patients care.

Procedures:

This study involves the following steps:

- I will schedule the interview with you at a mutually convenient place and agreed upon time and date. If you prefer, interviews can also be completed via Skype or Zoom.
- I will ask you during the interview to wear a face mask and hands sanitized and maintain a social distance of 1 meter as prevention against Covid-19.
- If you have no face mark, I will have a face mask available.
- The interview will last 30-60 minutes.
- I will audio-record the interviews.
- I will transcribe the recorded data verbatim.
- I will email the transcript to you to verify the content and then I will ask you for a follow-up meeting to discuss any revisions or updates you might have.
- To avoid any disturbances during the interviews, I will ask you to switch off the phone or put in flight mode.
- If you decide to participate, please respond to the consent form within 2 days of receiving it. If I don't receive a response after 2 days, I will send you a reminder email. I will assume that you decided not to participate after the 4 days have elapsed.

Here are some sample questions:

- How do you ensure that POMs for your patients are readily available when needed?
- How do you assess the effectiveness of your strategies for fulfilling POMs shortages to achieve the desired outcomes?
- What economic benefits do you provide your patients with POMs for them to patronize your pharmacy?

Voluntary Nature of the Study:

Research should only be done with those who freely volunteer. So, everyone involved will respect your decision to join or not. You will be treated the same at Walden University whether or not you join the study. If you decide to join the study now, you can still change your mind later. You may stop at any time. I am seeking 5 to 8 participants.

Risks and Benefits of Being in the Study:

Being in this study could involve some risk of minor discomforts that can be encountered in daily life, such as nervousness and anxiety which may cause mild distress. With the protections in place, this study would pose minimal risk to your wellbeing.

This study offers no direct benefits to individual volunteers. The aim of this study is to benefit society.

The economic benefits of this study include:

(a) Pharmacists could utilize the study outcomes to improve POMs supply to patients within the Lusaka community.

(b) Positive impact of POMs patients' health care as pharmacists' service quality for addressing POMs supply shortages improved.

The social change benefits include:

(a) This study's outcomes could contribute to positive social change by assisting pharmacists in advancing successful POMs shortages strategies required for POMs patients' care.

(b) Pharmacists' service quality for addressing POMs supply shortages could positively affect POMs patient's health care outcomes and lead to increased economic productivity.

(c) Pharmacists could use this study's outcomes to improve POMs supply to patients within the Lusaka community.

Payment:

There will be no payments of any kind to participants in this study.

I will reimburse your travel expenses to and from the interview venue.

Privacy:

The researcher is required to protect your privacy. The researcher is only allowed to share your identity or contact info as needed with Walden University supervisors (who are also required to protect your privacy) or with authorities if court-ordered (very rare). Your identity will be kept confidential, within the limits of the law. I will not use your personal information for any purposes outside of this research project. Also, I will not include your name or anything else that could identify you in the study reports. If I were to share this dataset with another researcher in the future, I will remove all names and identifying details before sharing; this would not involve another round of obtaining informed consent. Data will be kept secure on a password-protected flash drive and secured in a lockable safe. Data will be kept for a period of at least 5 years, as required by the university.

Contacts and Questions:

You can ask questions of the researcher by phone (+260977889325) or via email martin.mulomba7@waldenu.edu. If you want to talk privately about your rights as a participant or any negative parts of the study, you can call Walden University's Research

Participant Advocate at 001-612-312-1210. Walden University's approval number for this study is 08-06-21-0369074 and it expires on August 5, 2022.

You might wish to retain this consent form for your records. You may ask the researcher or Walden University for a copy at any time using the contact info above.

Obtaining Your Consent

If you understand the study and wish to volunteer, I will ask you to consent with a response via email with the words "I Consent."

Appendix B: Interview Protocol and Questions

Introduction

My name is Martin Mulomba. I would like to welcome and thank you for accepting the invitation for this face-to-face interview. This interview will likely take between 30-60 minutes. I would once again reiterate that the discussions are private and confidential and that your rights will be respected. The topic and interview questions for our discussion hinge on the service quality strategies for the fulfillment of Prescription-Only Medicines (POMs) shortages needed for service quality. During this interview I will keep my phone on silent as not to disturb the conversation.

I had earlier emailed you the consent form for you to read and understand your rights concerning this study, here are the two copies of which you may kindly sign and can keep one for your record.

If you agree I will record this interview: _____Yes _____No

Interview Questions

1. How do you ensure that POMs for your patients are readily available when needed?
2. How do you assess the effectiveness of your strategies for fulfilling POMs shortages to achieve the desired outcomes?
3. What economic benefits do you provide your patients with POMs for them to patronize your pharmacy?
4. What facilities do you offer patients with POMs as they wait for medicine dispensing?
5. How do you retain POMs patients as customers when there are POMs inventory shortages?
6. What factors do you consider, other than volume alone, about which POMs you should manage with more safety stock?
7. How do you store POMs to prevent potency reduction and dating expiry?

8. What attributes are important when selecting POMs suppliers?
9. What supply chain information do you need to help you proactively prevent POMs shortages?
10. What other information is essential regarding the strategies for fulfilling POMs shortages for POMs patients' service quality?

Once again, I thank you for the interview and answering all the questions. I would like to schedule another follow up meeting after I have interpreted your responses which will be less than 20 minutes.