

**THE PERCEPTIONS OF PATIENTS VERSUS EMPLOYEES ON SERVICE QUALITY
AT SPECIALTY HOSPITALS: A CASE STUDY OF CITY EYE HOSPITALS NAIROBI
AND NYERI COUNTY, KENYA.**



**A RESEARCH DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE
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UNIVERSITY BUSINESS SCHOOL, NAIROBI, KENYA**

APRIL 2024

DECLARATION

I hereby declare that this document has not been submitted for examination at Strathmore University or any other university previously for the award of a degree. To the best of my knowledge and belief, this dissertation contains no material that has been published previously or written by another person except where due reference is made.

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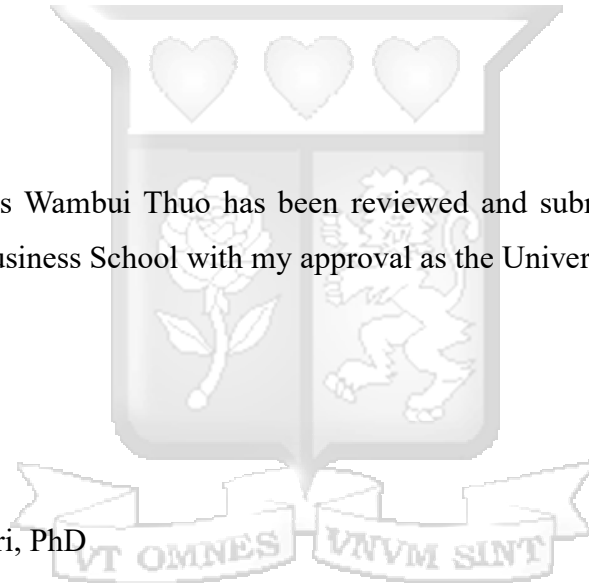
This dissertation by Peris Wambui Thuo has been reviewed and submitted for examination at Strathmore University Business School with my approval as the University Supervisor.

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ABSTRACT

The healthcare industry is highly competitive and hospital management must continuously find new and innovative ways to sustain their competitive advantage. Service quality is a key component of service delivery, which is one of the World Health Organization (WHO) healthcare building blocks. WHO estimates that at least 2.2 billion people worldwide are affected by near and distant vision impairments with eye problems remaining one of the most common yet preventable public health problems in LMICs. However, various studies have shown that even though eye hospitals are specialty hospitals, they are still part of the service industry, and just like other hospitals, patient expectations are continuously changing due to increased competition and technological advancements. Additionally, researchers have emphasized on the importance of incorporating employee perceptions when measuring service quality and reconciling the differences between patients and employees to improve service quality. Perceived service quality is deemed to exist along a continuum between ideal and unacceptable service. Thus, this study sought bridge a knowledge gap by comparing the perceptions of patients versus employees on service quality using the SERVQUAL model at City Eye Hospital. The specific objectives were to determine the perceptions of patients on service quality at CEH, to determine the perceptions of employees on service quality at CEH, and to determine how the similarities and/or differences could be leveraged to improve service quality at CEH. This study was anchored by the personal construct theory by George Kelly and had five independent variables namely: tangibility, reliability, assurance, responsiveness, and empathy and one dependent variable (perceived service quality) based on the SERVQUAL model. This was a descriptive, cross-sectional, quantitative study which adapted a positivist research philosophy. The target population was 500 patients and 120 employees where respondents were sampled using the convenience non-probability sampling method. Structured questionnaires hosted on the Kobo Open Data Kit were used for data collection, and data analysis was carried out using the SPSS software. The study had 378 patient and 84 employee respondents, and a pilot study was conducted before data collection to assess the reliability and validity of the questionnaire. For objective one, the study results established that patients' perceived tangibility highest, and reliability lowest based on the means, while for objective two, employees perceived tangibility highest, and empathy lowest also based on the means. Employee perceptions were higher than patient perceptions for all the independent variables. For objective three, the study results established that there was a difference in perceptions of service quality between patients and employees, with reliability and empathy having the strongest positive correlation with the dependent variable PSQ for both patients and employees based on the overall correlation analysis. The regression model results also showed that focusing on empathy, reliability, and tangibility would result in improvements in PSQ that were significant. Thus, the study concluded that for management at CEH to leverage on patient and employee perceptions on service quality, which was the key knowledge gap that this study sought to bridge, they should focus on improving reliability and empathy while sustaining tangibility. The study also recommended that these results may be used as a baseline for further service quality studies by specialty hospitals. Additionally, the government, policy makers and CEH management may also use the results as a data-driven approach in service quality policy formulation and improvement, and training employees on service quality. The scope of this study was however limited to specialty hospitals, specifically eye hospitals, and did not incorporate qualitative data from participants.

Keywords: Perceived Service Quality (PSQ), SERVQUAL, patients, employees

LIST OF ABBREVIATION

CEH:	City Eye Hospital
NACOSTI:	National Commission for Science, Technology, and Innovation
ODK:	Open Data Kit
PSQ:	Perceived Service Quality
SPSS:	Statistical Package of Social Science
SU-ISERC:	Strathmore University Institutional Scientific and Ethical Review Committee
WHO:	World Health Organization



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DEDICATION

I dedicate this dissertation to my family who have been a great source of strength and courage.
Thank you for your prayers and encouragement.



CHAPTER ONE

INTRODUCTION

This chapter consists of the background of the study, problem statement, objectives, research questions, and justification of the study.

1.1 Background of the Study

A global survey by McKinsey and Company of more than two hundred organizations revealed that 85% of executives were in agreement that the COVID-19 pandemic would have long-term ramifications on customers' wants and needs (Sneider & Singhal, 2021). It is pivotal that organizations recognize the needs of customers, understand them and align their services to meet these needs (Luo et al., 2019). In different service industries, such as banking and hospitality, innovative solutions in service quality are vital for survival, given the current fast-paced economic and technological developments (Luo et al., 2019; Woo et al., 2019).

A study which compared service quality and service loyalty in organizations concluded that for organizations to remain competitive and maintain sustained relationships with stakeholders, they should focus more on service loyalty which refers to their commitment to their service quality promise, which also builds customer loyalty (Setó-Pamies, 2012). Additionally, hospitals which also form part of the service industry and intend to maintain a competitive advantage must recognize that patient satisfaction is a key determining factor to success and it is directly related to better health outcomes (Xesfingi & Vozikis, 2016).

Parasuraman contends that service quality involves both outcomes and the process or technique in which the services are delivered, and that the intangibility of services unlike products presents a challenge in understanding perceived service quality (Parasuraman et al., 1985). Furthermore, in his research, executives acknowledge that it is difficult to standardize how different employees deliver similar or different services which has a substantial effect on perceived service quality by consumers (Parasuraman et al., 1985; Zeithaml et al., 1993).

According to Kansra who measured service quality in Indian hospitals using the SERVQUAL Model, it is important for hospitals to recognize that measuring and monitoring service quality is one of the key determinants in remaining competitive in the healthcare industry (Kansra & Jha, 2016). Additionally, findings from a study in Nigeria which assessed the perceptual differences of

employees versus patients on service quality using the same model showed that there were significant differences in perception and concluded that it was important to bridge this gap in order to improve overall service quality (Fiakpa et al., 2022).

1.1.1 Perceptions in healthcare

Efron defined perceptions as “*a man’s primary form of cognitive contact with the world around him*” (Efron, 1969). Perceived service quality is derived from a comparison made by consumers between expected service and perceived service with findings by Parasuraman showing that a continuum exists between ideal and unacceptable service (Parasuraman et al., 1985). A study whose aim was to establish employee perceptions on service quality found that service orientation and non-standardized scripted behavior were important predictors of perceived service quality and had an influence on customer-employee interactions (Vella et al., 2009). Perceptions may also be defined as the use sensory stimuli by people to interpret what is happening around them and then organize these stimuli to construct experiences of the world that are material (Pickens, 2005).

Focus groups used by Parasuraman to interview consumers from four service industries namely: brokerage firms, consumer banking, credit card, and product repair and maintenance established that similar criteria were used by consumers to assess service quality, regardless of the differences in the types of services offered (Parasuraman et al., 1985). The findings by Parasuraman and Valla are further reiterated by Fiakpa whose study focused comparing patient and employee perceptions in Nigeria where the study findings showed that employees rated variables such as empathy and tangibility significantly higher compared to patients (Fiakpa et al., 2022). These variables are defined and discussed further in chapter two.

Thus, perceived service quality exists along a continuum and consumer perceptions are dependent on the gap between expected service and perceived service with perceived service quality being deemed as the level of discrepancy between them (Parasuraman et al., 1985; Zeithaml et al., 1993). A study whose aim was to assess the perceptual differences between patients and nurses regarding the quality of nursing services defined perceptions as how the consumer evaluates the service quality offered while also highlighting that indeed discrepancies existed between perceived and expected service (Lee & Yom, 2007).

1.1.2 Service Quality in Healthcare

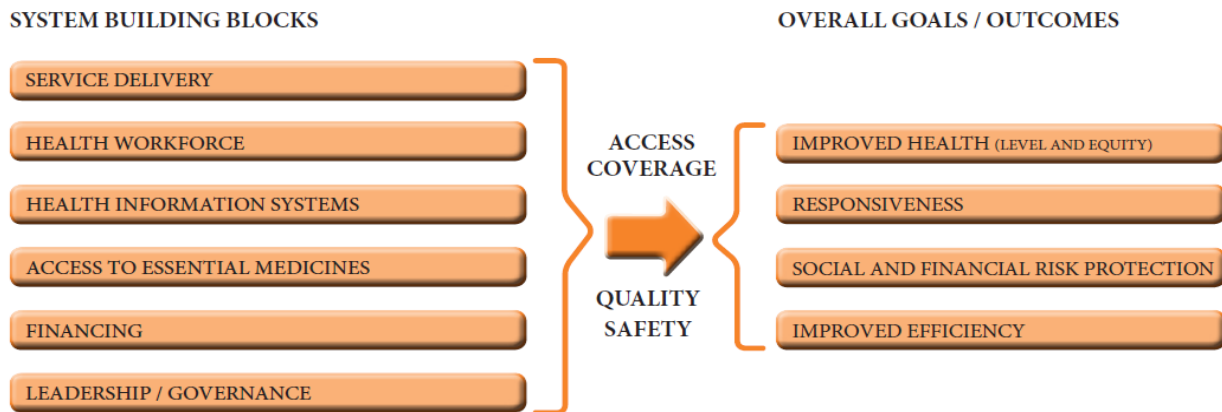
Crosby defined quality as “*conformance to requirements*” which must be continuously measured to ascertain conformance with any non-conformance detected being deemed as an absence of quality (Crosby, 1979). However, his definition has been critiqued since it views quality as either acceptable or unacceptable with no room for change (Hoyer et al., 2001). Deming’s contended that quality can only be defined from the perception of the agent which changes continually and must be translated into measurable characteristics so as to predict future needs (Deming, 2018).

Deming’s definition bears similar attributes to Feigenbaum who argued that quality is based on the perception of the customer where they measure their experience against their own standards, not the standards and requirements of the market or management (Feigenbaum, 1991). The importance of studying customer preferences and the standards they demand in product and service, which changes continuously is emphasized by Ishikawa who posits that this must be taken into account when designing services in a way that anticipates customer needs (Ishikawa & Loftus, 1990).

Gronroos, in his research, argued that service quality comprised of three components namely technical, functional and reputational with Parasuraman focusing on the functional component in his work when the SERVQUAL model was conceptualized (Grönroos, 1982; Parasuraman et al., 1988). Perceived quality differs from objective quality since it is a subjective approach based on the judgement of the consumer whereas objective quality involves a conceptual definition based on research and facts, ideally used by professionals (Zeithaml, 1987). Perceived service quality is the dissimilarity between expected and perceived service with expectations being defined as the wishes and wants by consumers, and perceived service quality existing across a continuum dependent on the degree of dissimilarity (Parasuraman et al., 1985).

Low and middle income countries (LMICs) cannot afford to ignore service quality and must consider it an integral part of the DNA of a functional health system, given the evolving healthcare needs and increasing public expectations (Kruk et al., 2018). Service quality is also a key component of service delivery, which is one of the WHO healthcare building blocks as illustrated in figure 1, with high quality service been defined as safe, effective, patient-centered, and timely (World Health Organization, 2011).

Figure 1: WHO Health Systems Building Blocks



THE SIX BUILDING BLOCKS OF A HEALTH SYSTEM: AIMS AND DESIRABLE ATTRIBUTES

Note. From (World Health Organization, 2011).

To optimize service delivery, health systems must be responsive to the needs of the population based on patient experiences when interacting with health systems, acknowledging that these experiences are shaped by a reciprocity between patients and health systems, and consequent patient experiences of the health systems are shaped by different influences in the patients’ lives (Mirzoev & Kane, 2017). A study with 516 respondents which investigated how total quality management influenced perceived quality of service and patient satisfaction, showed that a focus on quality management in hospitals had a positive impact on perceived service quality and patient satisfaction (Nguyen & Nagase, 2019). Aggarwal reiterates, in his research that aimed to assess service quality of healthcare professionals and sensitize healthcare professionals on the importance of service quality, that a focus on service quality is a pivotal desideratum and cannot be ignored in healthcare (Aggarwal et al., 2019).

1.1.3 Specialty Hospitals

This study sought to compare the perceptions of patients versus employees on Service Quality at specialty hospitals which are defined as hospitals which exclusively offer services tailored to patients with cardiac condition, patient with orthopedic condition, patient receiving specific surgical procedures or any other specialized category of healthcare services (Satiani, 2008). Schneider defined a specialty hospital as a stand-alone hospital where patients who present with specific medical conditions or in need of specific specialized surgical procedures are treated

(Schneider et al., 2008). Applying this to the Kenyan context, specialty hospitals include orthopedic hospitals such as St. Lukes Orthopedic and Trauma Hospital, children's hospitals such as Gertrudes Childrens Hospital, maternity hospitals such as Pumwani Maternity Hospital, psychiatric hospitals such as Chiromo Hospital Group, and eye hospitals such as City Eye Hospital and Lion's SightFirst Hospital. These specialty hospitals may differ in relation to discipline, but they share similarities such as focus on one disease category, and the desire to offer the best medical care to patients in their specific disease categories (Wind & Van Harten, 2017).

This study focused on specialty eye hospitals which was further defended under the problem statement section 1.2. The major eye hospitals in Kenya included City Eye Hospital, Lions Sight First Eye Hospital, Sabatia Eye Hospital, P.C.E.A Kikuyu Hospital eye unit, Dr. Agarwal's Eye Hospital, Westlands Laser Eye Hospital and Mombasa Eye Hospital and Laser Centre. These hospitals offered services such as general ophthalmology, refractive errors correction, cataract surgery, glaucoma, corneal and retinal conditions treatment. Most of the facilities in Nairobi share ophthalmologists who visit the hospitals on different clinic days. According to the Ministry of Health National Eye Health Strategic Plan 2020-2025, there are approximately 145 ophthalmologists in Kenya (1:250,000) with over 58% of them based in Nairobi (*National Eye Health Strategic Plan 2020-2025*, 2020).

The study focused on City Eye Hospital was founded in 2015. Its mission is to provide accessible and quality healthcare (*About Us - City Eye Hospital*, 2022). The hospital has existed for a fairly shorter time (9 years) compared to other eye hospitals offering similar services such as Lions Sight First Eye Hospital established in 1997 and P.C.E.A Kikuyu Hospital Eye Unit established in 1975 (*P.C.E.A Kikuyu*, 2022; *The Lions SightFirst Eye Hospital - Home*, 2022). Notwithstanding, the hospital has established itself as a formidable competitor and ally among the eye hospitals in Kenya serving more than one thousand patients per week in its three branches namely: City Eye Main Hospital, City Eye Upper Hill appointment-only medical center and City Eye Hospital Nyeri (*City Eye Hospital - City Eye Hospital*, 2022). Since part of City Eye Hospital's mission is to provide quality healthcare, this was a formative study to provide baseline data to facilitate evidence-based quality improvement and policy making. The study results would also serve as a baseline for service quality research at other specialty hospitals, who aim to provide quality and timely healthcare services.

The hospital also partners with other stakeholders such as the University of Nairobi School of Medicine for the training of ophthalmologists and Kenya Medical Training College (KMTC) for ophthalmic clinical officers, optometrists and ophthalmic nursing training (*City Eye Hospital - City Eye Hospital, 2022*). The other eye hospitals, such as Lions Sight First Eye Hospital and P.C.E.A Kikuyu Hospital Eye unit also offer similar training to the same professionals in addition to having the same specialists treating patients on different clinic days.

The study defined patients as the person directly receiving eye treatment or the caregiver who had brought this person to the hospital for treatment. The inclusion of the caregiver as a patient was because some of the patients who sought treatment at eye hospitals may have been unable to sign the informed consent forms or fill the questionnaire, and in this case the care giver filled out the questionnaire, since they had walked through the hospital process with them. Employees were defined as administrative staff such as accountants, clinical staff such as nurses, and support staff such as healthcare assistants since each of them could have impacted service quality at City Eye Hospital. The segmentation of the employees was further discussed in chapter three.

1.2 Problem Statement

The purpose of this study was to determine the similarities and differences on perceived service quality by employees and patients, and how these findings could be leveraged to improve service quality at City Eye Hospital. This study focused on specialty eye hospitals since eye problems remain to be one of the most common yet preventable public health problems in LMICs (Ono et al., 2010). WHO estimates that at least 2.2 billion people worldwide are affected by near and distant vision impairments, with only 36% and 17% of patients having received the appropriate treatment for vision impairments due to refractive errors and cataracts respectively, the two most common yet preventable causes of visual impairment worldwide (*Vision Impairment and Blindness, 2023*).

A study which focused on country-level analysis for global inequality in eye health in the early 2000s showed that the highest number of disability-adjusted life years per 100,000 was observed in low-and-middle income countries of Asia and Sub-Saharan Africa (Ono et al., 2010). Similarly, a cross-sectional study carried out in 190 countries, whose aim was to investigate the correlation between the burden of visual impairment and socioeconomic development, concluded that the two

were closely associated meaning that the prevention and treatment of eye problems should be a public health priority in LMICs (Wang et al., 2017).

Moreover, a study carried out in central India emphasized that although eye problems remained a common public health concern, eye hospitals were part of the service industry and that patient expectations were changing owing to developments in technology and increased competitive services, arguing that it was imperative that eye hospitals continuously measure patient satisfaction for accountability and strengthening of service delivery and quality (Sudhan et al., 2011). Comparably, a study in Nigeria whose objective was to understand patient satisfaction with eye care services at a teaching hospital concluded that it was important for developing countries to focus on service quality in healthcare service delivery and that the parameters that were important to patients could be different from those of eye care providers (Ezegwui et al., 2014). Furthermore, another cross-sectional study in Germany which analyzed the factors associated with patient satisfaction in ophthalmology concluded that patient satisfaction also had a positive association with non-medical factors such as cleanliness of the facility and kindness of staff, with another study which focused on the determinants of patients satisfaction with ophthalmic services concluding that the patients perception cannot be ignored in eye care service delivery (Schoenfelder et al., 2011; Ziaei et al., 2011).

This study also focused on employee perceptions in addition to patient perceptions where findings from a study in Nigeria which assessed the perceptual differences between employees and patients from two government hospitals in Abuja and Delta state showed that significant differences in perceptions existed with conclusions that the study findings strengthened the argument for similar and further research in this area (Fiakpa et al., 2022). Another exploratory study that focused on quality management in the health sector with a concentration on the factors affecting patient satisfaction showed that affordability, the fulfillment of clinical expectations, behavior of staff, hospital registration and administrative processes and physical amenities affect patient satisfaction (Kamra et al., 2016). The importance of continuously measuring patient perceptions was further reiterated by a study which demonstrated how Azalea Orthopedics, a specialty hospital in the United States used patient feedback to enhance physician-patient communication through coaching physicians on communication skills in addition to offering treatment to patients (Riskind et al., 2011). Nevertheless, a study by Johnston showed that measuring physicians' performance

based on patient satisfaction scores was inadequate since most physicians used evidence-based approaches to provide quality care to their patients. Thus, the physicians perception of quality care was beneficial and integrating it to the patients perception to improve service quality was important (Johnston, 2013).

Most of the literature reviewed focused on the perceptions of patients on service quality and failed to incorporate the perceptions of the providers (employees) which was also reiterated by a study which reviewed 124 published studies on service quality in healthcare between 1986 and 2016 from the Google Scholar and EBSCO databases which concluded that most studies that had been published focused on patient perceptions and few focused on employee perceptions or how the two could be compared (Upadhyai et al., 2019). Additionally, most of the researchers focused on comparing patient and employee perceptions but did not provide an in-depth analysis of how the similarities and/or differences identified could be leveraged to improve service quality, such as the study in Nigeria which provided an assessment of patient and employee perceptions on service quality and another study in South Korea which compared patient and nurses (employees) perceptions of service quality (Fiakpa et al., 2022; Lee & Yom, 2007).

Findings by Parasuraman also showed that there was a consumer-management gap and that most executives interviewed experienced difficulty in understanding what quality meant to consumers and how they could use this information to improve service quality, where they also acknowledged the value and impact that employees had in influencing consumer perceptions on service quality (Parasuraman et al., 1985). Another study conducted in Bangladesh with 1900 respondents whose aim was to compare customer expectations and employee (management) perceptions on service quality in healthcare also highlighted the importance of leveraging the findings to narrow the gap in improving service quality (Chowdhury, 2008). Thus, this study sought to bridge a knowledge gap by incorporating employee perceptions of service quality at a specialty hospital and more importantly establishing how the identified similarities and/or differences in perceptions between patients and employees could be leveraged to improve service quality at CEH.

1.3 Research Objectives

1.3.1 General Objective

The general objective of this study was to determine the perceptions of patients versus employees on service quality and how the similarities and/or differences could be leveraged to improve the service quality at City Eye Hospital Nairobi and Nyeri County, Kenya.

1.3.2 Specific Objectives

The specific objectives of this study were:

- i. To determine the perceptions of patients on service quality at City Eye Hospital.
- ii. To determine the perceptions of employees on service quality at City Eye Hospital.
- iii. To determine how the similarities and/or differences in perceptions could be leveraged to improve service quality at City Eye Hospital.

1.4 Research Questions

The study sought to answer the following research questions:

- i. What were the perceptions of patients on service quality at City Eye Hospital?
- ii. What were the perceptions of employees on service quality at City Eye Hospital?
- iii. How could the similarities and/or differences in perceptions be leveraged to improve service quality at City Eye Hospital?

1.5 Scope of Study

The goal of this study was to determine the perceptions of patients versus employees on Service quality at City Eye Hospital and how the gaps in perceptions could be leveraged to improve the Total Service Quality. The study took place at two City Eye Hospital branches namely: the main hospital along Ngong' road in Nairobi and City Eye Hospital branch in Nyeri, Kenya. City Eye Hospital is one of the major specialty eye hospitals in Kenya, with other specialty eye hospitals in Kenya including: Lions Sight First Eye Hospital, Sabatia Eye Hospital, P.C.E.A Kikuyu Hospital eye unit, Dr. Agarwal's Eye Hospital, Westland's Laser Hospital and Mombasa Eye Hospital and Laser Center. Thus, the modelling of this study as a case study of City Eye Hospital is a

representative of more than ten percent of the specialty eye hospitals in Kenya, further defended in the chapter three.

The theoretical scope of this study comprised of the Personal Construct Theory by George Kelly which anchored the study and the SERVQUAL model conceptualized by Parasuraman which was used to generate the conceptual framework. The independent variables of the study were tangibility, reliability, assurance, responsiveness, and empathy; based on the SERVQUAL model, while the dependent variable was perceived service quality (PSQ). For the methodological scope, the study adopted quantitative study methods and had two data sets: patient perceptions and employee perceptions data sets.

1.6 Significance of Study

To hospital management, the study was important in highlighting how the gaps in perceptions could be leveraged in improving service quality at specialty eye hospitals. This was to enrich existing quality policies as well as guide the development of other data-driven service quality policies at specialty eye hospitals.

To the employees, the importance of understanding their perceptions of service quality was to aid in standardizing the quality of care, and improving job satisfaction since they would be able to serve their patients better. Understanding their different perceptions also revealed new areas of employee training on service quality, guided by the data-driven policies.

To the patients, leveraging on their perceptions was intended to enhance their overall experience at the hospital leading to improved patient retention and loyalty.

To theory, the study has enriched existing literature on service quality at specialty eye hospitals and strengthened the argument as to why continuous monitoring of service quality is important.

To other stakeholders such as specialty eye hospitals, these results are important in highlighting the key areas of service quality improvement and the importance of data-driven policies on service quality. They may also be used as a baseline to conduct further research in this area at their hospitals.

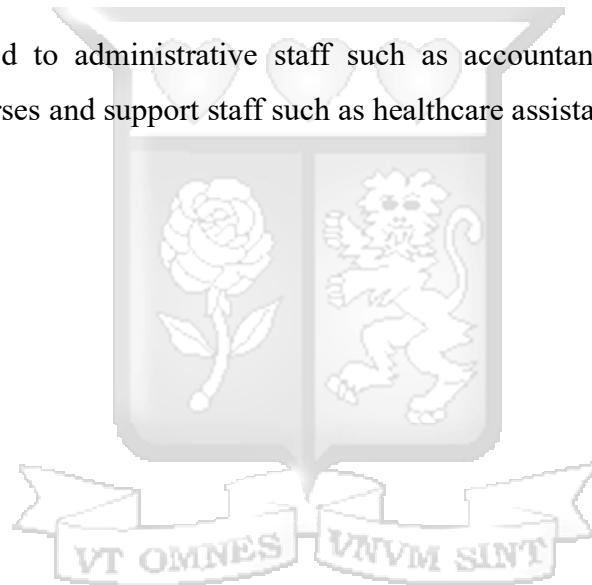
The researcher disseminated the results from this study through a written report to the management at CEH, publishing in service quality-oriented journals, Continuous Medical Education (CMEs) forums for employees and presentations at local and international conferences.

1.7 Operational Definition of Terms

Perceived Service Quality: This referred to the dissimilarity between expected and perceived service with expectations being defined as the wishes and wants by consumers, and perceived service quality existing across a continuum dependent on the degree of dissimilarity (Parasuraman et al., 1985).

Patients: This referred to persons receiving treatment at City Eye Hospital.

Employees: This referred to administrative staff such as accountants, clinical staff such as ophthalmologists and nurses and support staff such as healthcare assistants and housekeeping.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter outlined the theoretical review, empirical review based on the study objectives, conceptual framework, and operationalization of study variables.

2.2 Theoretical review

This section described the personal construct theory by George Kelly which was used to anchor the study objectives.

2.2.1 George Kelly's Personal Construct Theory

Theories are useful in research since they provide a framework within which we can expound on why certain events happen as they do, and they are designed to be expanded and tested continuously to prove their usefulness in a subject matter (Fransella, 2003). George Kelly, the proponent of this theory was born in 1905 in Kansas City and was awarded his Ph.D. in psychology with a focus on reading and speech disabilities in 1931 from the State University of Iowa (Fransella, 2003). Kelly developed his theory during the great depression when he worked at Fort Hays Kansas State College, after which he moved to the United States Navy as an aviation psychologist at the beginning of world war two, where his career began to thrive (Feist & Feist, 2006). *The psychology of personal constructs* was published in two volumes by George Kelly and this earned him immediate recognition where he was invited to give lectures in Europe, South America, Asia and North America (Kelly, 1955).

Kelly began his theory by questioning the existence of the universe. He compared this to peoples thoughts where he concluded that just as the universe continuously exists, peoples thoughts, which he refers to as constructs, are constantly changing to adapt to the realities of the world (Fransella, 2003). He believed that individuals create alternative constructs to help them deal and adapt to new situations since “*all our present interpretations of the universe are subject to revision or replacement*” which is the philosophical position of this theory referred to as constructive alternativism (Maher, 1969).

Kelly suggested the term “man-the-scientist” to aid in understanding how people understood the world around them, since people are continuously questioning, hypothesizing, testing, concluding and predicting what happens in the world around them (Feist & Feist, 2006; Fransella, 2003). His theory is regarded as a fully cognitive theory addressing the elements of perception, attention and memory and it is based on the fundamental postulate that “*a person’s processes are psychologically channelized by the ways in which he anticipates events*” (Fransella, 2003; Kelly, 1955). Thus, the context in which a phenomenon occurs also influences the construct or lens in which a person views and interprets it and this is subject to change if the same phenomenon occurs in a different context (Butt, 2004).

This fundamental postulate which was the principal of this theory was described in eleven corollaries namely: construction, individuality, organization, dichotomy, choice, range, experience, modulation, fragmentation, commonality and sociality corollary (Kelly, 1955). The corollaries that supported this study were the individuality corollary which described that people differed from each other in the way that they constructed and perceived events, the construction corollary which described how people construed events, the dichotomy corollary which described the differences in perceptions and views of a person’s world and the sociality corollary which described how our communication with others was based on the understanding of their constructs (Feist & Feist, 2006; Fransella, 2003; Kelly, 1955).

Chiari (2013) criticized this theory when he argued that it disregarded the role played by emotions, with (Lester, 2009) contending that even though Kelly wrote that his theory had no place for emotions, his theory defined guilt, anxiety and fear which introduced an element of emotion to it. Notwithstanding, we have theories of emotion and theories of cognition with Kelly’s theory heavily leaned towards the latter; underpinned by Don Bannister who wrote that “*There can be no onus on any theory to duplicate the constructs of another*” (Fransella, 2003).

The relevance of this theory in this study, which linked it to the study objectives, was to show that different people have different perceptions of service quality based on their own constructs shaped by their learning and experiences (Kelly, 1955). This was further reiterated by a study on health systems which concluded and emphasized that patient experiences of a health system are shaped by different influences in the patients’ lives and the reciprocity between the patient and the health system (Mirzoev & Kane, 2017).

Parasuraman also argued that quality of service was a difficult construct to measure since perceived service quality is as a result of the difference between expected service and perceived service, with employees having great influence on this and therefore he conceptualized the SERVQUAL model to aid in measuring perceptions (Parasuraman et al., 1985, 1988). Perceptions are affected by our personal constructs and are subject to change based on how we experience and construe events based on this theory, which links it to the SERVQUAL model adapted in this study since it was conceptualized to measure these perceptions, and the study objectives where the results obtained can be leveraged to influence and improve patient and employee perceptions of service quality.

2.3 SERVQUAL Model

Parasuraman contended that since most services are intangible, it may be difficult for an organization to measure how consumers perceive their service quality and that services are also heterogeneous meaning that similar services are offered by different employees where uniformity may be difficult to standardize (Parasuraman et al., 1985).

The SERVQUAL model was originally conceptualized by Parasuraman in 1985 where it measured ten dimensions namely reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding and tangibles (Parasuraman et al., 1985). The tool was later modified to measure five dimensions namely tangibles, reliability, responsiveness, assurance and empathy (Parasuraman et al., 1988).

The SERVQUAL model has been used by several researchers to measure service quality. For example, a study whose aim was to measure service quality in hospitals located in India's Jalandhar region, a study in Nigeria which assessed the perceptual differences of employees versus patients on service quality and another study in India with 210 respondents which measured quality in Indian commercial hospitals (Ali et al., 2018; Fiakpa et al., 2022; Kansra & Jha, 2016). A similar study in Turkey which compared service quality in public and private hospitals in Turkey concluded that the SERVQUAL model, based on the research findings, was valid and reliable in measuring service quality in a hospital setting (Taner & Antony, 2006).

The SERVQUAL model defined tangibles as physical facilities, equipment and appearance of human resource, reliability as performing services as promised, responsiveness as willingly providing prompt services to consumers, assurance as the ability of employees to inspire trust

stemming from their knowledge and courtesy and empathy as providing personalized attention to consumers (Parasuraman et al., 1988). However, there are still debates concerning some aspects of this instrument with some researchers having modified the scale to include some dimensions such as usability, and others developing their own instruments to measure service quality all together such as SERVPERF and 5Q model (Jain & Gupta, 2004; Ladhari, 2009; Zineldin, 2006). Nevertheless, a study which compared SERVQUAL metrics with SERVPERF; two major models of measuring service quality concluded that the diagnostic power of the SERVQUAL model was superior thus useful for managers in identifying and intervening in areas where there are service quality shortcomings (Jain & Gupta, 2004). Additionally, the SERVQUAL model has been shown to have good validity and reliability and has been widely applied in different sectors to measure service quality, including the healthcare sector (Ali et al., 2018; Fiakpa et al., 2022; Parasuraman et al., 1991).

The five dimensions of the SERVQUAL model are further subdivided into twenty-two questions as illustrated in the conceptual framework and operationalization of variables section (Parasuraman et al., 1988). Tangibility (measured by four items): physical facilities, hospital equipment, the environment and employee grooming, reliability (five items): providing services as promised, in the right way, within the promised timeframe, handling service complaints and hospital records appropriately, assurance (four items): instilling confidence in patients, patient safety, employee politeness and knowledge to respond to patient queries, responsiveness (four items): employees keeping patients informed, providing prompt services, willing to help patients and readily responding to patient queries, and empathy (five items): providing individualized patient attention, care towards patients, having patient interests at heart, understanding patient needs and having convenient operating hours (Parasuraman et al., 1985, 1988).

2.4 Empirical Review

This section explored existing literature to further describe patient and employee perceptions of service quality, and how the similarities and/or differences can be leveraged based on the study objectives.

2.4.1 Patient Perceptions and Service Quality

Quality management is a priority in organizations globally, especially in healthcare where it is centered around the process of care, and it remains synonymous with patient satisfaction (Aggarwal et al., 2019). A study in Vietnam with 516 respondents whose aim was to investigate the effect that quality management had on how patients perceived service quality and overall patient satisfaction concluded that PSQ and patient satisfaction were positively correlated (Nguyen & Nagase, 2019). Findings from a study in Nigeria whose aim was to assess and compare the perceptions of patients versus employees on service quality in public hospitals showed that perceptual differences existed among the two with patients rating empathy and reliability lowest, and employees generally having higher perceptions of service quality compared to patients (Fiakpa et al., 2022).

This was further emphasized by Zaid in a study which assessed the impact quality management and PSQ on patient satisfaction with findings showing that quality management and how patients perceived quality directly influenced patient satisfaction (Zaid et al., 2020). Success in the healthcare industry requires continuous understanding of patient needs as emphasized by a study by Riskind where he concluded that: *“a practice that consistently and continuously measures patient perceptions will be more efficient and effective in its daily operations”* (Riskind et al., 2011).

Another study in India with 210 respondents whose aim was to understand and compare the expectations of patients with regard to healthcare services and their performance using the SERVQUAL scale rated empathy and assurance highest while tangibility and responsiveness were rated lowest (Ali et al., 2018). However, these findings were in disagreement with a different study which evaluated service quality for outpatients using the same scale, where tangibility was rated highest based on the means but further analysis showed that reliability was the most important variable in determining patient satisfaction (Pekkaya et al., 2019). These findings were also similar to another study that was conducted in different hospitals spread out across nine cities in China whose aim was to evaluate PSQ for patients based on the SERVQUAL scale where tangibility was rated highest but further data analysis and correlation tests showed that empathy and reliability were the strongest predictors of service quality (Li et al., 2015).

Furthermore, another study with 400 respondents which evaluated service quality from the patients perspective found that the major factors that influenced service quality were the availability of information, experiences with doctors, and the environment in which the services were delivered (Abbasi-Moghaddam et al., 2019). Additionally, a previous study by Zarei whose aim was to understand service quality in an outpatient setting also found that the aforementioned factors had the highest impact on patient perceptions of service quality (Zarei, 2015).

2.4.2 Employee Perceptions and Service Quality

The importance of understanding employees perceptions on service quality in healthcare remains to be an important factor in achieving organizational success, with findings from a study that analyzed how employee satisfaction impacted customer satisfaction by measuring variables such as communication, employee loyalty and retention, showing that there was a causal relationship between employee satisfaction and customer satisfaction (Kurdi et al., 2020). A similar study on meta-analytics of employee job satisfaction and customer satisfaction relationship which involved an analysis of publications and databases between 1995 and 2010 showed that this relationship had a marked statistical correlation with propositions for future research in this area (Mendoza & Maldonado, 2014).

A study conducted in the United States whose aim was to understand the perceptions of employees on customer delight, and how their psychological and behavioral states were impacted by these perceptions concluded that employees were motivated to improve their skills and experienced an array of positive emotions, especially when they received positive feedback from customers on service quality (Barnes et al., 2013). Another study in Korea with 554 respondents which compared patients and nurses (employees) perceptions of nursing services, patient satisfaction and their intention to revisit the hospital, showed that the perceptions of nurses on service quality were higher compared to patients and that reliability was the most important dimension in predicting service quality (Lee & Yom, 2007).

The importance of understanding employee perceptions was further strengthened by the argument captured in the problem statement where a study by Azalea Orthopedics conveyed the importance of understanding patient perceptions by using patient feedback to enhance physician-patient communication skills, with another study by Johnston arguing that physician performance cannot be measured by solely using patient satisfaction scores and we must also incorporate the physician

perception of service quality which involves use of evidence-based approaches (Johnston, 2013; Riskind et al., 2011).

Notwithstanding, another study in Korea conducted at a leading private company whose aim was to understand whether the relationship between employee satisfaction and customer satisfaction was unilateral or bilateral concluded that it was unilateral with employee self-efficacy and collegiality balancing out the two, and recommended that top management should be cognizant of this, especially when hiring employees (Jeon & Choi, 2012).

2.4.3 To determine how the similarities and/or differences in perceptions could be leveraged to improve service quality at City Eye Hospital.

This study was carried out at a specialty eye hospital since eye problems continue to be a major public health concern globally, especially in LMICs, with the aim of bridging a knowledge gap by establishing whether service quality was a factor that patients considered when visiting a specialty hospital while also incorporating employee perceptions of service quality and leveraging the similarities and/or differences through objective three (Ono et al., 2010; Vision Impairment and Blindness, 2023). A study which compared patient and employee perceptions of service quality using the SERVQUAL scale concluded that hospital management should leverage on improving aspects of reliability such as providing services within the promised timeframe and empathy by building and sustaining trust between patients and employees (Fiakpa et al., 2022). Similarly, another study whose aim was to compare perceptions of the quality of ophthalmological services offered in public and private hospitals using the SERVQUAL scale concluded that reliability was the most important dimension that management should focus on to improve service quality (Hercos & Berezovsky, 2017). Additionally, both researchers emphasized on the importance of periodic measurement of service quality using the SERVQUAL scale to improve and sustain service quality and to also reconcile perceptual differences identified (Fiakpa et al., 2022; Hercos & Berezovsky, 2017).

The findings above were also echoed by other researchers such as a study whose aim was to compare perceptions of service quality between nurses and patients using the SERVQUAL model which also concluded that although a gap existed between expectations and performance for the overall nursing service quality, reliability and empathy remained the most important predictors of service quality for both groups (Lee & Yom, 2007). Moreover, another study whose aim was to

compare patient perceptions and expectations of service quality using the SERVQUAL model concluded that gaps between perceived and expected service existed for all the variables (Nadi et al., 2016).

Findings from a study conducted in Indian commercial hospitals which also compared patient expectations of healthcare services and perceived performance concluded that tangibility and empathy were important predictors of service quality but also queried whether tangibility was rated highly since hospitals invest a lot in branding themselves as modern, with the latest technological advancements (Ali et al., 2018). Another study by Karassavidou which measured quality of service in the National Health Service (NHS) hospitals in Greece also echoed that tangibility was rated highly in some studies since it was the easiest dimension to evaluate in the SERVQUAL model since it did not require much expertise (Karassavidou et al., 2009). Moreover, a study in the National Healthcare Service in Greece which measured the gaps in healthcare quality using the SERVQUAL model in a developing countries argued that although tangibility was rated highly in various studies but had minimal effect on service quality as compared to dimensions such as reliability and empathy, it helped in balancing out the other dimensions since it was easiest to measure based on the findings from the study in Greece (AlOmari, 2021; Karassavidou et al., 2009).

2.5 Knowledge gap

The third objective in this study on determining how the similarities and/or differences could be leveraged to improve service quality was the foundation of the knowledge gap in this study. Previous studies which had been conducted emphasized on the need to measure employee perceptions such as a study conducted in the United States whose aim was to investigate the perceptions of employees and how this was related to customer delight which reiterated that a lot of studies had been done to measure customer perceptions but few focused on employee perceptions (Barnes et al., 2013). Additionally, a study conducted in Nigeria which compared patient and employee perceptions of service quality in public hospitals did establish these perceptual differences based on the SERVQUAL model and made recommendations to management on how to leverage the differences, but the study failed to also focus on how the similarities in perceptions could be leveraged (Fiakpa et al., 2022).

Another study with 210 respondents conducted in India whose aim was to provide a understanding of patient expectations of healthcare services while comparing patient perceptions only focused on the patients and failed to incorporate employee perceptions, which is a knowledge gap that this study intended to bridge, given that the study adapted the same SERVQUAL model that was also adapted in thus study (Ali et al., 2018). A different study conducted in Turkey whose aim was to provide an evaluation of outpatient healthcare service quality using the SERVQUAL model, also had results comparable to those of other researchers who conducted similar studies, but failed to incorporate employee perceptions (Pekkaya et al., 2019).

Furthermore, a similar study conducted in Korea with a total of 554 respondents which compared patient and employee (nurses) perceptions of service quality with a focus on nursing services using the SERVQUAL model, also established the difference in perceptions but did not place emphasis on how these differences and similarities that existed could be leveraged (Lee & Yom, 2007). Another study which conducted a deep dive into the service quality dimensions in healthcare and how they can be measured, where studies in the Google Scholar and EBSCO databases published between 1986 and 2016 were evaluated also concluded that most of the studies done focused on patient perceptions of service quality, with minimal attention being given to the employee (provider) perceptions of service quality (Upadhyai et al., 2019).

A study conducted in Bangladesh which compared the expectations of customers (patients) and perceptions of management (employees) regarding healthcare which also adapted the SERVQUAL model and had 1900 respondents, emphasized on the importance of incorporating employee perceptions and how these results could be used to narrow the gap between patient and employee perceptions while also contributing to service quality policies (Chowdhury, 2008). Thus, this study sought to bridge a knowledge gap by incorporating employee perceptions of service quality and establishing how the similarities and differences observed based on the research results could be leveraged to improve service quality at CEH.

2.6 Conceptual Framework

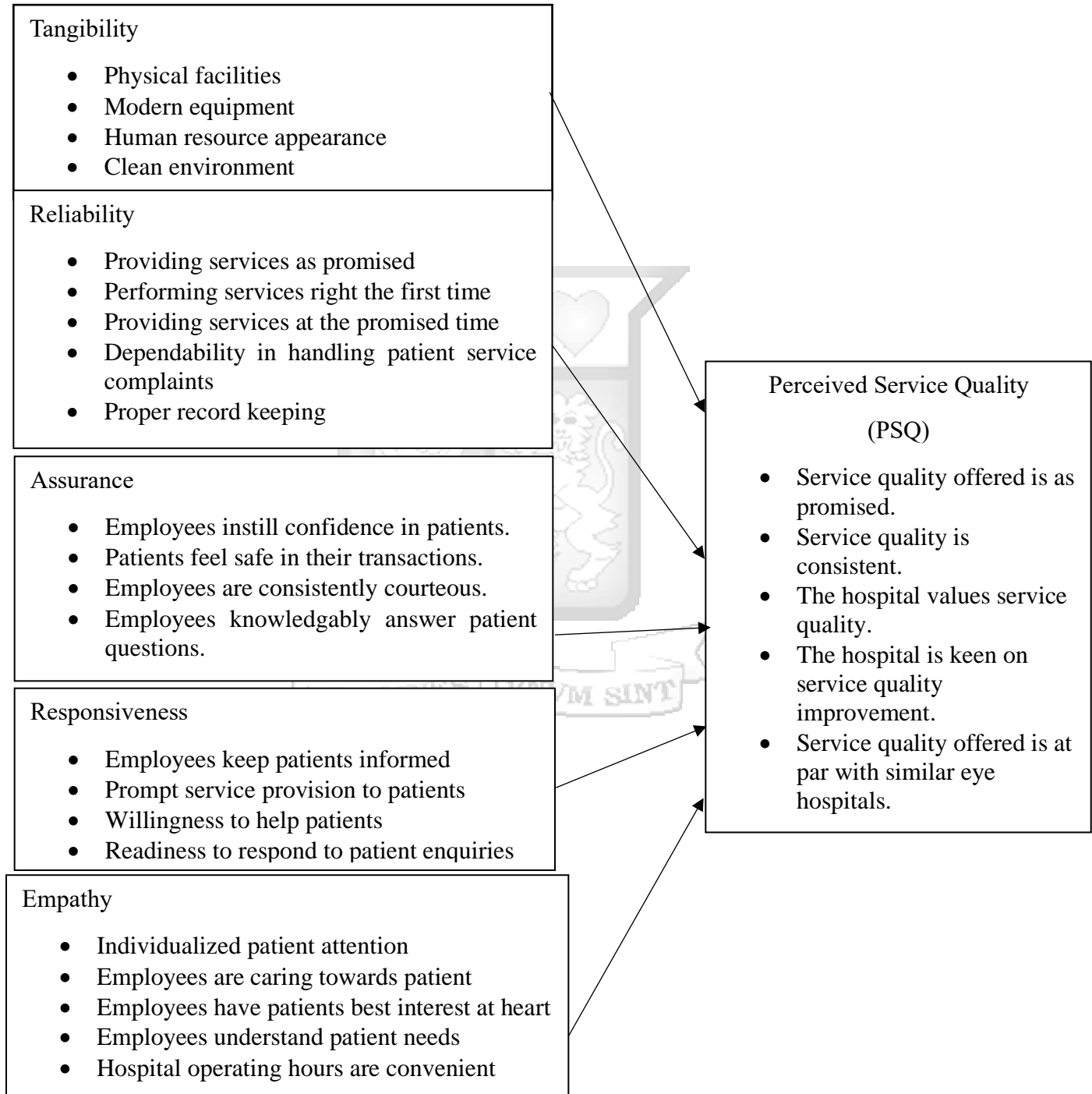
A conceptual framework is a visual model which defines the relationships between the dependent variable and the independent variables, and provides coherence of the researchers ideas and may be subject to change as the research evolves (Kivunja, 2018). The conceptual framework for this study was adapted from the SERVQUAL model conceptualized by Parasuraman and had five

independent variables (tangibility, reliability, assurance, responsiveness, and empathy) and one dependent variable (perceived service quality) (Parasuraman et al., 1985, 1988).

Figure 2: Conceptual Framework

Independent variables

Dependent variable



Note. Adapted from (Parasuraman et al., 1985, 1988).

2.7 Operationalization of Variables

This section in research aims to provide a further breakdown of the conceptual framework by further breaking down the research variables into measurable indicators and outlining the rating scale that will be used to measure these indicators (Sekaran & Bougie, 2016).

Table 1: Operationalization of Variables

Independent Variables	Indicators (SERVQUAL scale 22 questions)	Rating scale	Empirical review
Tangibility	1. Physical facilities	Likert Scale	(Parasuraman et al., 1985, 1988)
	2. Modern equipment	5- Strongly agree	
	3. Human resource appearance	4- Agree 3- Neutral	
	4. Clean environment	2- Disagree 1-Strongly disagree	
Reliability	5. Providing services as promised	Likert Scale 5- Strongly agree	(Parasuraman et al., 1985, 1988)
	6. Performing services right the first time	4- Agree 3- Neutral	
	7. Providing services at the promised time	2- Disagree 1-Strongly disagree	
	8. Dependability in handling patient service complaints		
	9. Proper record keeping		
Assurance	10. Employees instill confidence in patients.	Likert Scale 5- Strongly agree	(Parasuraman et al., 1985, 1988)
	11. Patients feel safe in their transactions.	4- Agree 3- Neutral	
	12. Employees are consistently courteous.	2- Disagree 1-Strongly disagree	

	13. Employees knowledgably answer patient questions		
Responsiveness	14. Employees keep patients informed.	Likert Scale	(Parasuraman et al., 1985, 1988)
	15. Prompt service provision to patients	5- Strongly agree 4- Agree 3- Neutral	
	16. Willingness to help patients.	2- Disagree 1-Strongly disagree	
	17. Readiness to respond to patient enquiries		
Empathy	18. Individualized patient attention.	Likert Scale	(Parasuraman et al., 1985, 1988)
	19. Employees are caring towards patient.	5- Strongly agree 4- Agree 3- Neutral	
	20. Employees have patients' best interest at heart.	2- Disagree 1-Strongly disagree	
	21. Employees understand patient needs.		
	22. Hospital operating hours are convenient.		

Note. Adapted from (Parasuraman et al., 1985, 1988).

2.8 Chapter Summary

This chapter provided the theoretical review which outlined the personal construct theory that was adapted in this study, the empirical review based on the three research objectives, the knowledge gap which emphasized on the importance of this study, the SERVQUAL model which inspired the conceptual framework which outlined the dependent and independent variables, and the operationalization of variables which provided a further breakdown of the variables using measurable indicators.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter consists of the research philosophy, research design, population and sampling, data collection, data analysis, research quality and ethical considerations.

3.2 Research Philosophy

The choice of research philosophy was based on a researcher's world view, the structure and process of their thoughts, how they mapped out their research problem and executed their research strategy (Creswell & Creswell, 2018; Žukauskas et al., 2018). This study adopted the positivist worldview, which is based on knowledge and generalizations considered to be true and verified by empirical inquiry and logical analysis (Creswell & Creswell, 2018; Turner, 2001).

The positivist view is also based on several assumptions. For example, the absolute truth in knowledge can never be established and since most quantitative research involves the testing of hypothesis and relationships between variables, the researcher must be objective and maintain a high standard of reliability and validity (Phillips & Burbules, 2000). Thus, based on this philosophy, the study sought to determine the perceptions of patients versus employees on service quality using a quantitative research design while deductive reasoning was used to draw inferences based on the results obtained.

3.3 Research Design

Research design refers to the framework of a study that involves quantitative, qualitative, and mixed methods approaches (Creswell & Creswell, 2018). This was a quantitative study that adopted a descriptive study design where data was collected to characterize one or two variables without making inferences on causal relationships (Aggarwal & Ranganathan, 2019).

The study had two sets of data: the perceptions of patients on service quality and the perceptions of employees on service quality. The dependent variable was perceived service quality (PSQ) which was determined by comparing means of the independent variables of the two data sets, and inferential statistics were used to understand the significance of the difference in means. The study adopted the non-probability convenience sampling method and data was collected using closed-

ended questionnaires. The study also adopted a cross-sectional study approach since data was collected at a specific point in time in November 2023 (Creswell & Creswell, 2018).

3.4 Population and Sampling

This section describes the target population, sampling technique, and sample size determination.

3.4.1 Target Population

A target population refers to a group of people with similar characteristics that a researcher intends to study while the study population is a subgroup of the target population from which the researcher selects a sample (Creswell & Creswell, 2018). Since findings from the sample population are used to make conclusions about the target population, the sample size must be sufficient with adequate representativeness (Martínez-Mesa et al., 2016).

The target population in this study was specialty eye hospitals in Kenya, which focused on the diagnosis and treatment of specific medical conditions and targeted the same type of patients based on their clinical and socio-economic status. Services offered at specialty eye hospitals include general ophthalmology, cataract surgery, glaucoma, corneal and retinal conditions treatment. In Kenya, they include City Eye Hospital, Lions Sight First Eye Hospital, Sabatia Eye Hospital, P.C.E.A Kikuyu Hospital eye unit, Dr. Agarwal's Eye Hospital, Westlands Laser Eye Hospital and Mombasa Eye Hospital and Laser Centre. This study excluded eye centers which offered walk-in eye screening, lenses, and frames such as Optica and Baus Kenya, and general and multi-specialty hospitals which had eye units as part of their sub-specialties.

This study used City Eye Hospital as its case study site since there were less than ten specialty eye hospitals that offered eye services of the same level, targeting the same population. Based on the seven examples identified above, using City Eye Hospital as the study site catered for 14.29% of the eye hospitals in Kenya, which exceeded the recommended 10% threshold when selecting a study population based on literature (Groebner et al., 2018; Martínez-Mesa et al., 2016).

The patients were defined as the persons receiving treatment at the facility or caregivers who accompanied the patients to the hospital, where the patient was not able to fill in the questionnaire, given that this was an eye hospital. Employees were defined as administrative staff that is senior management, middle-level managers, customer care, and cashiers; clinical staff such as

ophthalmologists, optometrists, clinical officers and nurses and support staff such as healthcare assistants, housekeeping, and security personnel.

3.4.2 Sampling Technique

The selection of a sampling frame informs the sampling technique used which must provide sufficient sample size, and representativeness and allow for the generalization of findings (Martínez-Mesa et al., 2016; Taherdoost, 2016). The sample size should also be reliable and efficient and the researcher must be cognizant of sampling errors that may occur and provide an allowance for this (Creswell & Creswell, 2018; Martínez-Mesa et al., 2016). This study adopted non-probability sampling methods where the convenience sampling technique was used as it allowed for the selection of participants who were available on the days of data collection (Creswell & Creswell, 2018; Taherdoost, 2016). This technique also supported the cross-sectional study approach since data was collected at a specific point in time in November 2023 (Creswell & Creswell, 2018)

3.4.2.1 Sample Size Determination

A sample size for a study should ideally have a 95% confidence interval and +/-5% precision (Martínez-Mesa et al., 2016). Precision is defined as the range of values where one would expect to find the true population value, also referred to as the margin of error, while the confidence interval refers to the probability that an indicator or parameter will fall within a range of values (Groebner et al., 2018). This study adopted Cochran's formula which is recommended for infinite populations in order to achieve a desired level of precision (Cochran, 1977). It was to calculate the patient sample size (Sarmah et al., 2013). For the employees, the study targeted the employees who worked at CEH (120 employees) based on the human resource office records. The desired confidence level for this study was 95% with +/-5% precision level (Groebner et al., 2018; Martínez-Mesa et al., 2016).

$$n_0 = \frac{Z^2 * p * (1-p)}{e^2}$$

Adopted from (Cochran, 1977)

where:

n_0 was the sample size.

Z was the Z-Value (1.96 was used in this study since the confidence level desired was 95%) (Groebner et al., 2018; Martínez-Mesa et al., 2016).

p was the estimated proportion of variability in the population (maximum variability of 0.5 was used since the exact variability was unknown) (Martínez-Mesa et al., 2016).

q was derived from (1-p).

e was the desired precision level (0.05 was used in this study since the confidence level desired is 95%) (Groebner et al., 2018; Martínez-Mesa et al., 2016).

$$n_0 = \frac{(1.96)^2 * 0.5 * 0.5}{(0.05)^2}$$

$$n_0 = 384.16 \text{ rounded up to } 385 \text{ patients}$$

The study adjusted the sample size upwards by 30% to cater for non-response bias, which refers to a scenario where patients who responded may have provided answers which differed from those who chose not to respond, given that 385 represented the total number of responses needed from the patients (Groebner et al., 2018).

$$385 * 30\% = 115 \text{ patients}$$

$$385 + 115 = 500 \text{ patients}$$

Thus, the study had a sample size of 500 patients. Since the study was taking place at two facilities, the sample was divided as follows: 350 patients (70%) from the main hospital along Ngong road Nairobi and 150 patients (30%) from the hospital in Nyeri town, Kenya.

The hospital had a total of approximately 120 employees as per the Human Resource Office records in November 2023 between the two branches where the main hospital had 85 employees whereas the Nyeri branch had 35 employees. Thus, the study targeted 120 employees. The non-response rate was calculated after the data collection, as outlined in chapter 4.

3.5 Data Collection Methods

Choosing a suitable data collection method for a study is fundamental to obtaining research data that are valid and reliable (Novikov & Novikov, 2013). This was a quantitative study where a

closed-ended structured questionnaire was used for the collection of primary data (Creswell & Creswell, 2018). The questionnaire consisted of eight sections (Section A to H) where Section A focused on patient biodata, Section B on employee biodata and Section C to G on the independent variables namely tangibility, reliability, assurance, responsiveness, and empathy, and section H on the dependent variable namely perceived service quality (PSQ). The 5-point Likert scale was used to rate responses for Section C to H where: 5= Strongly Agree, 4 = Agree, 3 = Neutral, 2 = Disagree, 1 = Strongly Disagree (Preedy & Watson, 2010).

The Kobo Open Data Kit (ODK) was used to facilitate data collection using the questionnaire which allowed for offline data collection. Additionally, the researcher did not conduct any manual data entry and all the data entry was done automatically through the Kobo ODK. The informed consent form for both patients and employees was also hosted on Kobo ODK, just before the questionnaire. Once the study participants had read, understood, and had all their questions answered during the informed consent process, they proceeded to consent online. The questionnaire was structured on the Kobo ODK in a way that a participant could not proceed to fill out the questionnaire until they consented on the online participant informed consent form. Data collection for patients was be done at the point of exit from the facility so that first-time visit patient respondents could also be included in the study.

The data was downloaded from the Kobo ODK server to the Statistical Package of Social Science (SPSS) for data analysis. Data cleaning which involves data importation, standardization, verification and grading was done, followed by data analysis as illustrated in the section below (Groebner et al., 2018).

3.6 Research Quality

This section focused on the pilot test study, reliability, and validity of the data.

3.6.1 Pilot test study

A pilot test study is important to measure the validity and reliability of data collection instruments (Slattery et al., 2011). In settings where information concerning pilot studies' sample size is insufficient, it is recommended that a sample size of twelve per group would suffice (Julious, 2005). A study which reviewed the recommendations by other researchers on the sample size for pilot studies to measure for validity and reliability also noted that some researchers recommended

30 respondents while others recommended 12 respondents per group (In, 2017). A study which evaluated the importance of conducting pilot studies recommended that 20 respondents would be appropriate for a pilot study and reiterated on the importance of this step in research to help in spotting any errors or deficiencies in the research instrument and addressing them before commencing the main data collection process (Hassan et al., 2006). Thus, this study used a sample size of twelve patients and twelve employees for the pilot study to test for the reliability and validity of the questionnaire, which represented a total of 24 respondents. Since this study took place at two CEH branches, a sample size of twelve patients and twelve employees were selected from CEH main hospital located along Ngong road, as a representative of the two branches for the pilot study. The pilot study was carried out in November 2023.

3.6.2 Reliability

Reliability in research refers to how much the results obtained from a study based on the data collection tool used can be trusted for accuracy and dependability (Mohajan, 2017). The Cronbach alpha also known as coefficient alpha is used to measure the reliability of questionnaires with values above 0.7 considered reliable (Heo et al., 2015). This study sought to determine the validity and reliability of the questionnaire through a pilot study. The questionnaire used was adapted from the SERVQUAL model. The pilot study was carried out for one day (6th November 2023). It comprised of 24 respondents who represented 12 patients and 12 employees, and the Cronbach's alpha was calculated from the data obtained (see table 4).

Table 2: Reliability test results

Variables	No. of questions	Cronbach's Alpha		
		<u>Patients</u>	<u>Employees</u>	<u>Overall</u>
Tangibility	4	0.856	0.883	0.872
Reliability	5	0.826	0.861	0.848
Assurance	4	0.895	0.852	0.882
Responsiveness	4	0.744	0.907	0.825
Empathy	5	0.804	0.885	0.847
PSQ	5	0.878	0.899	0.898

Note. From author's research data (2023)

Based on the results in table 4, both the dependent and independent variables had a Cronbach's Alpha test result above +0.7 which implied that the questionnaire was reliable (Creswell & Creswell, 2018; Heo et al., 2015).

3.6.3 Validity

Validity refers to how well a data collection tool measures what the researcher intends for it to measure (Mohajan, 2017). Validity is closely related to reliability since the results obtained can only be trusted if the questionnaire is measuring what it should based on the research questions (Novikov & Novikov, 2013). The study used content validity where the questionnaire was subjected to thorough scrutiny by the supervisor and examiners (Novikov & Novikov, 2013).

3.7 Data Analysis

This study used the Statistical Package of Social Science (SPSS) to analyze quantitative data through descriptive and inferential statistics. Since this study had two data sets (patient and employee data), the perceived service quality (dependent variable) was determined by testing and comparing the means of the two data sets for each independent variable. For example, comparing how patients and employees perceived tangibility. The overall comparison of all the independent variables was also done to determine how both patients and employees perceive the overall service quality.

Step one: Reliability tests were carried out to determine the Cronbach alpha from the pilot study data. The baseline Cronbach alpha value was 0.7 (Heo et al., 2015).

Step two: Tests of normality were done to determine whether the data met the assumption of parametric test. The Kolmogorov-Smirnov test was used to test for normal distribution, due to the large overall sample size (Berger & Zhou, 2014). Alpha was defined as 0.05 which meant that there was a 5% probability of incorrectly rejecting the null hypothesis, defined as a type one error, which was acceptable in this study (Groebner et al., 2018). The importance of this normality test was to inform the researcher's choice between parametric and non-parametric tests. If the data assumed normal distribution, the researcher would conduct parametric tests such as Pearson's correlation test, if the data did not assume normal distribution, the researcher would conduct non-parametric tests such as Spearman's correlation test for further data analysis (Groebner et al., 2018; Moore et al., 2015). The study adapted the following hypothesis:

Null hypothesis (H_0): The data met the assumption of parametric test.

Alternative hypothesis (H_a): The data did not meet the assumption of parametric test.

If the p-values obtained were less than alpha, the study rejected the null hypothesis. If the p-values obtained were greater than alpha, the study failed to reject the null hypothesis (Groebner et al., 2018).

Step three: The mean and standard deviations were calculated for the independent and dependent variables for both patients and employees, to determine perceptions for study objectives one and two. If the data met the assumption of parametric test, the t-test for independent samples would be used to determine if the difference in means was significant. If the data did not meet the assumption of parametric test, the Mann Whitney u-test would be used to determine if the difference in means was significant (Groebner et al., 2018; MacFarland et al., 2016). The computed test statistics were converted into a standardized value referred to as the Z-value, also known as the critical value. It referred to the number of standard deviations a value x was away from the mean, and was determined from the standard normal table below (Groebner et al., 2018; Novikov & Novikov, 2013). This study used 1.96 as the z-value since the desired confidence level was 95% (see table 2).

Table 3: Standard Normal Table

Confidence Level	Z-value
90%	1.645
95%	1.960
99%	2.575

Note. Adapted from (Groebner et al., 2018).

The study adapted the following hypothesis with alpha been defined as 0.05:

H_0 : There was no difference in perceptions of service quality between patients and employees.

H_a : There was a difference in perceptions of service quality between patients and employees.

If the p-values obtained were less than 0.05, the study rejected the null hypothesis. If the p-values obtained were greater than 0.05, the study failed to reject the null hypothesis (Groebner et al., 2018).

Step four: Correlation tests were carried out to determine the relationship between variables and their significance. If the data met the assumption of parametric test, the Pearson’s correlation test would be used. If the study did not meet the assumption of parametric test, the Spearman’s correlation test would be used (Groebner et al., 2018) The interest here was the value of r , the correlation coefficient, which was used to evaluate the strength and direction of the relationship between the independent and dependent variables, on a linear scale. If the value of r was positive, this indicated a positive association while a negative r value indicated a negative association (Moore et al., 2015). Table 3 also indicated the strength of the relationship in relation to r and was used to interpret the r values based on the data analysis:

Table 4: Interpretation of the absolute value of r

Absolute value of r	Strength of relationship
$r < 0.3$	Very weak
$0.3 < r < 0.5$	Weak
$0.5 < r < 0.7$	Moderate
$r > 0.7$	Strong

Note. Adapted from (Moore et al., 2015).

The study adapted the following hypothesis for patients and employees:

H_0 : The correlation coefficient r was equal to zero

H_a : The correlation coefficient r was unequal to zero

If the value of r was unequal to zero, the study rejected the null hypothesis. If the value of r was equal to zero, the study failed to reject the null hypothesis (Moore et al., 2015).

Step five: The researcher ran a regression model and obtained the value of r -squared, the coefficient of determination, which estimated the proportion of variation of the dependent variable that was explained by the independent variables (Wooldridge, 2013). This was at a 90%, 95%, and 99% confidence level, which was used to generate point estimates and used to illustrate how an improvement or change in the independent variable affected the dependent variable. Thus, the regression analysis served as supplementary analysis to enhance and enrich the research results by helping the researcher understand the combined impact of the independent variables on the dependent variable (Groebner et al., 2018; Moore et al., 2015). The regression equations that were

used are illustrated in appendix 8. The regression model reported point estimates and their respective standard errors, with a smaller standard error showing that the point estimate was reliable (Groebner et al., 2018). The ratio of the point estimate and the standard error generated the test statistic which in turn was used to generate the p-values (Groebner et al., 2018). The model also generated the value of r-squared, the coefficient of determination, which indicated the percentage of independent variables that could be used to predict PSQ (Moore et al., 2015).

3.8 Ethical Considerations

This study sought ethical approval from the Strathmore University Ethics Review Committee followed by National Commission for Science, Technology, and Innovation (NACOSTI) research permit (see appendix 4 and 5). The importance of seeking ethical approval was to protect the rights of the participants such as the right to privacy and the right to information through informed consent, while also protecting the researcher by demonstrating that she had adhered to the ethical standards of the university and that the research she was carrying out was valid and genuine (Gelling, 2016).

The researcher also obtained an introduction letter from Strathmore University Business School which was presented to the Management at City Eye Hospital for approval of the hospital as a study site (see appendix 1). The researcher also signed a data protection agreement with the hospital, which included a commitment to submit a written report to the hospital once the study was completed. The researcher also obtained informed consent from all patients and employees who participated in the study and ensured that all data collected from respondents remained confidential and anonymous.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF RESEARCH RESULTS

4.1 Introduction

The aim of this chapter is to present the results from the study based on the three objectives: the perceptions of patients on service quality, the perceptions of employees on service quality and how the similarities and/or differences in perceptions can be leveraged to improve service quality at City Eye Hospital. This chapter covers the response rate, tests of normality, followed by the profile of respondents and descriptive statistics for patients and employees reported under objective one and two respectively, and inferential statistics reported under objective three featuring the Mann Whitney U-test for difference in means, correlation test for relationships between variables, and the regression model.

4.2 Response rate

The study targeted a total of 620 respondents comprising of 500 patients and 120 employees at City Eye Hospital. The number of patients who successfully completed the online questionnaire were 378 out of 500 which represented a response rate of 75.6% while the number of employees who successfully completed the questionnaire were 84 out of 120 which represented a response rate of 70% (see table 5). The overall number of questionnaires sent out was 470, out of which 466 were completed and four respondents declined to take part in the study.

Table 5: Response Rate

Description	Sample size	Respondents	Response rate (%)
Patient	500	378	75.6
Employee	120	84	70.0
Total	620	462	74.5

Note. From author's research data (2023).

Based on table 3, the researcher considered the response rates by patients and employees to be acceptable for this study. This was justified by similar published studies such as a study in Nigeria which compared patient and employee perceptions using the SERVQUAL model which had 328 respondents, a study which measured service quality at Indian hospitals using the same model

which had 210 respondents, and another study which compared patient and nurses perceptions of nursing service quality using the same model which had 554 respondents (Ali et al., 2018; Fiakpa et al., 2022; Lee & Yom, 2007). The employee response rate was also justified by the fact that some employees were on leave or in the field for medical camps during the period of data collection in November 2023.

4.3 Tests of normality

The study sought to determine if the data collected assumed normal distribution. The study adapted the following hypothesis:

Null hypothesis (H_0): The data met the assumption of parametric test.

Alternative hypothesis (H_a): The data did not meet the assumption of parametric test.

The Kolmogorov-Smirnov test was used to test for normal distribution due to the large sample size of 462 respondents (see table 6). Alpha was defined as 0.05.

Table 6: Kolmogorov-Smirnov test of normality for patients and employees

Description	Patients			Employees		
	Statistic	df	Sig.	Statistic	df	Sig.
Tangibility	0.403	378	0.000	0.181	84	0.000
Reliability	0.325	378	0.000	0.165	84	0.000
Assurance	0.430	378	0.000	0.132	84	0.001
Responsiveness	0.399	378	0.000	0.170	84	0.000
Empathy	0.379	378	0.000	0.148	84	0.000
PSQ	0.392	378	0.000	0.181	84	0.000

Note. From Author's Research Data (2023)

Based on table 6, the p-values were less than alpha for the dependent and independent variables for both patients and employees. Thus, the study rejected the null hypothesis since the data did not assume normal distribution. Therefore, for the inferential statistics, the study adopted the Mann-Whitney U test to test for significance in the difference in means, the Spearman's Correlation test to determine the strength and association of the relationship between the dependent and

independent variables, and a regression model to determine whether and how the independent variables affect PSQ.

4.4 The perceptions of patients on service quality at CEH

This section presents the study results based on the profiles of patient respondents and descriptive statistics to compare means for both the dependent and independent variables to answer research question number one.

4.4.1 Profile of patient respondents

The demographic findings obtained from the patient respondents are presented below. The study sought to determine the gender, age, CEH branch, place of residence, and number of visits to CEH for patients (see table 7).

Table 7: Profile of patient respondents

Description	Patients	
	Frequency	Percentage (%)
Gender		
Male	193	51.1
Female	185	48.9
Age		
Below 25 years	28	7.4
Between 25-34	38	10.1
Between 35-44	57	15.1
Between 45-54	78	20.6
Over 55	177	46.8
CEH Branch		
CEH Nairobi	364	77.9
CEH Nyeri	103	22.1
Patient visits		
First-time visit	79	20.9
2 to 5 visits	226	59.8

More than 5 visits	73	19.3
Patient residence		
Urban	145	38.4
Rural	233	61.6

Note. From author's research data (2023).

Based on the study results, 51.1% of the patient respondents were male while 48.9% were female. Most patients were above the age of 55 years (46.8%), with the number dwindling gradually between the age groups and the lowest number of patients being below 25 years (7.4%). CEH Nairobi contributed 77.9% while CEH Nyeri contributed 22.1% of patient respondents in this study. Majority of the patients (59.8%) had visited the facility between two to five times, while 20.9% were first-time visitors and 19.3% had visited the facility more than five times. Additionally, most of the patients were from rural areas (61.6%) compared to urban areas (38.4%).

4.4.2 Patients Descriptive statistics

The study sought to answer research question number one on determining the perceptions of patients on service quality at CEH by comparing means between the dependent and independent variables that were adapted from the SERVQUAL model (see table 8).

Table 8: Patients Descriptive Statistics

Description	Patients		
	<u>N</u>	<u>Mean</u>	<u>Std. Deviation</u>
Tangibility	378	4.156	0.359
Reliability	378	3.950	0.415
Assurance	378	4.100	0.349
Responsiveness	378	4.024	0.371
Empathy	378	4.021	0.351
PSQ	378	4.026	0.355

Note. From author's research data (2023).

N= Number of respondents

Based on the study results where perceptions were to be determined by comparing means, tangibility had the highest mean (4.156) followed by assurance (4.100), responsiveness (4.024),

empathy (4.021) and reliability had the lowest mean (3.950) for the independent variables. PSQ, the dependent variable, had a mean of 4.026. From these results, the perceptions of patients regarding tangibility were highest while perceptions regarding reliability were lowest. Inferential statistics were carried out to further understand these findings and are discussed under objective number three (section 4.6).

4.5 The perceptions of employees on service quality at CEH

This section presents the study results based on the profiles of employee respondents and descriptive statistics to compare means for both the dependent and independent variables to answer research question number two.

4.5.1 Profile of employee respondents

The demographic findings obtained from the employee respondents are presented below. The study sought to determine the gender, age, CEH branch, employee distribution per department and job tenure (see table 9).

Table 9: Profile of employee respondents

Description	Employees	
	Frequency	Percentage
Gender		
Male	44	47.6
Female	40	52.4
Age		
Below 25 years	13	15.5
Between 25-34	55	65.5
Between 35-44	11	13.1
Between 45-54	4	4.8
Over 55	1	1.2
CEH Branch		
CEH Nairobi	58	69.0
CEH Nyeri	26	31.0

Employee department		
Administrative	22	26.2
Clinical	27	32.1
Support services	35	41.7
Job tenure		
Less than two years	52	61.9
3-5 years	23	27.4
Over 5 years	9	10.7

Note. From author's research data (2023).

Based on the research findings, 52.4% of employee respondents were female while 47.6% were male. Most employees were aged between 25-34 years (65.5%) with the least number been aged between 45-54 years (4.8%) and over 55 years (1.2%). The study had 69% of respondents from CEH Nairobi while 31% were from CEH Nyeri. Thirty-five employees (41.7%) were from support services, for example healthcare assistants, twenty-seven employees (32.1%) were from the clinical departments, for example nurses while twenty-two (26.2%) were from the administrative departments, for example accountants. Most of the employees (61.9%) had worked at CEH for less than two years, 27.4% had worked for 3-5 years while 10.7% had worked for over five years at the hospital.

4.5.2 Employee descriptive statistics

The study sought to answer research question number two on determining the perceptions of employees on service quality at CEH by comparing means between the dependent and independent variables that were adapted from the SERVQUAL model (see table 10).

Table 10: Employee Descriptive Statistics

Description	Employees		
	<u>N</u>	<u>Mean</u>	<u>Std. Deviation</u>
Tangibility	84	4.435	0.616
Reliability	84	4.290	0.620
Assurance	84	4.351	0.581
Responsiveness	84	4.390	0.626

Empathy	84	4.264	0.687
PSQ	84	4.388	0.671

Note. From author’s research data (2023).

N= Number of respondents

Based on the study results and methodology where perceptions were to be determined by comparing means, tangibility had the highest mean (4.435), followed by responsiveness (4.390), assurance (4.351), reliability (4.290) and empathy had the lowest mean (4.264). PSQ, the dependent variable, had a mean of 4.388. From these results, the perceptions of employees regarding tangibility were highest while perceptions regarding empathy were lowest. Inferential statistics were carried out to further understand these findings and are discussed under objective number three (section 4.5).

4.6 To determine how the similarities and/or differences can be leveraged to improve service quality at City Eye Hospital

The study sought to answer research question number three through descriptive statistics by comparing means between patients and employees, and inferential statistics using the Mann-Whitney U-test to determine if the difference in means was statistically significant, Spearman’s Correlation test to determine the strength and association of the relationship between the dependent and independent variables, and a regression model to determine whether and how the independent variables affect PSQ.

4.6.1 Descriptive statistics for both patients and employees

The study sought to answer research question number three by comparing means between the dependent and independent variables that were adapted from the SERVQUAL model, for both employees and patients (see table 11).

Table 11: Summary of descriptive statistics for patients and employees

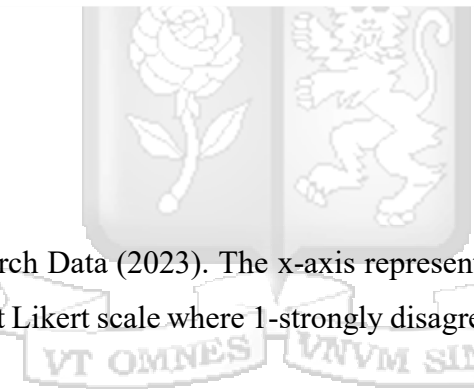
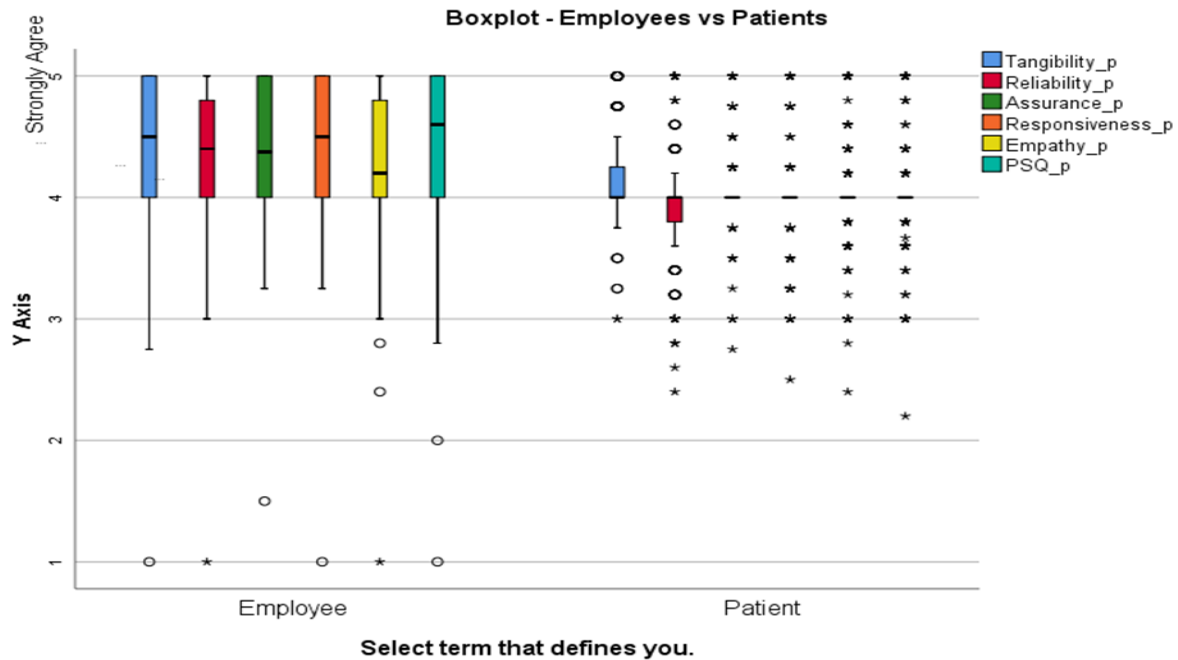
Description	Term	N	Mean	Std. Deviation
Tangibility	Patient	378	4.156	0.359
	Employee	84	4.435	0.616
Reliability	Patient	378	3.950	0.415
	Employee	84	4.290	0.620

Assurance	Patient	378	4.100	0.349
	Employee	84	4.351	0.581
Responsiveness	Patient	378	4.024	0.371
	Employee	84	4.390	0.626
Empathy	Patient	378	4.021	0.351
	Employee	84	4.264	0.687
PSQ	Patient	378	4.026	0.355
	Employee	84	4.388	0.671

Note. From author's research data (2023)

Tangibility was rated highest by both employees and patients (mean=4.434 and 4.156 respectively). The difference in the means was 0.278. Responsiveness was rated second by employees (mean=4.390) but rated third by patients (mean=4.024). The difference in means was 0.366 which was higher in comparison to tangibility. Assurance was rated second by patients (mean=4.100) but rated third by employees (mean=4.351). The difference in means was 0.251 which was lower compared to the difference in means for tangibility and responsiveness. Empathy was rated fourth by patients (mean=4.021), but it had the lowest rating for employees (mean=4.264). The difference in means was 0.243 which was lower compared to difference in means for tangibility, responsiveness, and assurance. Reliability was rated lowest by patients (mean=3.950) but rated fourth by employees (mean=4.290). The difference in means was 0.340 which was higher compared to tangibility, assurance, and empathy, but slightly lower in comparison to responsiveness. Employees also had a higher mean for the dependent variable PSQ (mean=4.026) compared to patients (mean=4.388). For all the independent variables and the dependent variable, employee overall perceptions were higher compared to patients which was also the case for all the individual questions asked (see appendix 7). A box plot was used as a robustness check to further illustrate the distribution of responses between employees and patients for both the dependent and independent variables (see figure 3).

Figure 3: Box plot illustrating the distribution employees versus patients’ responses.



Note. From Author’s Research Data (2023). The x-axis represents the employee and patient. The y-axis represents the 5-point Likert scale where 1-strongly disagree, 2-disagree, 3-neutral, 4-agree, and 5-strongly agree.

Based on the results from the box plot, most of the employee responses were distributed between the 4 and 5 rating on the Likert Scale while most of the patient responses had a wider distribution between 3, 4, and 5 ratings on the scale, with both groups having a few outliers.

4.6.2 Inferential statistics for patients and employees

The study also sought to answer research question three through inferential statistics using the Mann-Whitney U-test to determine if the difference in means was statistically significant, Spearman’s Correlation test to determine the strength and association of the relationship between the dependent and independent variables, and a regression model to determine whether and how the independent variables affect PSQ. These tests were used because the data did not meet the

assumption of parametric test as discussed under subtitle 4.3. These results would also strengthen the argument for research question one and two which focused on the perceptions of patients on service quality at CEH and the perceptions of employees on service quality at CEH respectively.

4.6.2.1 Mann-Whitney U-test for difference in means

From the normality test under subsection 4.3, the data did not meet the assumption of parametric test. Thus, the study adapted the Mann-Whitney U-test which is a non-parametric test to test whether the differences in perceptions between patients and employees, based on the means was statistically significant (see table 12). Alpha was defined as 0.05 and the following hypothesis was tested:

H₀: There is no difference in perceptions of service quality between patients and employees.

H_a: There is a difference in perceptions of service quality between patients and employees.

Table 12: Mann-Whitney U-test for difference in means

Variable	Mann-Whitney U-test	Z-value	p-value (2-tailed)
Tangibility	8866.500	-7.176	0.000
Reliability	8476.000	-7.211	0.000
Assurance	10926.000	-5.350	0.000
Responsiveness	9454.500	-6.792	0.000
Empathy	10766.500	-5.282	0.000
PSQ	8046.000	-8.176	0.000

Note. From author's research data (2023)

The data in table 10 shows that all the p-values were significantly less than the alpha value of 0.05. Thus, the study rejected the null hypothesis. Based on these results, there was a difference in perceptions of service quality between patients and employees. Additionally, the z-values obtained were larger than the critical z-value (1.960) at 95% confidence level showing that difference in perceptions was indeed statistically significant (see table 2 and table 10). This test strengthened the argument for research questions three by showing that the differences in the means between patients and employees for both the independent and dependent variables was significant (see table 15 and appendix 7).

4.6.2.2 Correlation analysis for relationship between variables

Consequently, the researcher carried out Spearman’s correlation test since the data did not meet the assumption of parametric test (see table 4), to better understand and strengthen the argument on differences in perceptions and how they can be leveraged to improve service quality (see table 13, 14 and 15). The interest was to check whether two items were related, for example, tangibility and perceived service quality, and the significance of the relationship.

4.6.2.2.1 Correlation analysis for patients

The following hypothesis was used to test if there was a relationship between the variables based on the spearman’s correlation test (see table 13):

H₀: The correlation coefficient r is equal to zero for patients.

H_a: The correlation coefficient r is unequal to zero for patients.

Table 13: Spearman’s correlation for patients

Variable	r and p-value	PSQ	Tangibility	Reliability	Assurance	Responsiv	Empathy
PSQ	r	1.000	.430**	.599**	.529**	.586**	.587**
	p-value		0.000	0.000	0.000	0.000	0.000

Note. From Author’s research data (2023).

N=378

**p<.05

r represents the correlation coefficient

Based on the r values for all the variables in table 11, they were all unequal to zero indicating that a linear relationship existed between the dependent variable PSQ and the independent variables. Thus, the study rejected the null hypothesis at 95% confidence level (p<0.05). All the r values were also positive showing that there was a positive association between the dependent and independent variables, meaning that an improvement in the independent variables would also lead to a simultaneous improvement in the dependent variable PSQ. The p-value values were all less than alpha (0.05) at 95% confidence level implying that the positive association between PSQ and the independent variables was statistically significant for patients. It was also observed based on the results presented in table 13 above and table 3 on interpretation of r values, that there was a weak positive correlation (r=0.430) between tangibility and PSQ, meaning that improvements in

tangibility would lead to minimal improvement in PSQ for patients. The other four independent variables had positive correlation of moderate strength with PSQ, meaning that improvements in reliability ($r=0.599$), assurance ($r=0.529$), responsiveness ($r=0.586$), and empathy ($r=0.587$) would lead to moderate improvements in PSQ for patients (see table 3 and table 11).

4.6.2.2.2 Correlation analysis for employees

The following hypothesis was used to test if there was a relationship between the variables based on the spearman's correlation test (see table 14):

H_0 : The correlation coefficient r is equal to zero for employees.

H_a : The correlation coefficient r is unequal to zero for employees.

Table 14: Spearman's correlation for employees

Variable	r and p-value	PSQ	Tangibility	Reliability	Assurance	Responsiv	Empathy
PSQ	r	1.000	.714**	.810**	.721**	.780**	.863**
	p-value		0.000	0.000	0.000	0.000	0.000

Note. From Author's research data (2023).

N=84

** $p < .05$

r represents the correlation coefficient

Based on the r values for all the variables in table 12, they were all unequal to zero indicating that a linear relationship existed between the dependent variable PSQ and the independent variables. Thus, the study rejected the null hypothesis. All the r values were also positive, showing that there was a positive linear relationship between the variables. The p -values were all significantly less than alpha (0.05) at 95% confidence level showing that the positive correlation between the dependent and independent variables was statistically significant. Based on table 3 on the interpretation of the absolute value of r and the results presented in table 14, the independent variables tangibility ($r=0.714$), reliability ($r=0.810$), assurance ($r=0.721$), responsiveness ($r=0.780$), and empathy ($r=0.863$) had a strong positive correlation with PSQ. This means that an improvement in tangibility, reliability, assurance, responsiveness, and empathy would simultaneously lead to a strong improvement in PSQ, with reliability and empathy having the strongest positive correlation with PSQ for employees.

4.6.2.2.3 Overall correlation analysis for both patients and employees

The following hypothesis was used to test if there was a relationship between the variables based on the spearman’s correlation test (see table 15):

H₀: The correlation coefficient r is equal to zero for patients and employees.

H_a: The correlation coefficient r is unequal to zero for patients and employees.

Table 15: Spearman’s correlation for both patients and employees

Variable	r and p-value	PSQ	Tangibility	Reliability	Assurance	Responsiv	Empathy
PSQ	r	1.000	.583**	.723**	.637**	.692**	.721**
	p-value		0.000	0.000	0.000	0.000	0.000

Note. From Author’s research data (2023).

N=84

**p<.05

r represents the correlation coefficient

Based on the r values for all the variables in table 15, they were all unequal to zero indicating that a linear relationship existed between the dependent variable PSQ and the independent variables. Thus, the study rejected the null hypothesis. All the r values were also positive showing that there was a positive linear relationship between the variables. The p-values were all less than alpha (0.05) at 95% confidence level implying that the positive linear relationship between PSQ and the independent variables was statistically significant. Based on table 3 on the interpretation of the absolute value of r, and table 15 above, tangibility (r=0.583) had a weak positive correlation with PSQ. Assurance (r=0.637) and responsiveness (r=0.692) had a positive correlation of moderate strength with PSQ, while reliability (r=0.723) and empathy (r=0.721) had a strong positive correlation with PSQ. This means that an improvement in tangibility for both patients and employees would lead to minimal improvement in PSQ while improvements in assurance and responsiveness would lead to moderate improvement in PSQ. Improvements in reliability and empathy would lead to the strongest improvement in PSQ for both patients and employees, and the regression model was used to further illustrate and strengthen the positive correlation arguments under objective three.

4.6.3 Regression models

To further understand the spearman's correlation results which established that a linear relationship of positive association existed between the dependent variable PSQ and the independent variables, and strengthen the argument for objective three, the researcher ran a regression model. The researcher was trying to understand whether the five independent variables (tangibility, reliability, assurance, responsiveness, and empathy) affect the dependent variable (PSQ) and how they affect the dependent variable (see table 16). The model generated point estimates for each independent variable in relation to PSQ, at a confidence level of 90%, 95% and 99% ($\alpha = 0.1, 0.05$ and 0.01 respectively). The ratio of the point estimate and the standard error generated the test statistic which in turn was used to generate the p-values using the SPSS software. The values of r (correlation coefficient) and r -squared (coefficient of determination) were also reported for the three models. These results illustrated how an improvement or change in the independent variable would affect the dependent variable PSQ for model one (patients), model two (employees), and model three (patients and employees).

4.6.3.1 Regression model for patients

Point estimates were generated for each independent variable in relation to the dependent variable (PSQ), with small standard errors reported. The statistical significance of the point estimates was also reported at 99%, 95% and 90% confidence level (** $p < 0.01$, * $p < 0.05$, * $p < 0.1$ respectively). For patients, $R(378) = 0.820$ meaning that there was a strong positive correlation between the dependent variable (PSQ) and the independent variables based on the regression model (see table 3 and table 16). Additionally, R -squared was 0.673 meaning that 67.3% of the independent variables could be used to predict PSQ for patients (see table 16).

Thus, if reliability and empathy were increased by a unit, PSQ would improve by 0.264 and 0.332 respectively and both were significant at 1% ($p < 0.01$, 99% confidence level). Increasing tangibility by a unit would improve PSQ by 0.1 which was also statistically significant at 1%. Increasing responsiveness by a unit would also lead to an improvement in PSQ that was statistically significant at 5% ($p < 0.05$, 95% confidence level), but an improvement in assurance by a unit was not significant in relation to PSQ (see table 16). This means that to leverage on patients' perceptions of service quality, CEH should focus on empathy, reliability, and tangibility which would result in PSQ improvement of statistical significance at 1% ($p < 0.01$, 99% confidence level).

4.6.3.2 Regression model for employees

Point estimates were generated for each independent variable in relation to the dependent variable PSQ for employees at 99%, 95%, and 90% confidence interval (*** $p < .01$, ** $p < .05$, * $p < .1$ respectively). For employees, $R(84) = 0.915$ meaning that there was a strong positive correlation between the dependent variable (PSQ) and the independent variables based on the regression model for employees (see table 3 and table 16). R-squared was 0.837 meaning that 83.7% of the independent variables could be used to predict PSQ for employees (see table 16).

For employees, if empathy was increased by a unit, PSQ would improve by 0.541 which was statistically significant at 1% ($p < 0.01$, 99% confidence level). Similarly, if reliability was increased by a unit, PSQ would improve by 0.442 which was also statistically significant at 1%. However, increasing tangibility, assurance, and responsiveness by a unit would not result in statistically significant improvements in PSQ. In fact, increasing tangibility and assurance by a unit would probably worsen employee perceptions of service quality based on the negative point estimates from the regression model (see table 16). This means that to leverage on employee perceptions of service quality, CEH should leverage on empathy and reliability which would result in statistically significant improvements in PSQ at 1% ($p < 0.01$, 99% confidence level).

4.6.3.3 Overall regression model for both patients and employees

Point estimates were generated for each independent variable in relation to the dependent variable PSQ for the overall model at 99%, 95%, and 90% confidence interval (*** $p < .01$, ** $p < .05$, * $p < .1$ respectively). $R(462) = 0.870$ meaning that there was a strong positive correlation between the dependent variable (PSQ) and the independent variables based on the overall regression model (see table 3 and table 16). R-squared was 0.757 meaning that 75.7% of the independent variables could be used to predict PSQ for both patients and employees (see table 16).

Therefore, if empathy was increased by a unit, it would lead to the greatest improvement in PSQ for the overall model (0.416) which was significant at 1% ($p < 0.01$, 99% confidence level). Additionally, if reliability was increased by a unit, PSQ would improve by 0.297 which was also statistically significant at 1%. Improvements in tangibility and responsiveness by a unit would also result in statistically significant improvements in PSQ at 1%. However, increasing assurance by a unit would not result in improvement in PSQ (see table 16).

Table 16: Patient, employee, and overall regression model

	Perceived Service Quality		
	Patient model	Employee model	Overall model
Tangibility	0.100*** (0.037)	-0.033 (0.102)	0.107*** (0.035)
Reliability	0.264*** (0.038)	0.442*** (0.113)	0.297*** (0.038)
Assurance	0.081 (0.055)	-0.115 (0.112)	-0.006 (0.049)
Responsiveness	0.129** (0.050)	0.117 (0.112)	0.147*** (0.046)
Empathy	0.332*** (0.053)	0.541*** (0.097)	0.416*** (0.044)
_cons	0.385*** (0.143)	0.312 (0.243)	0.186 (0.114)
Observations	378	84	462
R	0.820	0.915	0.870
R-squared	0.673	0.837	0.757
Adj R ²	0.669	0.827	0.755
F-stat	153.203	80.252	284.599
RMSE	0.204	0.279	0.224
p	0.0000	0.0000	0.0000
Patient	Yes	No	Yes
Employee	No	Yes	Yes

Note. From author's research data (2023)

Standard errors are in parentheses.

*** p<.01, ** p<.05, * p<.1

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter consists of the summary of the study, discussion of results based on each research objective, conclusions, study contributions to theory, policy and practice, recommendations, limitations, and suggested areas for further research.

5.2 Summary of study

The objectives of this study were: to determine the perceptions of patients on service quality at City Eye Hospital (CEH), to determine the perceptions of employees on service quality at CEH and to determine how the similarities and/or differences in perceptions could be leveraged to improve service quality at CEH. The study sought to bridge a knowledge gap by comparing perceptions on service quality between patients and employees at a specialty hospital. These hospitals are also part of the service industry, and with advancements in technology and increased competition among players, specialty hospitals must also focus on service quality, how they can measure and improve it.

The researcher chose to focus on specialty eye hospitals since findings from literature demonstrated that eye problems continue to be a major public health concern especially in LMICs, with the burden of visual impairment and socioeconomic development been closely associated. Thus, even with eye care been a niche industry in healthcare, eye problems are a public health concern globally, and it was important to establish how patients and employees perceive service quality, and how the findings can be leveraged to improve service quality and enrich literature in this field.

The study was anchored by George Kelly's personal construct theory whose link to the study objectives demonstrated that different people had different perceptions based on their own constructs shaped by their learning and experiences. The study had five independent variables adapted from the SERVQUAL model namely tangibility, reliability, assurance, responsiveness, and empathy, and one dependent variable (perceived service quality). This was a descriptive, cross-sectional quantitative study which adapted a positivist research philosophy, and whose population of study comprised of patients and employees at CEH Nairobi and Nyeri county. The study used

convenience non-probability sampling and had a sample size of 500 patients and 120 employees where 378 patients and 84 employees responded to the questionnaire. Data collection was done over a period of ten days in November 2023 using a closed-ended questionnaire hosted by the Kobo open data kit online. Data analysis was done using SPSS software, with output data results illustrating the response rate, profile of respondents, tests of normality, descriptive and inferential statistics as outlined in chapter four.

5.3 Discussion of research results

This section outlines the discussion of research results based on each research objective.

5.3.1 The perceptions of patients on service quality at CEH

The study sought to determine the perceptions of patients on service quality based on five independent variables adapted from the SERVQUAL model: tangibility, reliability, assurance, responsiveness, and empathy, with the dependent variable been perceived service quality (Parasuraman et al., 1988). The 5-point Likert scale was used to rate the patient responses (Preedy & Watson, 2010). Tangibility had the highest overall mean for patients followed by assurance, responsiveness, empathy and lastly reliability (see table 6 and appendix 7), with the box plot showing the distribution of responses for patients where majority of them gave an average score of four with most outliers falling between three and five (see figure 3).

These results were in agreement with a study conducted in public hospitals in two states in Nigeria which compared patient and employee perceptions on service quality, where both empathy and reliability were rated low (Fiakpa et al., 2022). However, in the same study, tangibility was also rated low, which was similar to a study done in private Indian commercial hospitals whose aim was to understand the expectations of patients concerning healthcare services by comparing these expectations and the perceived performance using the SERVQUAL model (Ali et al., 2018; Fiakpa et al., 2022). However, this was in disagreement with the results from this study where tangibility was rated highest and a study conducted in Turkey which evaluated service quality from an outpatient perspective where tangibility was also rated highest (Pekkaya et al., 2019). However, reliability was consistently rated low, with questions concerning service delivery within promised timeframes and handling of patient complaints being rated lowest (Fiakpa et al., 2022; Pekkaya et al., 2019).

The spearman correlation test for patients established that a linear relationship of positive association existed between the dependent variable PSQ and all the independent variables (see table 11). However, this relationship was weak for tangibility (0.430) and moderate for the other independent variables. This finding was quite surprising for the researcher since tangibility was rated highest by patients, but its improvement would have little effect on how patients perceived service quality at CEH. Reliability and empathy had a stronger relationship with PSQ compared to tangibility. This was in agreement with a study done in hospitals in nine Chinese cities which measured patient perceptions on service quality using the SERVQUAL model, where tangibility was also rated highest and empathy and reliability lowest, but correlation analysis showed a stronger, positive relationship with PSQ for reliability and empathy compared to the relationship between PSQ and tangibility (Li et al., 2015). However, findings by Ali from the Indian commercial hospitals introduced a debate by querying whether patient high perceptions of tangibility were as a result of hospitals branding themselves as modern facilities delivering exceptional care, which could also explain why tangibility was rated highly in this study, but rated low in the study done in the public hospitals in Nigeria, which may not necessarily focus on branding themselves in a similar manner (Ali et al., 2018; Fiakpa et al., 2022).

Additionally, actual perceptions of service quality were experiential, in the sense that a patient had to go through the complete hospital process before filling out the questionnaire in this study, and this could have influenced why reliability and empathy were consistently rated low compared to the other independent variables in this study, results that were consistent with similar studies done in Nigeria and Turkey (Fiakpa et al., 2022; Parasuraman et al., 1988; Pekkaya et al., 2019). Moreover, Karassavidou whose study focused on the quality of services in the National Healthcare Service (NHS) in Greece argued that tangibility was the most straight-forward quality dimension for patients to evaluate since visually-appealing and clean hospital environments, and well-groomed employees increase patient confidence, while other dimensions may be harder to evaluate since patients may not possess the knowledge or expertise to make a proper assessment (Karassavidou et al., 2009).

5.3.2 The perceptions of employees on service quality at CEH

The study also sought to determine the perceptions of employees on service quality based on five independent variables adapted from the SERVQUAL model: tangibility, reliability, assurance,

responsiveness, and empathy, with the dependent variable been perceived service quality (Parasuraman et al., 1988). The 5-point Likert scale was used to rate employee responses. Tangibility was rated highest (mean=4.435) while reliability and empathy were rated lowest (mean= 4.264 and 4.290 respectively). However, the dependent and independent variables for employees were all ranked higher and had higher means compared to patients.

Findings from a similar study done in Nigeria where employee ratings for all the variables were higher compared to patients, which was also the case in this study, highlighted one inconsistency where empathy was rated high by employees, but for tangibility and reliability, the findings were similar to this study (Fiakpa et al., 2022). The spearman's correlation test for employees established that all the independent variables had a strong linear relationship of positive association with the dependent variable, with empathy having the strongest relationship with PSQ and tangibility having the lowest. This finding depicted a similarity between patient and employee perceptions where although both groups rated tangibility highly, its relationship with PSQ compared to other independent variables, based on the correlation analysis was the weakest, which was also in agreement with a study that evaluated service quality in Chinese hospitals using the SERVQUAL model (Li et al., 2015). Another study which compared patient and nurses perceptions of service quality showed that the nurses (employees) had better perceptions of service quality compared to patients for all five dimensions of the SERVQUAL model, which was comparable to the results from this study, and also concluded that reliability was the most important dimension in improving service quality (Lee & Yom, 2007).

However, for the employee responses, the researcher remained cognizant of the fact that social desirability bias where one responds to a question in a socially acceptable way and acquiescence bias where one agrees to a statement in spite of how they feel, would have influenced how employees responded, based on a 5-point Likert scale, which could explain why employee ratings of all the variables were higher compared to patients for all the variables (Kreitchmann et al., 2019). Additionally, surface acting where employees portray emotions and change their outward appearance by appearing happy and warm towards patients regardless of how they actually feel at that moment, could make employees give more favorable answers on how they perceive service quality (Judge et al., 2009).

5.3.3 To determine how the similarities and/or differences in perceptions can be leveraged to improve service quality at City Eye Hospital.

This section outlines the similarities and differences established based on the research results and literature and how they can be leveraged to improve PSQ.

5.3.3.1 To determine the similarities in perceptions can be leveraged to improve service quality at CEH

Based on the study results, both patients and employees rated tangibility highest which was in agreement with similar studies which measured service quality using the SERVQUAL model, to determine perceptions (Li et al., 2015; Pekkaya et al., 2019). The results from this study established that focusing on tangibility to improve PSQ would lead to little improvement in PSQ for patients, and would likely affect employee perceptions negatively, which was in agreement with a study which measured service quality at Chinese hospitals using the SERVQUAL model, which also concluded that focusing on tangibility would not lead to much improvement (Li et al., 2015). These results were in agreement with caveats which had been expressed by other researchers in service quality studies such as Karassavidou who argued that although patients and employee perceptions of tangibility may be high based on the means since it may not require much expertise to evaluate, this may not necessarily translate to a statistically significant relationship with PSQ (Karassavidou et al., 2009). This study also contributed to knowledge on matters tangibility by demonstrating that employee perceptions of tangibility could actually have an inverse relationship with PSQ, supported by findings from other researchers which established that higher perceptions do not necessarily equate to a statistically significant relationship with PSQ and independent variables rated lower such as reliability and empathy actually have the greatest impact on PSQ (Fiakpa et al., 2022; Karassavidou et al., 2009; Lee & Yom, 2007; Li et al., 2015; Pekkaya et al., 2019).

The study results also established that focusing on assurance and responsiveness would lead to minimal improvement in PSQ which was in agreement with a study whose aim was to evaluate service quality in the Asian context which concluded that all dimensions of the SERVQUAL model were significant in improving service quality except assurance, with another study in Nigeria which compared patient and employee perceptions on service quality also demonstrating that focusing on assurance and responsiveness did not have much effect on PSQ (Fiakpa et al., 2022; Shafiq et al., 2017). Surprisingly, results from a similar study which evaluated quality of healthcare

services and how they affected patient satisfaction concluded that focusing on assurance was most important of the five SERVQUAL dimension but still agreed with this study and the previous cited studies that focusing on responsiveness had minimal effect on service quality (Al-Neyadi et al., 2018).

5.3.3.2 To determine the differences in perceptions can be leveraged to improve service quality at CEH

Reliability was rated lowest by patients while empathy was rated lowest by employees, based on the study results. However, correlation analysis and the regression model results established that the two variables had the greatest impact on PSQ. This brings in the researcher's argument on this objective that the two most important dimensions that the hospital should leverage on to improve service quality based on the study results were reliability and empathy (see table 14). This is reiterated by studies which evaluated patient perceptions of service quality which showed that even though independent variables such as reliability and empathy were rated low while tangibility was rated highest, correlation tests showed that improving reliability and empathy had a stronger impact on PSQ compared to focusing on tangibility (Fiakpa et al., 2022; Li et al., 2015). For example, improving reliability by a unit would improve PSQ by 0.264 for patients, 0.442 for employees, and 0.297 for the overall model, and for all, this was significant at 1% ($p < 0.01$) (see table 14).

Reliability has also been shown to be the most important dimension of the SERVQUAL scale to improve service quality by various studies such as a study in Brazil which compared perceptions between public and private facilities concerning the quality of outpatient ophthalmological services which concluded that reliability was the most important determinant of service quality, but surprisingly also discovered that patient perceptions of public ophthalmological facilities were higher compared to those of private facilities, which was in contrast with one of the conclusions made by Fiakpa that patient perceptions were lower since his study was conducted in public hospitals in Nigeria (Fiakpa et al., 2022; Hercos & Berezovsky, 2017). Additionally, another study which compared patient and nurses perceptions concerning the quality of nursing care concluded that although nurses perceptions of service quality were higher compared to patients, reliability was still the most important dimension in predicting service quality which was also in agreement with the study by Fiakpa in Nigeria which concluded that reliability should be the primary focus

by management in terms of timely delivery of services and dependability in handling service complaints (Fiakpa et al., 2022; Lee & Yom, 2007).

However, the importance of focusing on reliability in addition to empathy cannot be overlooked. Empathy involves being caring, understanding patient needs, providing individualized attention while reliability is being dependable in providing timely services, as promised, and timely handling of complaints and expectations according to Parasuraman, which may be affected by personal constructs of patient and employee respondents based on the theory that anchors this study (Kelly, 1955; Parasuraman et al., 1985, 1988). In this study, empathy emerged to be the most important dimension to improve PSQ which is in contrast with conclusions made in other studies where reliability was the most important dimension (Hercos & Berezovsky, 2017; Lee & Yom, 2007). The argument is also supported by findings by Fiakpa who argued that management should focus on encouraging strong, empathic relationships between employees and patients which would result in better handling of patient complaints and improved and timely service delivery (Fiakpa et al., 2022). However, other studies which compared patient expectations and perceptions of service quality introduced a debate by demonstrating that although study results showed that empathy was the most important dimension in predicting service quality, reliability had the largest gap between perceived and expected service (Nadi et al., 2016). Additionally, for the three models in table 14 (patient, employee, and overall model), the point estimates were significant at 1% for both empathy and reliability, meaning that if this study was repeated or replicated in a similar setting, the probability of drawing the same argument and conclusion was high. Thus, this further strengthened the researcher's argument that CEH should leverage on improving empathy and reliability simultaneously, which contributed to knowledge in this area.

However, another study which measured gaps in healthcare service quality by identifying the challenges and opportunities in developing countries concluded that tangibility plays a crucial role in balancing out the other service quality dimensions and their deficiencies (AlOmari, 2021). Thus, even while focusing on reliability and empathy to leverage the differences in perceptions between patients and employees to improve service quality at CEH, tangibility cannot be ignored since it acts as an important buffer and creates an important first impression, but the focus should be on sustaining it rather than investing more resources to improve it, since this will have minimal impact on PSQ.

5.4 Conclusion

The study sought to determine the perceptions of patients versus employees on service quality at CEH and to determine how the similarities and/or differences can be leveraged to improve service quality. For objective one, the key result for patient perceptions was that although tangibility was rated highest and empathy and reliability lowest based on the means, the correlation tests and regression model showed that focusing on empathy and reliability would have the greatest impact on PSQ. The relationship between assurance and PSQ was not statistically significant and focusing on it would lead to negligible changes in PSQ. Thus, the researcher's argument and conclusion based on the research results and literature, to contribute to knowledge in this area, is that management at CEH should focus on aspects of reliability such as delivering services within the promised timeframe, and dependability in handling service complaints by patients and empathy such as having convenient operating hours and employees understanding patient needs, to improve patient perceptions.

For objective two, the key results for employee perceptions in relation to PSQ were that they similarly rated tangibility highest, and empathy and reliability lowest based on the means. All independent variables had a strong positive association with PSQ, but based on the regression model, only empathy and reliability had a relationship of statistical significance at 1% with PSQ. In fact, focusing on tangibility and assurance for employees would affect PSQ negatively, and responsiveness would have minimal effect on PSQ. Thus, the researcher's argument and conclusion based on the research results and literature, to contribute to knowledge in this area, is that to improve employee perceptions, management at CEH should also focus on aspects of empathy and reliability.

For objective three on how the similarities and/or differences could be leveraged to improve service quality at CEH, the hospital should primarily focus on empathy and reliability aspects, but they also cannot afford to ignore tangibility since it's the easiest and most straightforward variable to assess by both patients and employees, and acts as an anchor for the two variables. Thus, CEH should improve on empathy and reliability while sustaining tangibility to realize long-term sustainable improvements in PSQ. It is the researcher's belief that adopting this data-driven service quality improvement approach at CEH would make the hospital a formidable competitor in the specialty hospitals space.

5.5 Study Contributions

This section outlines the study contribution to theory, policy, practice, and the SERVQUAL model.

5.5.1 Contribution to theory

This study was anchored by the personal construct theory by George Kelly. The study had an empirical contribution to this theory which is based on the fundamental postulate that *“a person’s processes are psychologically channelized by the ways in which he anticipates events”* and people’s perceptions are subject to change based on the context in which they occur. This study strengthened this theory and its use in future service quality research that involves perceptions by demonstrating that even when patients visit specialty hospitals where they seek specific services such as eye hospitals, service quality is still an important aspect of patient experience and should not be overlooked. Similarly, employees also have their own perceptions of service quality, even when they interact with the same environment on a regular basis. The study also contributed to knowledge in regard to the individuality corollary of this theory which explained that people differ in the way they construct and perceive events, which was explained by the differences in perceptions based on the study results. Furthermore, the results also contributed to knowledge in the sociality corollary of the theory which explains that our interactions with others are based on our understanding of their constructs, and this can be used to explain why focusing on empathy will result in improvement of statistical significance in PSQ. Kelly also echoed that *“all our present interpretations of the universe are subject to revision or replacement”*, and therefore it is possible for the hospital to refine and improve patient and employee perceptions of service quality by following this data-driven approach.

5.5.2 Contribution to policy

For the policy makers at CEH, these research results will be used to enrich and improve service quality policies. Additionally, they may also act as a point of reference and baseline for other service quality studies and policy improvements in hospitals. Furthermore, since this study also aided in highlighting the similarities and differences in service quality between patients and employee, the results can be used as a data-driven approach by management to understand which policies can be implemented immediately to address the nuances in perceptions, while having other long-term policies to address and sustain service quality improvement. Eye problems remain a

major public health concern globally and contribution to knowledge in this area will also inspire other hospitals and stakeholders to embrace data-driven policy making processes which will lead to more meaningful and impactful engagements between policymakers, practitioners, and other stakeholders.

5.5.3 Contribution to practice

These research results will allow practitioners and other stakeholders in the specialty hospitals space to realize that although patients visit their hospitals for specific health problems, service quality is still of concern to the patients and employees alike and should not be handled as an afterthought. Additionally, these specialty hospitals also face competition from hospitals which offer services in multiple specialties, and who invest a lot in service improvement policies and practices. Thus, patients have a choice on the hospitals they want to visit, and we are now living in an era where having the best doctor in a particular specialty at your hospital may not be reason enough to convince a patient to visit a facility. Thus, the study results will inform the practitioners that practicing empathy and offering reliable services improves patient and employee perceptions of service quality, and that continuous service quality measurement and improvement may be the point of difference for a specialty hospital in this competitive industry.

5.5.4 Contribution to the SERVQUAL model

The study results have contributed to knowledge by reiterating that the SERVQUAL model remains to be a reliable tool in measuring perceptions in service quality research. This has also been validated by other researchers who have conducted similar service quality research, with consistent study results. Thus, the study results corroborate the original argument by Parasuraman who conceptualized the SERVQUAL model when he wrote that even though most services were intangible and heterogeneous, and perceived service quality existed along a continuum dependent on the degree of dissimilarity between perceived service and expected service (Parasuraman et al., 1985). Therefore, future researchers borrowing from this study to measure perceptions on service quality can use the SERVQUAL model with proven validity and reliability, which has been demonstrated in this study and by other researchers who have used the same model.

5.6 Recommendations

To the management of CEH, this study recommends that the hospital should leverage on improving empathy and reliability while still sustaining its tangibility efforts, since this acts as an anchor for the two. Furthermore, the study results strengthen the argument that the hospital should focus on data-driven service quality improvement efforts and continuously measure the impact of the changes that they implement. For example, improvements in reliability by being dependable in handling patient service complaints and empathy by understanding patient needs and having convenient hospital operation hours. Additionally, the management should continue to sustain its efforts on tangibility by ensuring that the hospital environment remains clean with appealing physical facilities, and that employees appear neat and well-groomed. For matters which involve aspects of assurance and responsiveness such as employees instilling confidence in patients during service and keeping patients informed, the hospital should sustain them but not base their main service quality improvement policies and resources on them since they have minimal impact on PSQ.

To other players in the specialty hospital space, the findings from this study can be used as a baseline for further service quality studies and improvements, and they can also provide critique to this study based on their results and findings.

To the government and policy makers, the study findings call for use of data-driven approaches in policy making, especially on matters of service quality improvement. County governments which manage primary public healthcare facilities where majority of patients seek care, can use these study findings as a basis for service quality improvement and understanding of patient and employee perceptions, which can improve overall patient and employee experience.

5.7 Dissemination of study results

The researcher continuously engaged with management throughout the study and has informally shared these findings with them for validation. A formal presentation is scheduled before the end of the first quarter of 2024 and a final printed copy with fact sheets will be shared with the top leadership at the hospital. The researcher has identified key journals on quality of care to publish these results and is in the process of developing manuscripts. The researcher also plans to apply

for one local, one regional, and one international conference in 2024 and submit an abstract from this study for poster and oral presentation.

5.8 Study limitations

The study scope was limited to specialty hospitals, with an eye hospital been selected as the study site by the researcher which excluded patients and employees in other public and private multi-specialty hospitals. The study was designed as a descriptive, cross-sectional quantitative case study thus the researcher did not incorporate qualitative data from the research participants. The study had a sample size of 378 patients and 84 employees, and based on the nature of the study where patient and employee perceptions were compared, the study would have benefited from a larger sample size. Also, this study adopted the SERVQUAL model to measure service quality and did not involve other service quality measurement models such as SERVPERF model.

5.9 Suggested areas of further research

The study recommends that further research that compares the perceptions of patients and employees should be conducted in multi-specialty hospitals in the public and private sectors, with qualitative methods being incorporated in the study. Additionally, this study can be replicated in other specialty hospitals using SERVQUAL or a different service quality measurement model such as SERVPERF. Researchers can also carry out a similar study in other service quality sectors such as the hospitality and banking sector.

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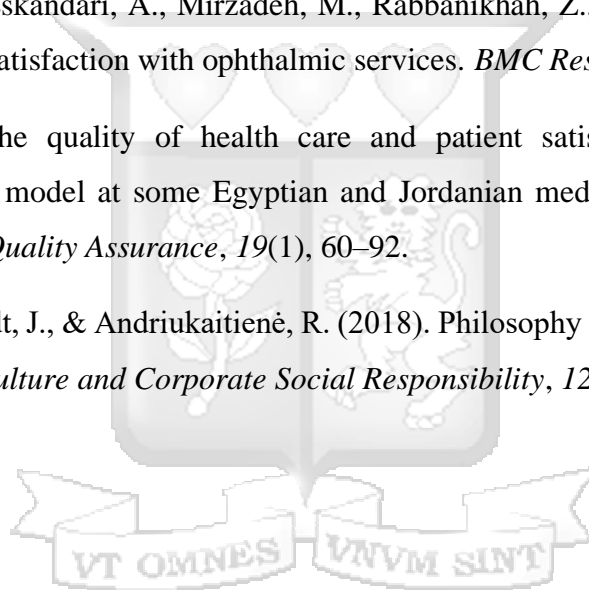
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APPENDICES

Appendix 1: Letter of Introduction

Ole Sangale Rd, Maclarakia Estate
P. O. Box 59857 - 00200, Nairobi, Kenya.
Cell: +254 703 034 414/617. Twitter: @SBSKenya
Facebook/LinkedIn: Strathmore Business School
Email: info@sbs.ac.ke or visit www.sbs.strathmore.edu



Tuesday, 25th July 2023.

To Whom It May Concern,

RE: FACILITATION OF RESEARCH – PERIS WAMBUI THUO.

This is to introduce Peris Wambui Thuo, a Master of Business Management in Healthcare Management (MBA-HCM) student at Strathmore University Business School, admission number MBA HCM/147761/22.

As part of our MBA-HCM Program, Peris is expected to do applied research and undertake a project. This partially fulfills the requirements of the MBA-HCM course; to this effect, Peris would like to request appropriate data from your organization.

Peris is undertaking a research paper on “The Perceptions of Patients Versus Employees on Service Quality: A Case Study of City Eye Hospitals Nairobi and Nyeri County, Kenya.” The information obtained shall be treated confidentially and used for academic purposes only.

Our MBA-HCM Programme seeks to establish links with industry, and one of these ways is by directing our research to areas that would be of direct use to the industry. We would be glad to share our findings with you after the research, and we trust that you will find them of great interest and practical value to your organization.

We appreciate your support and will be willing to provide further information if required.

Yours sincerely,

A handwritten signature in black ink, appearing to be "Alois Njenga".

Alois Njenga.

Manager – Graduate Programme.

Strathmore University Business School is a Proud member of:



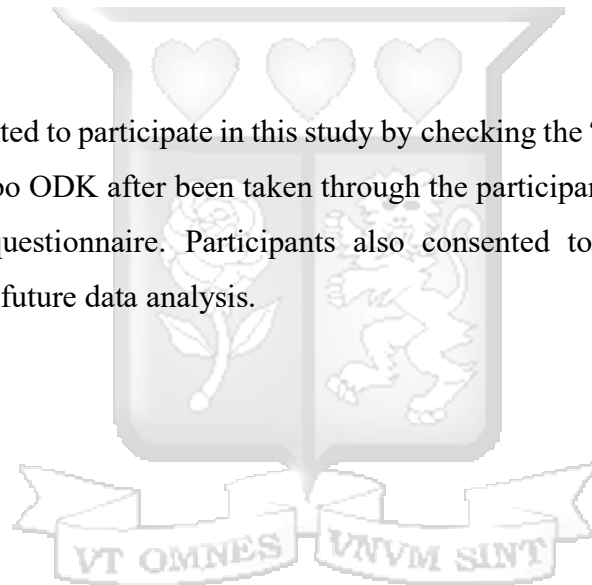
Appendix 2A: Certificate of Consent (English)

I hereby confirm that I have received satisfactory information about the study that will be conducted by Peris Wambui Thuo entitled: **THE PERCEPTIONS OF PATIENTS VERSUS EMPLOYEES ON SERVICE QUALITY: A CASE STUDY OF CITY EYE HOSPITALS NAIROBI AND NYERI COUNTY, KENYA.**

I understand that the study will be conducted for academic purposes and that the information provided will be treated with utmost confidentiality. I also understand that I am free to withdraw from the study at any time without explanation.

I hereby express my intention to voluntarily participate in this study.

Note. Participants consented to participate in this study by checking the “I agree to take part in this research” box on the Kobo ODK after been taken through the participant informed consent form, before filling out the questionnaire. Participants also consented to having their completed questionnaires stored for future data analysis.



Appendix 2B: Cheti cha Kibali (Swahili)

Ninathibitisha kuwa nimepokea maelezo ya kuridhisha kuhusu utafiti utakaofanywa na Peris Wambui Thuo yenye mada: **MITAZAMO YA WAGONJWA DHIDI YA WAFANYAKAZI KUHUSU UBORA WA HUDUMA: UTAFITI WA HOSPITALI YA MACHO YA CITY EYE KATIKA KAUNTI YA NAIROBI NA NYERI, KENYA.**

Ninaelewa kuwa utafiti huu utafanywa kwa madhumuni ya kitaaluma/kiakademia na kwamba ujumbe utakaopeanwa utashugulikiwa kwa usiri wa hali ya juu. Pia ninaelewa kuwa niko huru kujiondoa kwenye utafiti wakati wowote bila maelezo.

Kwa hili, ninaeleza nia yangu ya kushiriki kwa hiari katika utafiti huu.



Appendix 3A: Questionnaire (English)

I, Peris Wambui Thuo intend to carry out a research study entitled – **THE PERCEPTIONS OF PATIENTS VERSUS EMPLOYEES ON SERVICE QUALITY: A CASE STUDY OF CITY EYE HOSPITALS NAIROBI AND NYERI COUNTY, KENYA.**

Your responses to the questions below will facilitate the completion of my Master of Business Administration (MBA) Healthcare Management degree at Strathmore University Business School. The findings will also be useful to the management of City Eye Hospital in identifying the areas of service quality improvement at the hospital.

Thank you in advance.

This questionnaire is being filled by:

Patient ()

Employee ()

Section A: Patient Demographic Information

This section is to be completed by patients only. Employees, please skip this section.

1. City Eye Hospital Branch

City Eye Main Hospital, Ngong road, Nairobi ()

City Eye Upperhill appointment-only clinic, Nairobi ()

City Eye Hospital Nyeri ()

2. Gender of respondent

Male ()

Female ()

3. Age of respondent (years)

Below 25 years () Between 25-34 () Between 35-44 () Between 45-54 () Over 55 ()

4. Where do you live currently?

Rural area ()

Urban area ()

5. How many times have you visited City Eye Hospital?

First-time visit ()

2-5 visits ()

More than 5 visits ()

Section B: Employee Demographic Information

This section is to be completed by employees only. Patients, please skip this section

6. Which City Eye Hospital Branch are you based at?

City Eye Main Hospital, Ngong road, Nairobi ()

City Eye Upperhill appointment-only clinic, Nairobi ()

City Eye Hospital Nyeri ()

7. Gender of respondent

Male ()

Female ()

8. Age of respondent

Below 25 years () Between 25-34 () Between 35-44 () Between 45-54 () Over 55 ()

9. Department

Administrative staff ()

Clinical staff ()

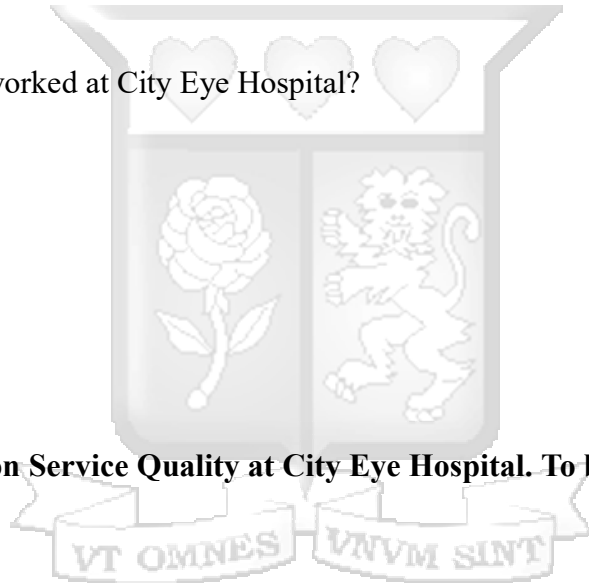
Support staff ()

10. How long have you worked at City Eye Hospital?

Less than 2 years ()

2 – 5 years ()

Over 5 years ()



Section C to G focuses on Service Quality at City Eye Hospital. To be filled by both patients and employees

Section C: Tangibility

To what extent do you agree with the following statements relating to tangibility at the hospital?

Where 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

Variable	1	2	3	4	5
The physical facilities are visually appealing					
The hospital has modern equipment					
The hospital environment is clean					
The employees appear neat and well groomed					

Section D: Reliability

To what extent do you agree with the following statements relating to reliability at the hospital?

Where 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

Variable	1	2	3	4	5
The hospital provides services as promised					
Services are performed in the right way the first time					
Services are delivered within the promised timeframe					
The hospital is dependable in handling service complaints by patients					
Patient records are handled appropriately					

Section E: Assurance

To what extent do you agree with the following statements relating to assurance at the hospital?

Where 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

Variable	1	2	3	4	5
Employees instill confidence in patients					
Patients feel safe while transacting at the hospital					
Employees are consistently polite to patients					
Employees possess the knowledge to respond to patient questions					

Section F: Responsiveness

To what extent do you agree with the following statements relating to reliability at the hospital?

Where 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

Variable	1	2	3	4	5
Employees keep patients informed					
The hospital provides prompt service to patients					
Employees are willing to help patients within the hospital					
Employees readily respond to patient enquiries					

Section G: Empathy

To what extent do you agree with the following statements relating to reliability at the hospital?

Where 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

Variable	1	2	3	4	5
The hospital provides individualized patient attention					
Employees are caring towards patients					
Employees have the best patient interests at heart					
Employees understand patient needs					
The hospital operating hours are convenient					

Section H: Perceived Service Quality

To what extent do you agree with the following statements relating to perceived service quality at the hospital? Where 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

Variable	1	2	3	4	5
Service quality offered is as promised					
Service quality is consistent					
The hospital values service quality					
The hospital is keen on service quality improvement					
Service quality offered is at par with similar eye hospitals					

Adapted from (Parasuraman et al., 1985, 1988).

Thank you for your time.



Appendix 3B: Hojaji (Swahili)

Mimi, Peris Wambui Thuo, ninakusudia kufanya utafiti unaoitwa – **MITAZAMO YA WAGONJWA DHIDI YA WAFANYAKAZI KUHUSU UBORA WA HUDUMA: UTAFITI WA HOSPITALI YA MACHO YA CITY EYE KATIKA KAUNTI YA NAIROBI NA NYERI, KENYA.**

Majibu yako kwa maswali yaliyo hapa chini yatawezesha kukamilika kwa shahada yangu ya Uzamili ya Utawala wa Biashara (MBA) ya usimamizi wa huduma za afya katika Chuo Kikuu cha Strathmore. Matokeo hayo pia yatakuwa na manufaa kwa uongozi wa Hospitali ya Macho ya City Eye katika kubainisha maeneo ya kuboresha ubora wa huduma katika hospitali hiyo.

Asante.

Hojaji hii inajazwa na:

Mgonjwa ()

Mfanyakazi ()

Sehemu A: Ujumbe wa demografia ya mgonjwa

Sehemu hii itajazwa na wagonjwa pekee. Wafanyakazi, tafadhali msijaze sehemu hii.

1. Tawi la Hospitali ya Macho ya City Eye

Tawi la Hospitali ya City Eye, Ngong road, Nairobi ()

Tawi la Hospitali ya City Eye, Upper Hill, Nairobi ()

Tawi la Hospitali ya City Eye, Nyeri ()

2. Jinsia ya mhojiwa

Kiume ()

Kike ()

3. Umri wa mhojiwa

Chini ya 25 years () Kati ya 25-34 () Kati ya 35-44 () Kati ya 45-54 () Zaidi ya 55 ()

4. Kwa wakati huu, unaishi wapi?

Mashinani/mashambani ()

Mjini ()

5. Ni mara ngapi umetembelea Hospitali ya Macho ya City Eye?

Ziara ya mara ya kwanza ()

Kati ya ziara mbili hadi tano ()

Zaidi ya ziara tano ()

Sehemu B: Ujumbe wa demografia ya mfanyakazi

Sehemu hii itajazwo na wafanyakazi pekee. Wagonjwa, tafadhali msijaze sehemu hii.

6. Tawi la Hospitali ya Macho ya City Eye

Tawi la Hospitali ya City Eye, Ngong road, Nairobi ()

Tawi la Hospitali ya City Eye, Upper Hill, Nairobi ()

Tawi la Hospitali ya City Eye, Nyeri ()

7. Jinsia ya mhojiwa

Kiume ()

Kike ()

8. Umri wa mhojiwa

Chini ya miaka 25 () Kati ya miaka 25-34 () Kati ya miaka 35-44 ()
Kati ya miaka 45-54 () Zaidi ya miaka 55 ()

9. Idara

Mfanyakazi wa idara ya utawala ()

Mfanyakazi wa kliniki ()

Mfanyakazi wa msaada ()

10. Ni kwa kipindi kipi umefanya kazi katika Hospitali ya Macho ya City Eye?

Chini ya miaka miwili ()

Kati ya miaka miwili hadi mitano ()

Zaidi ya miaka mitano ()

**Sehemu C hadi G inazingatia Ubora wa Huduma katika Hospitali ya Macho ya City Eye.
Itajazwa na wagonjwa na wafanyakazi.**

Sehemu C: Kuonekana/ Kugusika

Ni kwa kiasi gani unakubaliana na maelezo yafuatayo kuhusu kuonekana/kugusika katika Hospitali ya Macho ya City Eye?

Ambapo 1= Sikubali kwa kiasi kikubwa, 2= Sikubali, 3= Sina msimamo, 4= Nakubali, 5= Nakubali kwa kiasi kikubwa

Vigezo	1	2	3	4	5
Vifaa vya kimwili katika hospitali vinavutia macho					

Hospitali ina vifaa vya kisasa					
Mazingira ya hospitali ni safi					
Wafanyakazi wa hospitali wanaonekana wasafi na wakupendeza					

Sehemu D: Kutegemewa

Ni kwa kiasi gani unakubaliana na maelezo yafuatayo kuhusu kutegemewa katika Hospitali ya Macho ya City Eye?

Ambapo 1= Sikubali kwa kiasi kikubwa, 2= Sikubali, 3= Sina msimamo, 4= Nakubali, 5= Nakubali kwa kiasi kikubwa

Vigezo	1	2	3	4	5
Hospitali inatoa huduma kama ilivyo ahidiwa					
Huduma zinafanywa kwa njia sahihi mara ya kwanza					
Huduma hutolewa ndani ya muda ulioahidiwa					
Hospitali inategemewa katika kushugulikia malalamiko ya huduma					
Rekodi za wagonjwa zinashugulikiwa ipasavyo					

Sehemu E: Uhakikisho

Ni kwa kiasi gani unakubaliana na maelezo yafuatayo kuhusu uhakikisho katika Hospitali ya Macho ya City Eye?

Ambapo 1= Sikubali kwa kiasi kikubwa, 2= Sikubali, 3= Sina msimamo, 4= Nakubali, 5= Nakubali kwa kiasi kikubwa

Vigezo	1	2	3	4	5
Wafanyakazi huweka imani kwa wagonjwa					

Wagonjwa wanahisi wako salama wanapofanya shughuli zao hospitalini					
Wafanyakazi huwa na heshima kwa wagonjwa kila wakati					
Wafanyakazi wanamiliki ujizi wa kujibu maswali ya wagonjwa					

Sehemu F: Mwitikio

Ni kwa kiasi gani unakubaliana na maelezo yafuatayo kuhusu mwitikio katika Hospitali ya Macho ya City Eye?

Ambapo 1= Sikubali kwa kiasi kikubwa, 2= Sikubali, 3= Sina msimamo, 4= Nakubali, 5= Nakubali kwa kiasi kikubwa

Vigezo	1	2	3	4	5
Wafanyakazi wanahakikisha wagonjwa wamearifiwa					
Hospitali hutoa huduma ya haraka kwa wagonjwa					
Wafanyakazi wanajitolea kusaidia wagonjwa ndani ya hospitali					
Wafanyakazi huwajibu kwa haraka wagonjwa wanaouliza maswali					

Sehemu G: Huruma

Ni kwa kiasi gani unakubaliana na maelezo yafuatayo kuhusu huruma katika Hospitali ya Macho ya City Eye?

Ambapo 1= Sikubali kwa kiasi kikubwa, 2= Sikubali, 3= Sina msimamo, 4= Nakubali, 5= Nakubali kwa kiasi kikubwa

Vigezo	1	2	3	4	5

Hospitali huwapa wagonjwa makini ya kibinafsi					
Wafanyakazi wanajali wagonjwa					
Wafanyakazi wanajali masilahi ya wagonjwa katika roho zao					
Wafanyakazi wanaelewa matakwa ya wagonjwa					
Saa za kazi za hospitali zinafaa					

Sehemu H: Ubora wa huduma unaotambuliwa

Ni kwa kiasi gani unakubaliana na maelezo yafuatayo kuhusu ubora wa huduma unaotambuliwa katika Hospitali ya Macho ya City Eye?

Ambapo 1= Sikubali kwa kiasi kikubwa, 2= Sikubali, 3= Sina msimamo, 4= Nakubali, 5= Nakubali kwa kiasi kikubwa

Vigezo	1	2	3	4	5
Ubora wa huduma ni kama inavyotarajiwa					
Ubora wa huduma ni kama ilivyoahidiwa					
Hospitali inathamini ubora wa huduma					
Hospitali ina nia ya kuboresha ubora wa huduma					
Ubora wa huduma inayotolewa ni sawa na hospitali za macho zinazofanana					

Adapted from (Mdee et al., 2006; Parasuraman et al., 1985, 1988).

Asante kwa muda wako.

Appendix 4: Ethics approval letter from SU-ISERC



24th July 2023

Dr Thuo Peris Wambui,
peris.thuo@strathmore.edu

Dear Dr Thuo,

RE: The Perceptions of Patients versus Employees on Service Quality: A Case Study of City Eye Hospitals Nairobi and Nyeri County, Kenya

This is to inform you that SU-ISERC has reviewed and approved your above SU-masters research proposal. Your application reference number is SU-ISERC1799/23. The approval period is from 24th July 2023 to 23th July 2024.

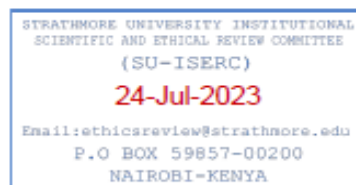
This approval is subject to compliance with the following requirements:

- i. Only approved documents including (informed consents, study instruments, MTA) will be used.
- ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC.
- iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 72 hours of notification.
- iv. Any changes anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-ISERC within 72 hours.
- v. Clearance for the export of biological specimens must be obtained from relevant institutions.
- vi. Submission of a request for renewal of approval at least 60 days prior to the expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- vii. Submission of an executive summary report within 90 days of completion of the study to SU-ISERC.

Before commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology, and Innovation (NACOSTI) <https://research-portal.nacosti.go.ke/> and obtain other clearances needed.

Yours sincerely,

Mr Ambrose Rachier,
Chairperson; SU-ISERC



Appendix 6: Research Budget

ITEM	DESCRIPTION	AMOUNT (Ksh.)
PROPOSAL AND DISSERTATION	Internet costs	3,000
	Subtotal	3,000
PILOT	Travel to Nairobi	1,500
	Pilot data processing and analysis	3,000
	Subtotal	4,500
DATA COLLECTION AND ANALYSIS	Travel to Nairobi	4,000
	Travel to Nyeri	7,000
	Data Collection (includes lunch)	14,000
	Data Analysis	20,000
	Miscellaneous expenses	5,000
	Subtotal	50,000
FINAL DOCUMENT	Printing	1,500
	Binding	500
	Subtotal	2,000
Total Costs	Sum of estimated costs	59,500
	10% Budget Contingency	5950
	Grand Total	65,450

Appendix 7: Detailed descriptive Statistics

Table 17: Detailed descriptive statistics for both patients and employees

Description	Patients		Employees	
	Mean	Std. Dev	Mean	Std. Dev
Tangibility	4.098	0.390	4.286	0.737
1. The physical facilities are visually appealing	4.143	0.473	4.595	0.661
2. The hospital has modern equipment	4.206	0.431	4.452	0.701
3. The hospital environment is clean	4.177	0.422	4.405	0.762
4. The employees appear neat and well groomed	4.098	0.390	4.286	0.737
Reliability				
5. The hospital provides services as promised	3.989	0.540	4.464	0.702
6. Services are performed in the right way the first time	4.013	0.480	4.369	0.724
7. Services are delivered within the promised timeframe	3.860	0.655	4.000	0.864
8. The hospital is dependable in handling service complaints by patients	3.849	0.556	4.155	0.829
9. Patient records are handled appropriately	4.040	0.450	4.464	0.735
Assurance				
10. Employees instill confidence in patients	4.101	0.393	4.345	0.685
11. Patients feel safe while transacting at the hospital	4.103	0.375	4.452	0.684
12. Employees are consistently polite to patients	4.111	0.435	4.214	0.777
13. Employees possess the knowledge to respond to patient questions	4.085	0.397	4.393	0.640
Responsiveness				
14. Employees keep patients informed	4.029	0.468	4.321	0.794
15. The hospital provides prompt service to patients	3.902	0.674	4.262	0.713
16. Employees are willing to help patients within the hospital	4.108	0.359	4.524	0.649
17. Employees readily respond to patient enquiries	4.058	0.414	4.452	0.666
Empathy				
1. The hospital provides individualized patient attention	4.058	0.388	4.131	0.818
2. Employees are caring towards patients	4.082	0.366	4.393	0.640
3. Employees have the best patient interests at heart	4.037	0.390	4.357	0.755
4. Employees understand patient needs	4.056	0.411	4.310	0.806
5. The hospital operating hours are convenient	3.873	0.702	4.131	1.073

Description	Patients		Employees	
	<u>Mean</u>	<u>Std. Dev</u>	<u>Mean</u>	<u>Std. Dev</u>
Perceived Service Quality				
1. Service quality offered is as promised	4.045	0.366	4.345	0.736
2. Service quality offered is consistent	4.005	0.444	4.321	0.714
3. The hospital values service quality	4.050	0.413	4.464	0.752
4. The hospital is keen on service quality improvement	4.005	0.431	4.452	0.813
5. Service quality offered is at par with similar eye hospitals	4.029	0.502	4.357	0.940



Appendix 8: Regression model equations

Patient model:

$$PSQ_{patient} = \beta_0 + \beta_{11} \times Tangibility + \beta_{21} \times Reliability + \beta_{31} \times Assurance + \beta_{41} \times Responsiveness + \beta_{51} \times Empathy + \varepsilon$$

Employee model:

$$PSQ_{employee} = \beta_0 + \beta_{10} \times Tangibility + \beta_{20} \times Reliability + \beta_{30} \times Assurance + \beta_{40} \times Responsiveness + \beta_{50} \times Empathy + \varepsilon$$

Overall model:

$$PSQ_{Overall} = \beta_0 + \beta_1 \times Tangibility + \beta_2 \times Reliability + \beta_3 \times Assurance + \beta_4 \times Responsiveness + \beta_5 \times Empathy + \varepsilon$$

Where:

PSQ- Perceived Service Quality (dependent variable)

β_0 – Population y-intercept

β_1 – Population slope coefficient for independent variable (tangibility)

β_2 – Population slope coefficient for independent variable (reliability)

β_3 – Population slope coefficient for independent variable (assurance)

β_4 – Population slope coefficient for independent variable (responsiveness)

β_5 – Population slope coefficient for independent variable (empathy)

ε – Random error component

Note. Adapted from (Groebner et al., 2018)