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Investigating the impact of Customer Behavior and Perceptions on adoption of community Pharmacy Services in Islamabad, Pakistan: A Case Study of D. Watson Chain Pharmacies

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A B S T R A C T

This study investigated factors influencing customer service adoption at D. Watson Pharmacy in Islamabad. The key factors covering accessibility challenges, trust deficits, and service quality perceptions are examined through structured quantitative surveys. A sample of 120 respondents from urban and peri-urban areas of Islamabad participated in data collection. Surveys incorporated validated Likert-scale and binary items derived from SERVQUAL and Accessibility Theory constructs. The statistical analysis used SPSS software to perform descriptive statistics, chi-square tests, correlation, and regression modeling. The demographic results indicated predominant youth participation, balanced gender representation, and diverse education and income levels. Descriptive findings revealed mixed perceptions of convenience and pricing distributed across all customer segments. Chi-square tests demonstrated no significant association between branch choice, perceived convenience, and pricing perceptions. The results of spearman correlation analysis detected a small yet significant negative relationship between trust and customer satisfaction. In addition ordinal regression results indicated that trust and satisfaction did not significantly predict customer visit frequency outcomes. Finally, multiple linear regression identified perceived pricing as the only significant predictor of visit frequency outcomes. The crosstab analysis revealed consistent customer suggestions for home delivery services and enhanced pharmacist training. No significant group differences appeared in improvement suggestions between high and low satisfaction respondents. The findings suggested that Islamabad's urban infrastructure reduced accessibility disparities, affecting branch selection dynamics empirically. Cultural expectations in Pakistan may explain the observed inverse trust-satisfaction relationship among D. Watson customers. This research recommendation includes transparent pricing strategies, branch expansion, home delivery pilots, and enhanced pharmacist training programs. Digital communication channels and collaborative partnerships with transport providers are also proposed to improve customer access. This study contributed to literature on community pharmacy adoption by contextualising urban customer behavior in Pakistan. The study findings may guide D. Watson management and policymakers in enhancing service accessibility, trust, and overall satisfaction. The methodology followed Saunders' Research Onion framework and a

positivist approach ensuring rigorous quantitative analysis. In this research data reliability was assured through pilot testing and validated measurement scales adapted from established literature. Inferential analysis employed chi-square, Spearman's correlation, ordinal regression, and multiple linear regression techniques in SPSS. Scope limitations included exclusive focus on Islamabad branches, restricting generalisability to other urban or rural contexts. Finally, future research recommendations proposed longitudinal designs, qualitative interviews, geo-spatial mapping, and exploration of digital engagement variables. In summary, this study contributed insights to enhance D. Watson Pharmacy's competitive position and public health. The results also underscored the importance of context-specific adaptations for urban community pharmacies in Pakistan.

Keywords: D. Watson, Pharmacy, Public health, Pakistan.

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INTRODUCTION

D. Watson Pharmacy, a prominent pharmacy chain in Pakistan, provides essential pharmaceutical and healthcare services. It was founded in 1978. Now, it has grown across major urban centers like Islamabad, offering wide-ranging products (D. Watson, 2023). Its inventory includes medicines, medical equipment, cosmetics, and other healthcare essentials, ensuring comprehensive availability (D. Watson, 2023). Despite strong brand reputation, customer engagement is influenced by factors such as accessibility and service quality (Babar and Francis, 2020). With Pakistan's pharmacy market projected at PKR 4.08 billion by 2024 and 5.73% annual growth, consumer understanding remains essential (Statista, 2024). This study examines key determinants of customer adoption, focusing on accessibility, trust, and service quality metrics. The prevalent self-medication practices and informal healthcare reliance underscore necessity for evaluating regulated pharmacy perceptions (Nguyen, *et al*., 2023).

This research addresses prevailing challenges within Pakistan's pharmacy sector, particularly regarding D. Watson's service reach. The geographical accessibility remains limited for peri-urban and rural populations due to scarce pharmacy outlets (Khan, *et al*., 2018). In addition, financial barriers persist as medication affordability significantly challenges numerous low-income demographics across various regions (Ahmed, *et al*., 2020). Other than that, essential medicine availability can remain inconsistent, further complicating treatment access for many patients. Special populations, including the elderly and disabled, often encounter difficulties accessing and utilising pharmacy services (Ahmed, *et al*., 2020). Customer trust fundamentally depends on personalised pharmacist interactions, consultation quality, and transparent pricing strategies (Murtaza, *et al*., 2020). Through analysing these dimensions, this study offers insights for policymakers and pharmacy management to enhance service delivery.

Statement of the Problem

Despite its strong presence, D. Watson Pharmacy faces challenges related to accessibility, trust, and service quality affecting engagement. The peri-urban and rural customers often struggle to reach D. Watson branches. It is due to limited coverage and transportation barriers. Moreover, perceptions of higher pricing compared to local pharmacies may deter cost-conscious consumers from utilizing its services. Customer trust in pharmacy services is influenced by pharmacist expertise, regulatory compliance, and interaction quality. Although D. Watson employs qualified pharmacists, high patient volumes may limit consultation time. It can also reduce perceived service quality. Service quality dimensions such as responsiveness, reliability, and empathy significantly shape customer satisfaction levels. This study explores these issues. It is to identify factors influencing customer perceptions and service adoption at D. Watson Pharmacy. By addressing these concerns, research will offer strategies to improve accessibility, trust, and service quality outcomes.

Background of the Research Problem

D. Watson pharmacy has several branches in Islamabad, accessibility remains a challenge for customers residing outside central areas. Many people in peri-urban and rural locations face obstacles such as transportation difficulties, higher costs, and limited availability of pharmacy services (Khan, *et al*., 2018). Additionally in

chain pharmacies like D. Watson pharmacy pricing is often perceived as higher than that of smaller, local pharmacies, potentially discouraging lower-income consumers (Nguyen, *et al*., 2023).

Customer trust in pharmacy services depends on factors such as pharmacist expertise, regulatory compliance, and service experience (Babar and Francis, 2020). While D. Watson employs trained pharmacists, some customers may feel that pharmacist consultations lack personalized attention due to high patient volumes and limited consultation time (Murtaza, *et al*., 2020). The SERVQUAL model (Zeithaml, Berry & Parasuraman, 1990) identifies five critical service dimensions: reliability, assurance, tangibles, empathy, and responsiveness. Although D. Watson excels in product availability and brand reputation, improvements in customer engagement and personalized consultations could enhance its competitive position (Parasuraman, *et al*., 1988). This study aims to analyze these challenges and provide recommendations to improve customer experiences at D. Watson Pharmacy.

Aim

The aim of this research is to examine customer perceptions and behaviors toward D. Watson Pharmacy, identifying key factors that influence service adoption. The study will propose actionable recommendations to improve accessibility, trust, and service quality, ultimately enhancing pharmaceutical service delivery in Pakistan.

Research Questions

What are the primary factors influencing customer adoption of D. Watson Pharmacy services in Islamabad?

How do perceptions of accessibility, trust, and service quality impact consumer engagement with D. Watson Pharmacy?

Research Objectives

To evaluate how accessibility factors (geographical location, pricing, and infrastructure) affect customer preferences at D. Watson

To assess the impact of trust in pharmacists and service quality on customers' willingness to use D. Watson Pharmacy services

To investigate customer satisfaction levels and expectations regarding D. Watson Pharmacy, identifying areas for service enhancement and improvement.

Deliverables

A research report analyzing customer perceptions of D. Watson Pharmacy services.

Practical recommendations for D. Watson management to enhance service accessibility and quality.

Research Methodology

The study aims to examine customer perceptions toward D. Watson Pharmacy located in Islamabad, Pakistan. It focuses on service accessibility, trust, and quality factors. The methodological investigation uses a quantitative research design.

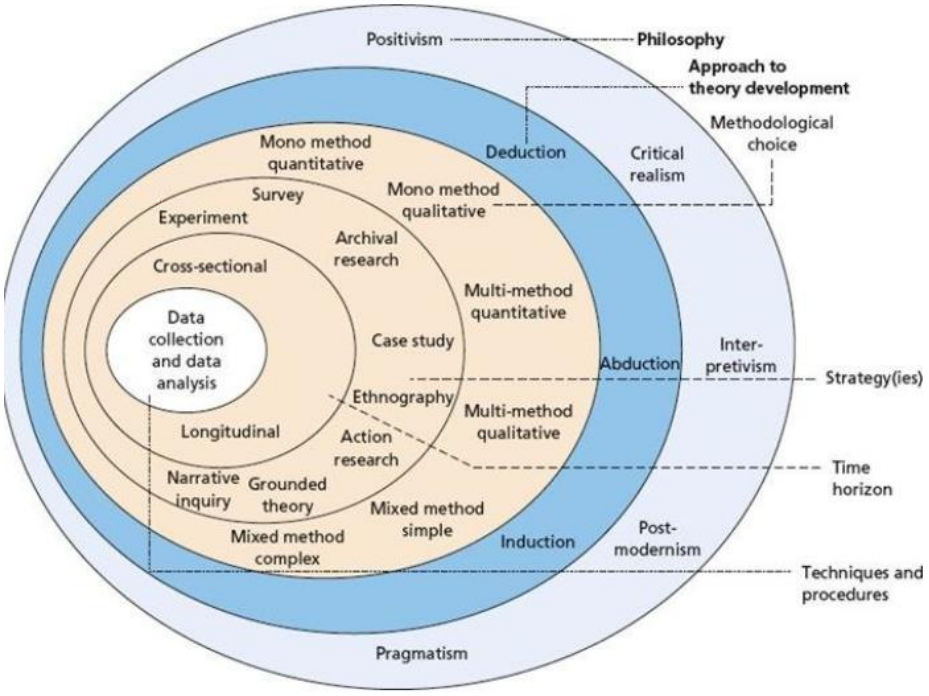


Figure 1: Research Onion for Understanding methodology (Mbedzi, et al., 2020).

Research Philosophy

The research adopts a *positivist philosophy* as it emphasizes objectivity in measuring perceptions (Ali, 2024). It uses structured surveys to gather numerical data. Such design decision separates measurable facts from subjective opinion. The research uses *deductive reasoning* to test established theories. Also, the investigation adheres to scientific principles in data collection. This study validates measurement scales before use using survey items that are based on the SERVQUAL model.

Research Approach/Strategy

This study targets respondents from various branches of D. Watson Pharmacy. This approach is selected as it minimizes sampling bias and maximizes representativeness. Also, the research strategy focuses on collecting precise data.Such strategy is developed using principles from the Research Onion framework (Melnikovas, 2018). The chosen approach emphasizes clarity and simplicity in question design. Also, the study design supports the testing of specific research factors framed in the questionnaire. This research employs regression analysis to identify key predictors to facilitate a clear linkage between theory and data. The adopted strategy is refined through a pilot study. This research approach ensures that all instruments are valid and the strategy ensures that conclusions are statistically supported.

Research Design

The research design is structured to ensure systematic inquiry as it uses a *cross-sectional* study design (Maier, *et al.,* 2023). This study collects data during a *fixed period* as its design is planned to capture real-time customer feedback. The study design emphasises practical application as it is built on the quantitative method. The investigation for this study uses a structured survey to measure perceptions. Such design incorporates validated measurement scales. The research collects data that can be subjected to statistical testing as its design supports both descriptive and inferential analysis.

This study uses SPSS software for data analysis as the adopted design adopts simple yet robust techniques (Pallant, 2020). It employs regression models to test relationships and the design ensures that the research questions are directly addressed. This research is aligned with the *positivist philosophy* as discussed before. This design selection supports an objective inquiry into service adoption factors. Such structure is supported by the Research Onion framework. This study outlines clear phases of data collection and analysis. The research design also minimizes potential errors through careful planning. Also, the research design is thoroughly grounded in theory. This kind of design is selected for its analytical precision. The method yields objective insights into customer behavior.

Data Collection Methods

The data collection in this study uses *structured questionnaires* and it collects primary data from D. Watson Pharmacy customers (Mazhar, *et al.,* 2021). This survey is administered face-to-face at branch locations and data are collected from participants in diverse socio-economic groups. The process begins with a brief demographic section. Also, the questionnaire captures age, gender, income, and education related data. The survey design includes items on accessibility factors as these items measure geographical location convenience and infrastructure quality. The questionnaire designed for the study assesses pricing perceptions. This survey includes questions on trust in pharmacists and it captures perceptions of brand reliability and regulatory compliance. Survey questionnaire in this study uses the SERVQUAL model to measure service quality. Such survey collects data on multiple dimensions of service. The instrument uses a 5-point Likert scale to standardize responses. This design ensures ease of understanding for all participants.

This study collects data in multiple locations across Islamabad Such collection method ensures that responses are recorded promptly. Also, the data is digitally recorded to reduce errors (Sorra, *et al.,* 2022). This type of method emphasizes consistency in administration. The structured approach facilitates uniformity in responses and the survey design allows the conversion of subjective perceptions into quantifiable variables. The instrument is developed with careful attention to language and structure. The data collection process is monitored continuously. The research method emphasizes integrity and precision. Such approach ensures high participation rates and quality data.

Data Analysis Methods

The data analysis is done using SPSS software (Bala, 2016). This study employs descriptive statistics functions in SPSS to summarize the data. The analysis starts by computing means and frequencies. In addition, this design uses regression analysis to test influence of different factors. This method identifies key predictors of service adoption. This study also examines the relationships among accessibility, trust, and quality. The data to be analysed is coded and prepared for analysis. The analysis process includes data cleaning and validation. It is done to ensure that the dataset is complete and accurate. The descriptive statistics provide an overview of customer profiles. In addition, the analysis uses inferential techniques to interpret relationships. This study calculates correlation coefficients between variables

as well. The method used is multiple regressions to assess the impact of trust. Such analysis tests whether accessibility influences service utilization. This research also uses statistical significance levels to confirm findings. This method includes checks for multi-collinearity (Shrestha, 2020). This type of analysis is performed in stages to ensure accuracy. This study interprets the results with reference to theoretical models.

Ethics Acknowledgement

This study follows strict ethical guidelines as per institutions research directives. It obtains informed consent from all participants prior to data collection. It also ensures voluntary participation at all stages (Xu, *et al.,* 2020). Such process respects participant confidentiality and privacy by using tools like consent form (Appendix 1). The design step secures ethical approval from an institutional review board. The research communicates study objectives clearly to participants before data collection. The method also includes encrypting all personal data. This study uses secure data storage methods to limit access to sensitive information (Gupta, 2022). The ethical framework used in this study is integrated into every phase. It adheres to all applicable ethical standards. Such approach reinforces the integrity of the research. The ethical process is monitored continuously. Research approach also ensures that participants can withdraw freely. The ethical considerations act as the guide to all methodological choices.

Findings and Analysis

This chapter of the study is about explaining all the findings and results established using the data from survey collection instrument. This data is first cleaned and checked for any errors or issues before proceeding with the SPSS tool usage for analysis. Then the data is processed using multiple techniques available SPSS software. The discussion of results shared below in this chapter is to proper reflect upon this study conclusion in the final chapter. It is also to find certain limitations that has been overlooked or carried forward due to lack of time and resources. These limitations are then used to establish proper guidance for the future researchers.

Descriptive Statistics

The demographic profile of the sample reveals predominant youth representation. It can be seen with the results being 44.2% aged between eighteen and twenty-four years (Figure 2). Thirty percent of respondents belonged to the twenty-five to thirty-four and thirty-five to forty-four age brackets combined. This indicated broad adult engagement. Only a minority, representing 2.5%, were aged fifty-five years or above. This suggested limited senior participation.

Q-1. What is your age?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-24	53	44.2	44.2	44.2
	25-34	33	27.5	27.5	71.7
	35-44	21	17.5	17.5	89.2
	45-54	10	8.3	8.3	97.5
	55 and above	3	2.5	2.5	100.0
	Total	120	100.0	100.0	

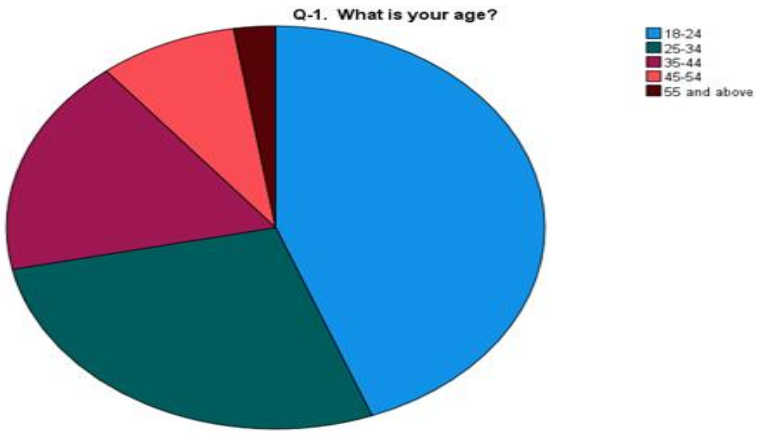
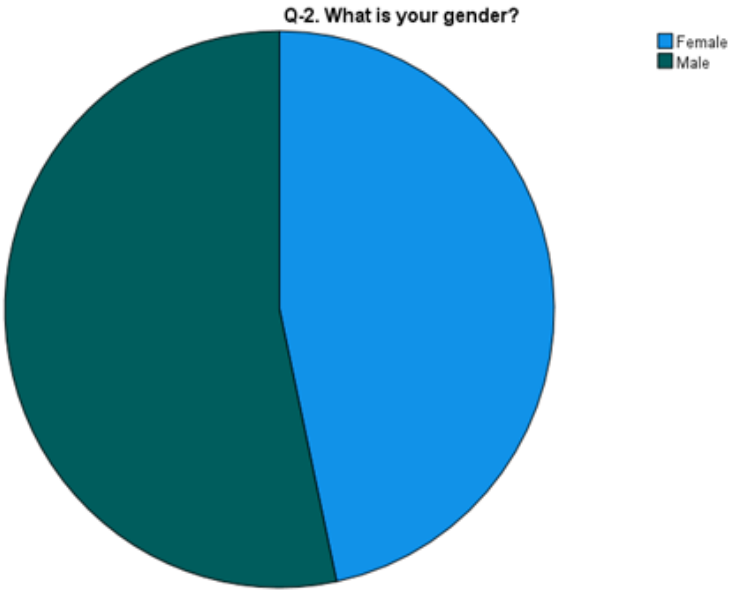


Figure 2: Age frequency and graph.

Q-2. What is your gender?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	56	46.7	46.7	46.7
	Male	64	53.3	53.3	100.0
	Total	120	100.0	100.0	



Q-3. What is your highest level of education?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor's degree	28	23.3	23.3	23.3
	Doctorate or higher	27	22.5	22.5	45.8
	High School diploma	23	19.2	19.2	65.0
	Less than high school	19	15.8	15.8	80.8
	Master's degree	23	19.2	19.2	100.0
	Total	120	100.0	100.0	

Gender distribution was relatively balanced, with 53.3% identifying as male and 46.7% as female. Educational attainments among participants appeared varied. The bachelor's degree holders comprised around 23.3% and doctorate degree holders almost equaling that proportion at 22.5% (Figure 3). High school diploma and master's degree recipients each accounted for 19.2% of respondents.

A smaller segment, 15.8%, reported educational levels below high school diploma.

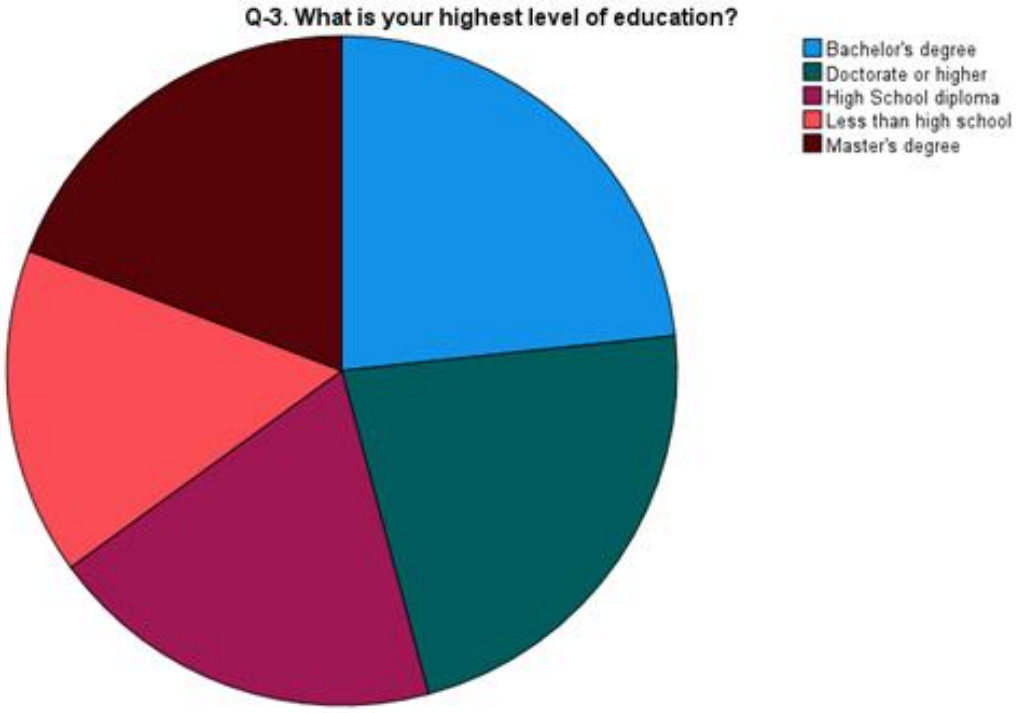


Figure 3: Gender and Education distribution.

The findings on income-related question revealed that majority of respondents (37.5%) have a monthly household income between PKR 50,001 and 80,000. This is followed by 19.2% earning between PKR 30,000 and 50,000. Also around 18.3% shared their earning between PKR 80,001 and 120,000 (Figure 4). It is also noted that 15.8% of participants in the report earned less than PKR 30,000. Only 9.2% earned above PKR120,000. Such findings indicate that a significant portion of the population falls within the middle-income bracket. Fewer individuals at the lower and higher ends of income spectrum are observed. This distribution is also an important indicator of moderate to lower purchasing power of population for pharmacy services.

Q-4. What is your approximate monthly household income?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Above PKR 120,000	11	9.2	9.2	9.2
	Less than PKR 30,000	19	15.8	15.8	25.0
	PKR 30,000 - 50,000	23	19.2	19.2	44.2
	PKR 50,001 - 80,000	45	37.5	37.5	81.7
	PKR 80,001 - 120,000	22	18.3	18.3	100.0
	Total	120	100.0	100.0	

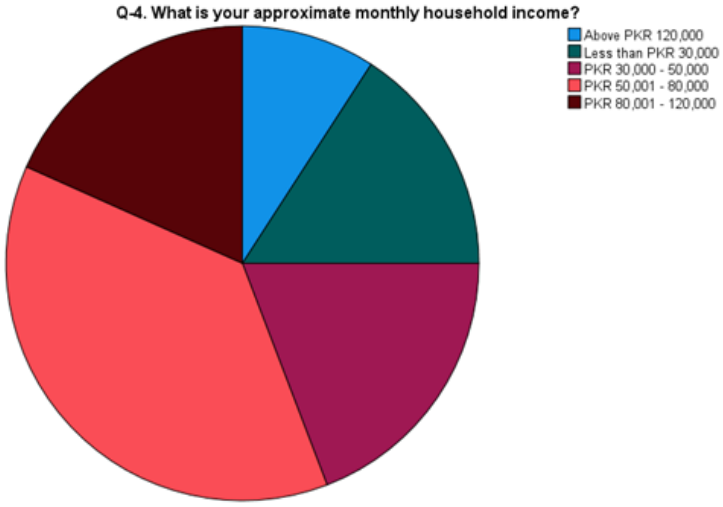
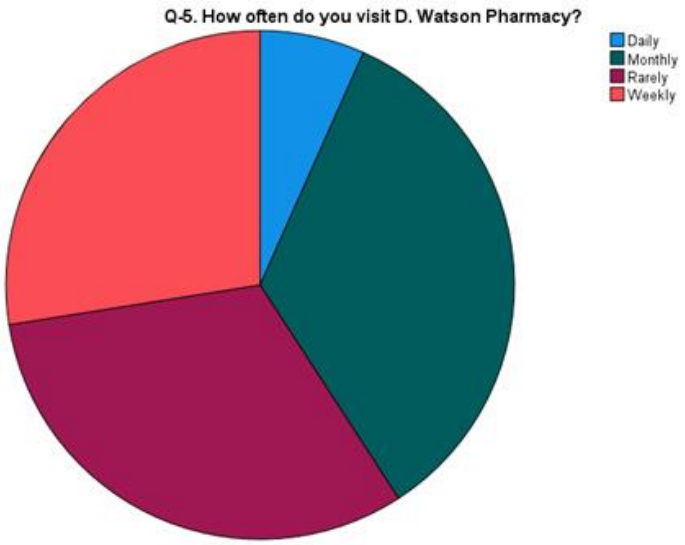


Figure 4: Income distribution.

Q-5. How often do you visit D. Watson Pharmacy?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	8	6.7	6.7	6.7
	Monthly	41	34.2	34.2	40.8
	Rarely	38	31.7	31.7	72.5
	Weekly	33	27.5	27.5	100.0
	Total	120	100.0	100.0	



The frequency of pharmacy visits varied considerably with 34.2% of customers reporting monthly patronage of D. Watson Pharmacy. Weekly visits were indicated by 27.5% of respondents. This reflected regular consumer engagement. Thirty-one point seven percent described their patronage as rare. This suggested occasional usage patterns. Only 6.7% of respondents visited on a daily basis sharing limited daily pharmacy dependency. Branch preference analysis showed Blue Area and G-8 Markaz branches each attracting 25.0% of respondents. F-11 Markaz branch followed closely with 21.7% of customer visits. The I-8 Markaz branch accounted for 15.8%, while other branches together comprised 12.5% (Figure 5).

The respondents identified multiple factors influencing their pharmacy choice. This reflected complex decision-making processes. Brand reputation emerged in combination with other factors in 21.7% of cases. It is an indication of reputational significance. Location convenience alone influenced 8.3% of respondents, while service quality independently guided 6.7%. Pharmacist expertise and price each independently influenced 5.0% of customers. This highlighted professional trust and cost considerations. A combination of service quality and price appeared in 5.0% of selections. This showed dual-factor influence. Complex three-factor combinations including brand reputation, price, and service quality, appeared in smaller proportions across multiple response categories. These multi-faceted influences underscore the need for holistic service strategies.

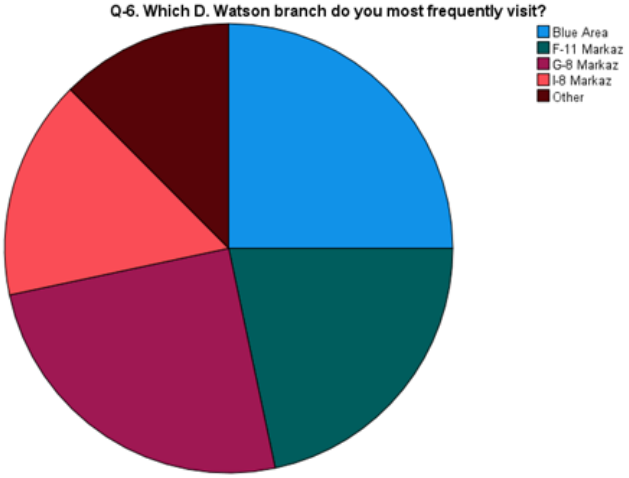


Figure 5: Visiting frequency and Branch preferences.

The convenience of branch location received mixed perceptions across respondents, with 25.0% rating convenience at the highest level. Twenty-four point two percent provided the second-highest rating. This reflected positive accessibility impressions. Eighteen point three percent rated location convenience at the mid-level (Figure 6). Such result suggested moderate ease of access. Smaller proportions, approximately 32.5% combined, rated location convenience at lower levels of one and two. These ratings indicated that while a quarter of customers find branches highly accessible, a notable segment experiences location-related challenges. Such insights emphasise the strategic importance of branch placement and accessibility improvements.

Q-8. How convenient is the location of your preferred D. Watson branch for you?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	19	15.8	15.8	15.8
	2	20	16.7	16.7	32.5
	3	22	18.3	18.3	50.8
	4	29	24.2	24.2	75.0
	5	30	25.0	25.0	100.0
	Total	120	100.0	100.0	

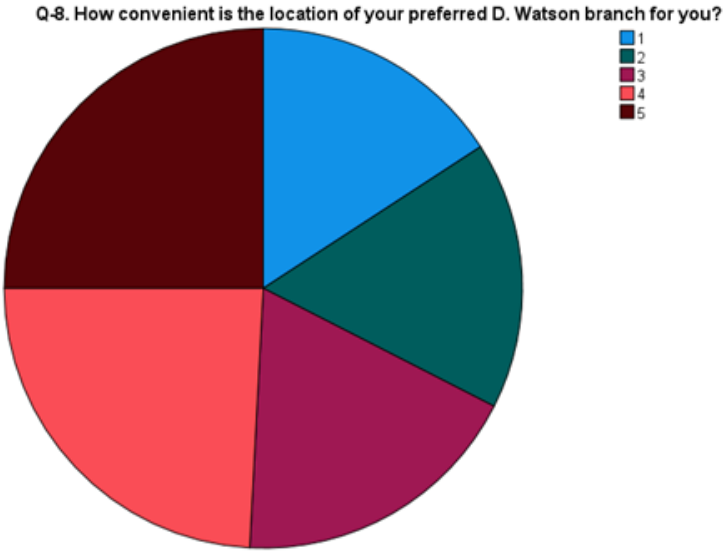


Figure 6: Location of preferred branch.

The perceptions of pricing at D. Watson Pharmacy relative to smaller local competitors were balanced across the rating spectrum. Twenty-nine point two percent of respondents chose the mid-level rating of three (Figure 7). This indicated neutral pricing perceptions. Favorable pricing perceptions, represented by ratings four and five, collectively constituted 37.5% of responses. Unfavorable perceptions, indicated by ratings one and two, comprised 33.3% of responses. These findings suggest that pricing strategies impact customer perceptions nearly equally in positive and negative directions. This balance shares the need for clear communication of value and promotional initiatives.

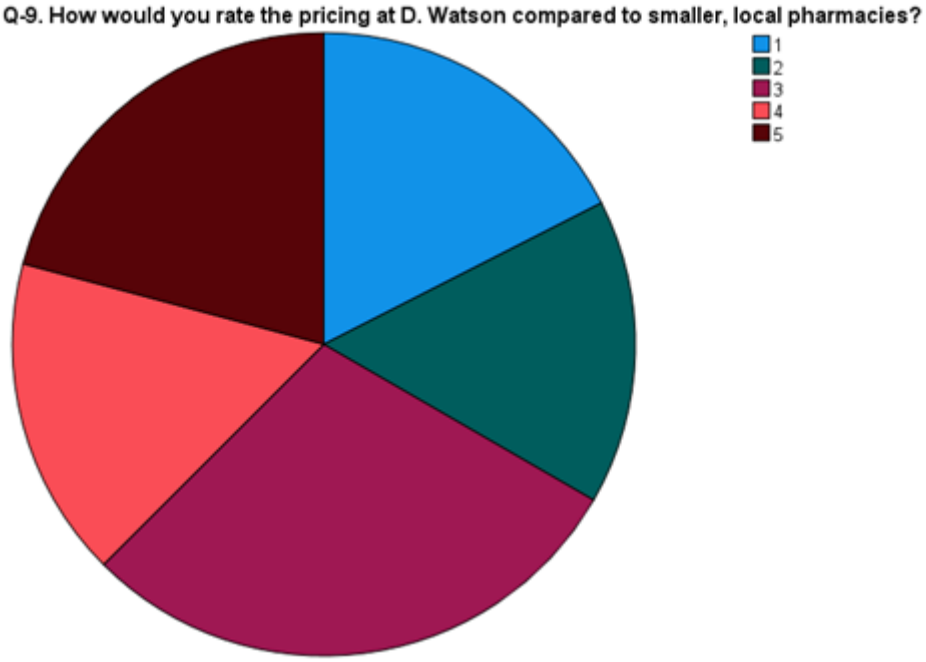
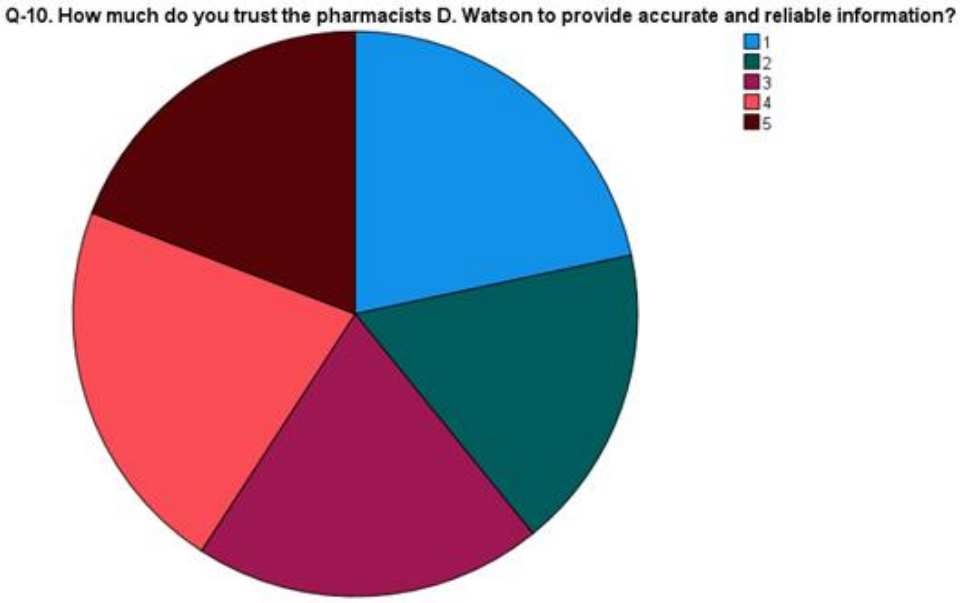


Figure 7: Pricing of D. Watson.

Q-10. How much do you trust the pharmacists D. Watson to provide accurate and reliable information?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	26	21.7	21.7	21.7
	2	21	17.5	17.5	39.2
	3	24	20.0	20.0	59.2
	4	26	21.7	21.7	80.8
	5	23	19.2	19.2	100.0
	Total	120	100.0	100.0	



Q-11. How satisfied are you with the overall service quality of D. Watson Pharmacy?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	26	21.7	21.7	21.7
	2	17	14.2	14.2	35.8
	3	22	18.3	18.3	54.2
	4	28	23.3	23.3	77.5
	5	27	22.5	22.5	100.0
	Total	120	100.0	100.0	

The trust factor in pharmacists at D. Watson Pharmacy demonstrated moderate to strong confidence levels among customers. Ratings of four and five combined accounted for 40.9% of respondents expressing high trust. Mid-level trust, represented by rating three, was selected by 20.0% of participants. Lower trust levels, indicated by ratings one and

two, comprised 39.2% of responses (Figure 8). Similarly, satisfaction with overall service quality showed 45.8% of respondents. This expressed high satisfaction through ratings four and five. Mid-level satisfaction was indicated by 18.3%. On the other hand, 35.9% expressed lower satisfaction levels. These findings highlight opportunities to enhance both trust and service satisfaction among a substantial customer segment.

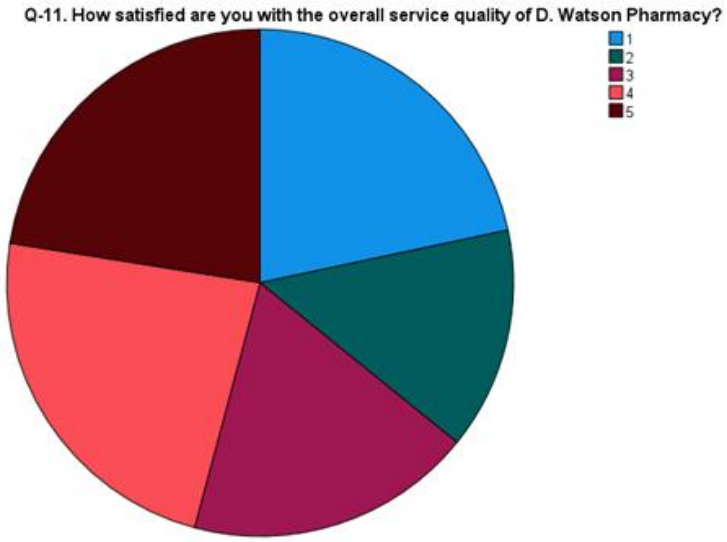


Figure 8: Trust and Satisfaction of service quality.

The transportation modes utilised by respondents to reach D. Watson Pharmacy varied. This variation reflected the diverse accessibility contexts. Personal vehicles accounted for 21.7% of primary transport modes, while rickshaws represented 20.8%. Walking and public transport (bus/metro) each accounted for 19.2% of responses (Figure 9). Other modes, such as ride-hailing or cycling, comprised 19.2% of transport modalities. These findings illustrate that a majority of customers rely on motorized transport. Yet, significant pedestrian access persists. Additionally, 55.0% of respondents reported refraining from visits due to transportation or accessibility challenges. This high proportion underscores the critical role of transport infrastructure in service adoption.

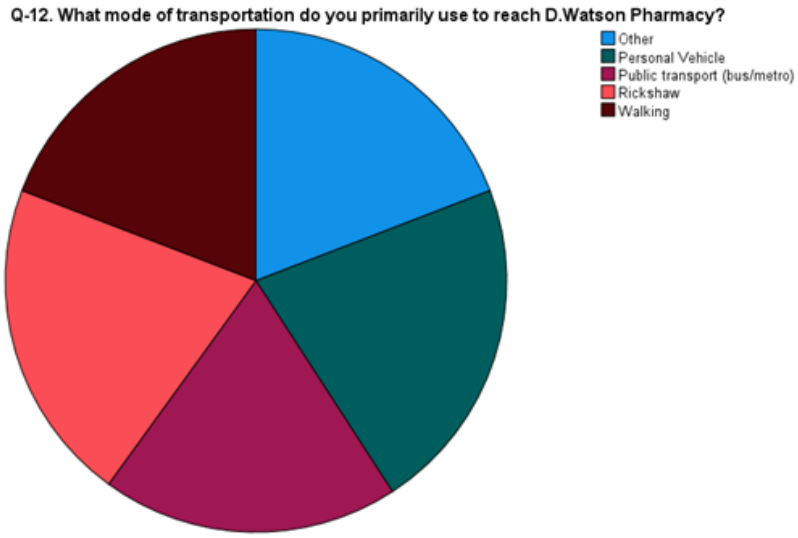


Figure 9: Transportation model preference.

Q-14. Please describe any challenges you face when accessing D. Watson Pharmacy services?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High pricing	22	18.3	18.3	18.3
	Limited branch coverage	32	26.7	26.7	45.0
	Long waiting times	20	16.7	16.7	61.7
	Poor staff courtesy	19	15.8	15.8	77.5
	Transportation difficulties	27	22.5	22.5	100.0
	Total	120	100.0	100.0	

The analysis of reported access challenges highlights critical service delivery barriers. Limited branch coverage was cited by 26.7% of respondents. This showed geographic service gaps. Transportation difficulties were identified by 22.5% further re-inforcing earlier findings of mobility constraints (Figure 10). High pricing emerged as a challenge for 18.3% of customers, reflecting cost barriers. Long waiting times and poor staff courtesy were reported by 16.7% and 15.8% respectively. This indicated operational and interpersonal service challenges. Respondents proposed several actionable improvements to address these issues. Home delivery services were the most recommended suggestion as they received 28.3% support. Enhanced pharmacist training and longer consultation times gained 20.0% and 19.2% of suggestions respectively. Expansion of branch locations and promotional pricing also featured prominently among customer recommendations.

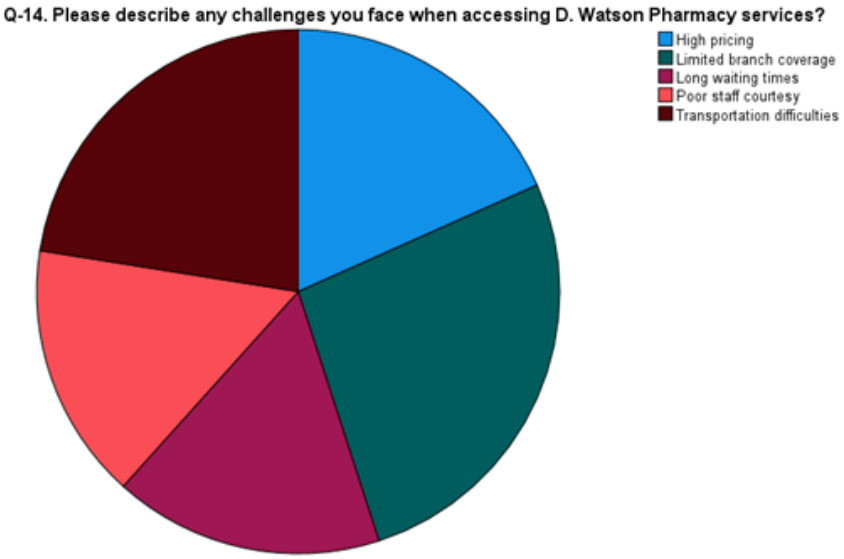


Figure 10: Challenges in accessing pharmacy services.

The descriptive statistics for convenience, pricing, trust, and satisfaction provide initial insights into measurement distributions. Mean values ranged from 2.99 for trust to 3.26 for convenience. This indicated moderate customer perceptions overall. Pricing mean of 3.07 and satisfaction mean of 3.11 similarly reflected neutral customer assessments. The standard deviations between 1.367 and 1.466 demonstrated substantial variation in participant responses across variables.

To evaluate how accessibility factors (Geographical location, pricing, and, infrastructure) affect customer preferences at D. Watson Pharmacy

The chi-square analysis examined the association between branch choice and perceived location convenience

categories among respondents. A Pearson chi-square value of 22.093 with sixteen degrees of freedom indicated no statistically significant relationship. Significance p-value of .140 exceeded the .05 threshold suggested random variation in convenience perceptions.

The association between branch preference and perceived pricing at D. Watson was similarly assessed through chi-square testing. Pearson chi-square statistic of 6.388 with sixteen degrees of freedom indicated no significant pricing association. Observed p-value of .983 exceeded the customary significance level. This confirmed independence between branch choice and pricing perceptions. A lower expected count persisted across more than half the contingency cells. This limited interpretive robustness.

To assess the impact of trust in pharmacists and service quality on customer's willingness to use D. Watson Pharmacy services (operationalised as visit frequency)

The Spearman's correlation assessed the monotonic relationship between trust and satisfaction variables in our dataset. Correlation coefficient of –0.180 indicated a small negative association significant at the .05 level (p =.049). This negative result suggests that higher trust ratings were associated with marginally lower satisfaction scores. Despite statistical significance the effect size remained minimal.

In next step, Ordinal regression evaluated how trust, satisfaction, and branch location predict visit frequency outcomes in customers. A goodness-of-fit tests yielded generally non-significant Pearson and deviance chi-square values. This indicated acceptable model fit. Pseudo R-squared values were low (Cox and Snell .041, Nagelkerke .045, McFadden .017) as well (Appendix 2). This reflected limited explanatory power to some extent. Model chi-square change of 5.040 with six degrees of freedom was non-significant at p=.539.

The threshold parameters indicate the logit cut-points distinguishing visit frequency categories in the ordinal model. Daily threshold at –2.910 was significant, while other threshold parameter estimates were non-significant. Significant Daily threshold suggests that lower logits correspond to the least frequent visit category. These threshold insights helped contextualise how trust and satisfaction locate customers along the model-based frequency continua.

The trust parameter estimated to be around 0.108. In addition, it had non-significant Wald statistic (Appendix 2). This indicated trust did not predict visit frequency significantly. Confidence interval for trust parameter crossed zero. This reflected uncertainty in predictor's directional effect magnitude. Despite moderate mean trust levels, trust did not translate into measurable changes in visitation probabilities. So, future studies may explore potential non-linear effects or moderating variables influencing the trust-visitation nexus.

The satisfaction parameter estimate of –0.137 did not reach statistical significance in the ordinal regression model (Appendix 2). The negative direction of estimate suggests marginal inverse relationship between satisfaction scores and visitation frequency. A wide confidence interval spanning both negative and positive values underscores instability of satisfaction predictor effect. The lower value of explanatory contribution of satisfaction highlights need for alternative service quality measures in future models.

The results of branch dummy variables captured location-specific influences on visit frequency probabilities heterogeneity in the model. None of the branch location coefficients significantly differed from the reference category. This indicated uniform branch effects. Blue Area coefficient estimate of –0.483 was non-significant as well (Appendix 2). This suggested similar visitation patterns across branches. A high zero-frequency cell warnings in model fitting underscored distributional limitations of branch level analysis.

The descriptive and inferential findings collectively indicated limited predictive power of convenience, pricing, trust, and satisfaction factors. Non-significant chi-square associations and low pseudo R-squared values emphasises model development and improvement necessities. A significant negative Spearman correlation between trust and satisfaction demands further in-depth qualitative contextual exploration. The Ordinal regression thresholds highlighted distinct visit frequency boundaries despite weak statistical predictor contributions. Therefore, advanced modeling strategies and richer predictor sets may strengthen future analyses of pharmacy visit behavior.

Objective one SPSS analysis focused on accessibility factors influencing branch selection through convenience and pricing analysis. Chi-square results did not support hypothesis of significant accessibility factor associations with branch preference. Despite moderate mean scores for convenience and pricing, branch choice appeared empirically independent of these predictors. This finding suggests additional accessibility dimensions beyond proximity and cost warrant investigation in subsequent studies.

The second objective SPSS analysis examined the influence of trust and service quality on customer visit frequency patterns. The results of Spearman correlation yielded a

significant negative relationship to little extent. Ordinal regression also showed lacking outcome to demonstrate significant contributions of trust and satisfaction as predictors of frequency categories. Low pseudo R-squared and non-significant coefficients suggest necessity for alternative model specifications as well for deeper analysis integrating additional covariates. Both descriptive and inferential analyses highlighted both measurement strengths and modeling limitations requiring attention. The integration of geo-spatial analysis, in-depth interviews, and experimental choice tasks could deepen accessibility and trust insights.

To investigate customer satisfaction levels and expectations regarding D. Watson Pharmacy, identifying areas for service enhancement and improvement

The objective third analysis examined relationships between satisfaction levels and customer improvement suggestions voiced by respondents in crosstab analysis. The crosstabs compared satisfaction dichotomy (low: ratings one to three; high: ratings four and five) against suggestion categories. Crosstab outputs in Appendix provide counts and row percentage distributions for each satisfaction group and suggestion option. The suggestion category counts included twenty-four recommendations for enhanced pharmacist training and thirty-four for home delivery services. The Home delivery services emerged most frequently among suggestions with a 28.3% overall selection rate (Figure 11). Lower satisfaction respondents (ratings one and two) voiced home delivery needs at rates above forty percent (Appendix 2). Conversely, highly satisfied customers indicated enhanced pharmacist training suggestions slightly more frequently than dissatisfied respondents. The enhanced pharmacist training ranked second highest among all other suggestions. It appeared in twenty percent of all responses recorded. Longer pharmacist consultations and more branch locations both accounted for roughly nineteen point two percent of suggestions.

The lower pricing promotions were recommended by thirteen point three percent of respondents. This indicated cost sensitivity in feedback. Longer pharmacist consultations constituted significant suggestions among mid-level satisfaction respondents (Appendix). It averaged to be around twenty-seven percent in that group. The recommendations for more branch locations maintained relatively uniform frequencies across all satisfaction categories. This indicated universal need. The lower pricing and promotional strategies appeared less frequently among highly satisfied respondents, at under fifteen percent. The chi-square tests produced a Pearson value of ten point eight five with sixteen degrees of freedom. The associated p-value equaled point eight one nine. This indicated non-significant associations at the 0.05 threshold. Thus suggestion preferences did not differ significantly between customers with low and high service satisfaction. These findings imply that improvement priorities remain consistent regardless of overall perceived service quality ratings.

The final multiple regression model evaluated combined influences of accessibility, pricing, trust, and satisfaction on visit frequency. The visit frequency was operationalised as a numeric scale ranging from one (rarely) to four (daily) for regression. The model summary indicated an R value of point two seven eight and R squared of point zero seven seven. An adjusted R squared equaled .045. This suggested modest explanatory power within the sample data. The ANOVA results yielded an F statistic of 2.413 with p-value 0.053. The regression model approached statistical significance at the conventional 0.05 level (Appendix). This indicated borderline predictive adequacy. Predictor variables collectively explained roughly seven point seven percent of variance in visit frequency. Model residuals approximated normal distribution, meeting linear regression assumption checks without showing major variance aberrations.

Variance inflation factors for each predictor remained below the commonly accepted threshold of five. These diagnostic outcomes confirm minimal risk of predictor multi-collinearity affecting coefficient stability within the fitted regression model. The standardised coefficient analysis highlighted pricing perceptions as the sole significant predictor of visit frequency. The trust perceptions exhibited a negligible standardised beta of .029. This indicated minimal effect on visit frequency. The convenience value showed an even smaller negative association, with a beta of negative 0.034 (Appendix 2). Service satisfaction displayed a small positive beta coefficient of .0104 in the regression. Specifically, the unstandardised price coefficient equaled negative 0.173 with p-value .005. Convenience, trust, and satisfaction coefficients did not achieve statistical significance within this linear regression model. The collinearity diagnostics indicated acceptable tolerance values. This suggested negligible multi-collinearity among predictors in the regression.

These regression results underscore the pivotal role of perceived pricing in shaping customer visit frequency at D. Watson. Both Accessibility convenience and customer trust, while beneficial, lacked strong predictive power in the adoption model. Service satisfaction exhibited a small positive effect. However, it did not reach statistical

confirmation in this analysis. The borderline overall model significance suggests potential incremental improvements with expanded sample sizes or additional predictors in future. So, future studies can consider incorporating behavioral intention items other than visit frequency to refine predictive accuracy estimates. Despite limitations, the model affirms that cost perceptions are important. This will help represent primary leverage for service adoption strategies. Pharmacy management should prioritise pricing promotions and transparent cost communication to enhance customer adoption rates. In addition, persistent service quality improvements and trust-building initiatives may yield incremental benefits over time for customer retention.

The objective three crosstab findings align partially with SERVQUAL model expectations regarding empathy and responsiveness dimensions. Customer suggestions for home delivery services reflect responsiveness deficits identified in earlier studies by Babar and Francis (2020). Enhanced pharmacist training recommendations also support the assurance dimension of SERVQUAL by emphasising expertise improvements. The pricing concerns identified through regression reinforced the importance of tangibles dimension relating to cost transparency. However, the mixed significance patterns for satisfaction and trust indicate potential cultural influences not captured in this model. Therefore, the future studies can include qualitative methods to explore nuanced customer perceptions beyond quantitative service metrics. In addition, Mixed-method approaches may reveal underlying drivers of suggestion preferences across satisfaction and accessibility dimensions. Incorporating demographic covariates into regression models could also clarify sub-group differences in service adoption behaviors.

Q-15. What suggestions do you have to improve accessibility, trust, and, service quality at D. Watson Pharmacy?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Enhanced pharmacist training	24	20.0	20.0	20.0
	Home delivery services	34	28.3	28.3	48.3
	Longer pharmacist consultations	23	19.2	19.2	67.5
	Lower pricing/promotions	16	13.3	13.3	80.8
	More branch locations	23	19.2	19.2	100.0
	Total	120	100.0	100.0	

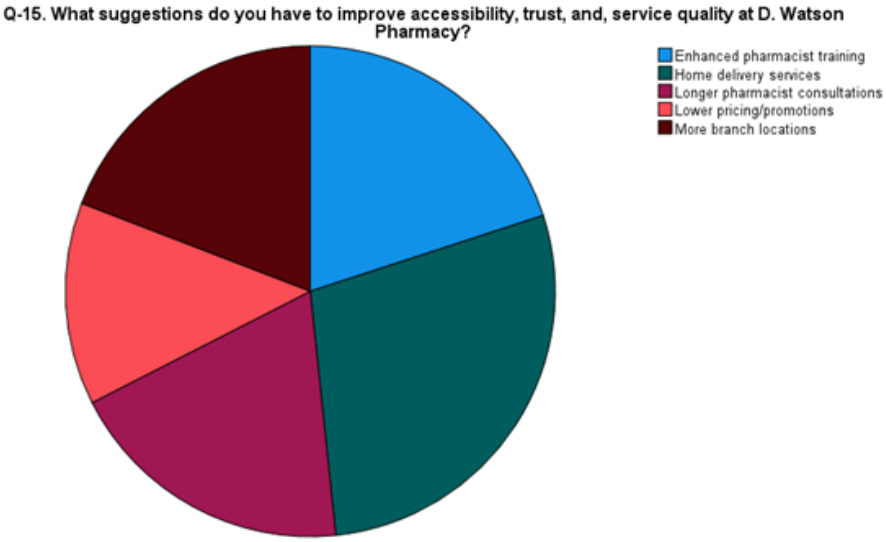


Figure 11: Suggestions on improvements from customers.

DISCUSSION

Accessibility Factors

This study found no significant association between branch choice and perceived convenience (χ^2 = 22.093, p = .140; Section 4.3; Appendix 2) or between branch choice and pricing perceptions (χ^2 = 6.388, p = .983; Appendix 2). Another study also reported no significant association between geographic proximity and community pharmacy utilization in logistic regression models (Hamidi, *et al*., 2021). In addition a UK based urban analysis similarly found that visit frequency did not vary with travel distance among city dwellers (Valliant, *et al*., 2022). However, this outcome contrasted with prior research discussed in second chapter emphasising geo-graphical accessibility as a critical determinant of pharmacy utilization (Penchansky and Thomas, 1981). Khan, *et al*., (2018), highlighted rural access barriers, yet our urban sample did not reflect these proximity effects. The lack of pricing influence on branch preference in our study also diverges from Nguyen, *et al*.'s (2023). Nguyen's finding on cost deterrence among lower-income consumers diverges from current study. However, this study results aligns with provider perception studies reporting cost concerns did not predict pharmacy preference when service quality was uniform (Druică, *et al*., 2021). Together, such comparisons validate the unexpected accessibility outcomes. These differences in the findings may be the result from Islamabad's relatively uniform urban infrastructure reducing spatial disparities. Other than that, some un-measured factors like in-store amenities or digital service options might mediate branch selection more strongly. So, future research should incorporate geo-spatial mapping and qualitative interviews to uncover latent accessibility dimensions. The integration of customer journey mapping could also clarify otherwise un-observed convenience factors. Thus, our results expand the accessibility debate. It did so by questioning presumed proximity and cost trade-offs in urban pharmacy contexts to some extent as well.

Trust and Service Quality

The small negative correlation between trust and satisfaction finds some support in pharmaceutical care research showing trust and satisfaction respond to different determinants. One study demonstrated that while trust in pharmacist information and satisfaction with care correlate, they arise from distinct predictor sets (Druică, *et al*., 2021). However, it was also unexpected in light of established trust–loyalty relationships (Maidment, *et al*., 2021). Whereas the SERVQUAL assurance dimension predicts positive trust–satisfaction associations (Zeithaml, *et al*., 1990), this study data exhibited inverse trends. This difference may reflect Pakistan's cultural dynamics where higher expectations lead to lower satisfaction despite trustful pharmacist interactions (Babar and Francis, 2020). The Ordinal regression's negligible predictive power of trust and satisfaction on visit frequency further shares findings in communication trials. In the enhanced pharmacist interactions improved knowledge without significantly altering visit behaviors (Schackmann, *et al*., 2023). However, these findings also contrasted with Aziz, *et al*., (2018), who reported significant service quality influences on revisit intentions in Punjab pharmacies. Low pseudo R-squared values suggest our model omitted relevant predictors such as personalised consultation time or digital engagement metrics. The incorporating qualitative measures of perceived empathy and responsiveness might strengthen future predictive models. In additoin, longitudinal designs could capture evolving trust dynamics over time.

Satisfaction and Improvement Suggestions

The crosstab analyses showed home delivery and enhanced pharmacist training pre-dominated as improvement suggestions across satisfaction strata. These recommendations align with SERVQUAL's responsiveness and assurance dimensions. These dimensions are also identified in literature as key satisfaction drivers (Abu-Farha , *et al*., 2022; Zeithaml, *et al*., 1990; Babar and Francis, 2020). The home delivery services specifically address mobility constraints documented by Khan, *et al*., (2018), and resonate with digital health opportunities described by Nguyen, *et al*., (2023). This similarly calls for enhanced pharmacist training underscore the importance of staff competency emphasised in Tripathi and Siddiqui's (2018) studies. The uniform suggestion patterns across satisfaction groups suggest that basic service enhancements remain broadly demanded by customers. The chi-square non-significance confirms these priorities transcend satisfaction levels. Consequently, D. Watson's management should implement standardised training programs and pilot home delivery options to address consistent customer needs effectively.

Predictive Influences on Visit Frequency

The multiple regression results highlighted perceived pricing as the sole significant predictor of visit frequency (Section 4.5; Appendix 2). This corroborated Nguyen, *et al*.'s (2023), emphasis on affordability barriers. It also connects with broader literature on affordability's impact on pharmacy utilisation as well (Chandra, *et al*., 2020). Our model's R^2 of 0.077 and borderline ANOVA p-value suggest modest explanatory capacity. This values of R^2

parallels findings in a Malaysian survey where logistic regression models explained limited variance in pharmacy utilisation using demographic and accessibility factors along (Hamidi, *et al*., 2021). Both convenience (β = –0.034, p = .572) and trust (β = 0.029, p = .617) exhibited minimal standardised betas, diverging from SERVQUAL's reliability and assurance expectations (Zeithaml, *et al*., 1990). This divergence may reflect Islamabad's mature pharmacy network reducing access variability and trust disparities. Inclusion of digital engagement variables or intention-specific items could enhance model fit. So, future studies should explore interactive effects among service dimensions using techniques like structural equation modeling.

The study findings both support and challenge existing literature on community pharmacy service adoption in Pakistan. Accessibility factors were less influential than previously suggested by rural studies (Khan, *et al*., 2018). This indicated urban-specific dynamics. Trust and satisfaction effects on visit frequency contradict conventional SERVQUAL relationships (Zeithaml, *et al*., 1990). This implied cultural or contextual moderators. The improvement suggestions aligned strongly with responsiveness and assurance gaps identified by Babar and Francis (2020), reaffirming key service enhancement areas. Pricing emerged as the most pivotal adoption lever. This is consistent with affordability concerns highlighted by Nguyen, *et al*., (2023). Collectively, such comparisons show the complex interplay of traditional and emerging factors shaping pharmacy service adoption. It is particularly for adoption in metropolitan Pakistan contexts.

CONCLUSIONS

The pricing perceptions emerged as the most influential factor shaping customer visit frequency decisions in this study. The accessibility dimensions such as branch proximity and perceived convenience did not significantly influence branch selection among customers. Also, trust in pharmacists exhibited a small negative correlation with satisfaction. This indicated unexpected customer perception dynamics overall. Service quality variables lacked significant direct influence on visit frequency within the applied quantitative framework context. The urban infrastructure in Islamabad likely reduced accessibility disparities. This can explains the non-significant proximity effects empirically found. Cultural expectations may contribute to inverse trust-satisfaction dynamics requiring context-specific service models in Islamabad.

Customer suggestions emphasised home delivery and enhanced pharmacist training as priority improvement areas consistently. The regression outcomes confirmed affordability concerns as a central adoption lever for pharmacy services in Islamabad context. Also, the structural model limitations indicated other un-measured variables likely influenced customer behavior. This influence is beyond measured dimensions here significantly. Non-significant chi-square associations challenged previous accessibility theories seen in urban pharmacy utilisation studies empirically consistently. The research findings diverged from SERVQUAL expectations. It highlighted the need to adjust standard service models for context. This study fulfilled methodological intentions through comprehensive quantitative analyses aligned with research objectives successfully fully. While some inferences were supported in lesser studies, the study delivered valuable, context-specific insights into service adoption.

This research validated that pricing strategies remain the primary mechanism to enhance customer visit frequencies effectively broadly. The inverse trust-satisfaction pattern suggests exploring cultural moderators affecting service perceptions further empirically significantly. The research achieved its aim while exposing model limitations requiring alternative future approaches. The conclusions draw clear connections between research objectives and empirical outcomes for reader understanding. This study contributes to academic literature by contextualising service adoption dynamics within metropolitan Pakistan settings specifically. The management of stakeholder expectations effectively requires acknowledging study limitations. It also needs leveraging findings pragmatically strategically always. The chapter's conclusions will guide D. Watson management to prioritise evidence-based service enhancements moving forward operationally. These findings underscored the importance of context-specific adaptations for pharmacy chains operating in similar metropolitan areas.

RECOMMENDATIONS AND ACTION PLAN

The D. Watson management should develop transparent pricing strategies with detailed cost breakdowns promoted widely. The implementation of periodic promotional discounts for essential medications can address affordability concerns among customers effectively. Piloting home delivery services will remove geographic and transportation barriers for many peri-urban customers. In addition, expanding branch locations to underserved peri-urban areas is crucial for improving service accessibility levels. Some enhanced pharmacist training programs should focus on communication skills and personalised consultation

practices regularly. Extending consultation times can foster stronger patient-pharmacist relationships and build customer trust over time.

The regular customer satisfaction surveys with open-ended questions will capture evolving needs beyond structured measurements. Developing digital communication channels such as SMS reminders and mobile app notifications will increase convenience perceptions. Any collaboration with local ride-sharing providers could alleviate transportation challenges. These challenges are for customers lacking personal vehicles consistently effectively. Price transparency initiatives including itemised cost displays can foster trust and reduce perceived price barriers substantially. Introducing loyalty programs with reward points may encourage repeat visits and long-term customer retention effectively further.

The implementation of tiered pricing promotions during off-peak hours can balance affordability with profitability objectives strategically. Investing in in-store amenities such as dedicated consultation areas could enhance perceived service quality substantially significantly. Periodic staff performance audits will ensure consistency in service delivery and identify training needs proactively effectively. In addition, developing collaborative partnerships with healthcare providers could integrate pharmacy services into broader care networks effectively. Collaborating with local transport authorities to improve public transit routes could enhance patient access significantly effectively. Offering mobile-based appointment scheduling can reduce wait times and improve overall pharmacy operations efficiency considerably strategically.

LIMITATIONS OF THE STUDY

The study's cross-sectional design limited causal inferences regarding customer behaviors over extended periods significantly. Geographic focus exclusively on Islamabad restricts generalizability to other urban or rural Pakistani contexts. The self-reported survey responses may introduce social desirability and recall biases affecting data accuracy substantially. Limited qualitative insights prevented deeper exploration of nuanced customer perceptions and contextual drivers significantly. Smaller sample size and variable selection may have constrained explanatory power of regression and correlation analyses considerably. The study reliance on structured questionnaires might overlook latent factors influencing service adoption and customer loyalty. High patient volumes at branches during data collection could have influenced response quality inadvertently. Some seasonal variations in pharmacy patronage were not accounted for as well. This could potentially mean skewing visit frequency patterns observed significantly.

In addition to above, language barriers among respondents might have affected interpretation of survey items, reducing response validity. The exclusion of intangible digital engagement metrics limits understanding of convenience and adoption patterns fully. Secondary data sources may contain inaccuracies as well as both positive and negatives are possible for all the case descriptions based on varied location of pharmacy services.

FUTURE STUDIES DIRECTIONS

Based on the findings of current study, future research should adopt longitudinal designs to examine evolving trust and satisfaction dynamics over time significantly. The incorporation of qualitative interviews can uncover underlying motivations behind customer improvement suggestions more deeply effectively. The geo-spatial mapping of branch and customer locations should clarify accessibility influences in urban contexts better. Exploration of digital engagement variables like mobile app usage may enhance understanding of convenience and adoption patterns. In addition, inclusion of demographic moderators such as income and education could reveal subgroup differences in adoption behaviors. The utilisation of experimental choice tasks might assess trade-offs customers make between price, convenience, and service quality. Mixed-method approaches can integrate quantitative surveys with focus groups to enrich contextual understanding significantly.

Some comparative studies across multiple pharmacy chains could highlight relative strengths and weaknesses of various service models. The examination of the impact of health literacy on pharmacy perceptions and behaviors may reveal new adoption drivers. Structural equation modeling techniques could test interactive effects among service dimensions more comprehensively effectively. Investigating medication adherence outcomes associated with pharmacy interventions could assess service impact more fully. The exploration of partnerships with telehealth platforms may broaden service offerings. It can also provide integrated care opportunities for customers.

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