HEALTHCARE FINANCING AND FINANCIAL SUSTAINABILITY OF NATIONAL REFERRAL HOSPITALS IN KENYA

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D58/CTY/PT/27260/2018

A THESIS SUBMITTED TO THE SCHOOL OF BUSINESS, ECONOMICS AND TOURISM IN PARTIAL FULFILMENT OF THE AWARD OF MASTER OF SCIENCE DEGREE IN FINANCE OF KENYATTA UNIVERSITY

OCTOBER, 2024

DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

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DEDICATION

It is with deep gratitude and heartfelt regard that I dedicate this thesis to my family, mentors, and friends. I earnestly wish to dedicate and express my profound gratitude to my beloved parents Mr Yohannes and Mrs Yosefin whose exceptional love, countless sacrifices, encouragement, and extraordinary support have been essential in the timely completion of this thesis.

I dedicate this research work to my brother Wilson and cousin Kevin for their inspiration and unconditional support.

In the same way, I dedicate this research to the loving memory of my closest friend Moses Mukira, who until his untimely demise believed that I had all it takes to weather the storm. If and only, I remain focused, disciplined, consistent, resilient, open-minded, and relentless. These attributes have enabled me to navigate swiftly in my research conquest.

ACKNOWLEDGEMENT

I extend my deepest appreciation and honour to the Almighty God the Most Compassionate, Beneficent, and Merciful, for His love, faithfulness, sustenance, and tender grace, which has seen me through my academic journey from the beginning up to this level. I am truly thankful for His benevolence, unconditional love, and countless blessings. Everything I have accomplished; I owe to God.

I wish to convey my earnest appreciation to my instructors Dr Caroline Kimutai and Dr Nathan Mutwiri for their enthusiasm, dedication, patience, and continual academic guidance. Without their effort and relentless support, it would have been impossible to finish my thesis on time.

Further, I remain indebted to all personnel and faculty members in the department of finance for their unwavering contribution to the successful completion of this thesis.

Most specifically, I recognize the effort and contributions of the defence panellists and board of examiners at the department and graduate school whose guidance and thought-provoking insights have been instrumental in steering this thesis in the right direction.

I equally acknowledge with gratitude the librarians, management of National Referral Hospitals and Ministry of Health staff who accorded me the support I so much needed in the completion of my thesis.

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OPERATIONAL DEFINITION OF TERMS

Combined National and County Health Allocation	An aggregate of funds apportioned to the Ministry of Health (under National government) and the County health departments (under County governments).
Donor Healthcare Financing	Amount of healthcare funds derived from domestic or international donors for the improvement of the public health sector. It is measured as a percentage of total public healthcare expenditure.
Financial Sustainability	Financial capability of a hospital to maintain broader sources of financing, positive and stable cash flows for a longer period without facing any financial distress in both midterm and long-term. It is measured in terms of changes in cash flows; where stable and positive cash flows imply an organization is financially resilient and sustainable over a longer period.
Government Healthcare Financing	The ways through which government finances public healthcare from its revenue. Government healthcare expenditure is stated as a percentage of the total national budget.
Healthcare Financing	Financing mechanisms used to fund public healthcare organizations in a given country. It is

	concerned with mobilizing, accumulating, and allocating funds to public healthcare organizations
National Health Insurance	Mandatory statutory health insurance to employees in formal and informal sectors.
National Health Insurance Financing	Funding public healthcare using National Hospital Insurance Fund (NHIF) scheme. It is measured as a percentage or fraction of private healthcare expenditure.
Out-of-Pocket Healthcare Financing	Amount of money/funds received by hospitals from individual households paying for their healthcare expenses from their incomes or cash reserves. It is measured as a percentage of private healthcare expenditure.
Profitability	It is the capability of an hospital to generate enough revenue that surpasses its expenses; enabling it to cover all its operational costs and fulfil its long-term objectives.
Private Healthcare Expenditure	It is a sum total of out-of-pocket and public healthcare insurance funding.
Secondary Healthcare	Specialized healthcare for patients referred by primary healthcare providers, which is often, provided by level V and level VI hospitals.

ABBREVIATION AND ACRONYMS

ADB	African Development Bank
AU	African Union
CBHI	Community-Based Health Insurance
CBK	Central Bank of Kenya
COVID-19	Coronavirus Disease 2019
EU	European Union
FY	Fiscal Year
GDP	Gross Domestic Product
GMM	Generalized Method of Moment
HFG	Health Finance and Governance
HFR	Healthcare Financing Reforms
HIC	High-Income Countries
KSH	Kenya Shillings
LMICs	Lower & Middle-Income Nations.
MOH	Ministry of Health
NCDs	Non-Communicable Diseases
NFPO	Not-for-Profit Organization
NHIF	National Hospital Insurance Fund.
NRH	National Referral Hospitals.
OECD	Organization for Economic Cooperation and Development.
OOPS	Out-of-pocket spending.
PFMA	Public Financial Management Act
SAGAs	Semi-Autonomous Government Agencies

SDG	Sustainable Development Goal.
SHI	Social Healthcare Insurance.
SIB	Social Impact Bonds
UHC	Universal Health Coverage.
UNDP	United Nations Development Program.
UNECA	United Nations Economic Commission for Africa.
UNICEF	United Nations Children's Fund.
US	United States
USAID	United States Agency for International Development.
WHO	World Health Organization.

ABSTRACT

In the backdrop of the rising global burden of diseases, global economic uncertainties, demographic transitions, and pandemics, most national referral hospitals in Kenya are struggling to remain afloat. They are highly characterized by diminishing sources of funding coupled with declining hospitals' net margins and financial reserves. Their pre-existing financial vulnerability was exposed during the coronavirus pandemic, which almost pushed the entire public healthcare system into a near collapse. Most of them were in dire need of government emergency bailouts to meet their short-term financial needs. It is on this ground that this study strived to investigate the statistical relationship between healthcare financing and financial sustainability of National Referral Hospitals in Kenya. More specifically, it examined the statistical relationship between out-of-pocket financing, government healthcare financing, donor healthcare financing, national health insurance financing; and financial sustainability of National Referral Hospitals. It also evaluated the moderation effect of financial leverage on the relationship between healthcare financing and financial sustainability. The study hinged on resource dependence, Musgrave, demand in healthcare, resource-based view and free-cash-flow theories. Using a positivism philosophy and explanatory study design the study assessed the relationship. It adopted a generalized least squares panel model with random effects and used a census sampling design to sample all five National Referral Hospitals. The study relied on quantitative secondary data for the period 2019-2021 obtained through a secondary data abstraction tool from the hospital's financial reports and other government agencies. The study utilized both descriptive and inferential statistics to analyse the collected data using EViews analytical applications. The study performed a number of diagnostic tests that included tests on normality, multicollinearity, heteroscedasticity, and stationarity. The findings revealed that out-of-pocket healthcare financing had a negative and statistically significant relationship with financial sustainability of National Referral Hospitals. The study found out-of-pocket to be regressive and resulted in inequity in healthcare utilization and catastrophic healthcare expenditure that impaired households' current and future abilities to meet their healthcare financial obligations. Based on this the study recommended a set of ceiling caps on out-of-pocket expenditure in line with World Health Organizations' threshold of 10% of total healthcare financing. The study further revealed that government healthcare financing had a strong positive and significant relationship with financial sustainability of National Referral Hospitals. This emphasized the indispensable role of government in healthcare financing of National Referral Hospitals. The study recommends that the government should consider increasing the amount of funds allocated to health sector to prevent a financial crisis in the healthcare system. The statistical evidence further established that donor healthcare financing had a strong negative and statistically significant relationship with financial sustainability as compared to out-of-pocket financing; which can be largely attributed to diminishing donor funding and overreliance of this form of financing that increase financial vulnerability of these hospitals. The inference further indicated that National Health Insurance Fund financing had a positive and most significant relationship with financial sustainability. To alleviate healthcare financing disequilibrium and its subsequent impact on financial sustainability of National Referral Hospitals, the study proposed a review and realignment of the current healthcare financing policies, laws, and reforms. The study recommends the establishment of a robust and optimal National Health Insurance Policy and adoption of innovative sources of financing public healthcare, such as the use of social impact bonds to finance various health programs with severe social impacts like lifestyle diseases. However, more research on social impact bonds is required.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Healthcare is an indispensable sector of economy, which makes sure that there is a healthy and productive labour force necessary for economic development. It is one of the key components of Sustainable Millennium Goals (SDG 3) on health and well-being that is closely interconnected to a number of other SDG targets related to work productivity and sustainable economic growth (UNDP, 2015). This is because there is a strong interrelationship between healthcare and the economy, as noted in several studies like that of Sharma (2018) who observed that healthcare and economy are inextricably intertwined, and investment in healthcare is of great significance in the realization of economic goals of a nation. This is also manifested in Wu et al. (2021) study, which noted that healthcare is a key social pillar in the economy that creates a conducive human capital environment necessary for economic development (Osadchuk et al., 2019).

In spite, of its indispensable role in the economy, healthcare is under threat due to the rising healthcare costs and diminishing sources of public healthcare financing (UNECA, 2018; WHO, 2019). This unprecedented increase in healthcare costs according to Toader (2014) is linked to several factors that include population growth, the acquisition of new and yet important medical diagnostic technologies, the rising cost of prescription drugs and therapeutic, and rising cases of lifestyle and chronic diseases fuelled by rapid urbanization. As well as the outbreak of the coronavirus global pandemic that overstretched the already strained public healthcare system (WHO, 2020). The rising healthcare costs and dwindling sources of public healthcare financing have elicited heated debates on whether the current healthcare financing mechanisms are adequate in ensuring financial sustainability of public hospitals that are an essential part of a public healthcare system (Dubas-Jakobczyk & Koziel, 2020).

Globally, there is a growing concern about the financial stability and sustainability of these public hospitals amidst global economic uncertainties and pandemics. Most public hospitals according to Shrank et al. (2021) have been experiencing acute net income losses, and unprecedented financial instability even before the outbreak of COVID-19, an indication that the financial woes were in existence for a long period (Fleming et al., 2021). The pre-existing financial vulnerability of the public hospitals according to Kwon

and Kim (2021) largely contributed to the near-collapse of the public health system in both developed and underdeveloped countries. This, therefore, makes it a global concern that should be examined and dealt with affirmatively to cushion the public healthcare sector from global economic disruptions and rising healthcare expenditure (WHO, 2020).

In the United States, most public hospitals struggled with negative margins even way before the COVID-19 pandemic. This is in spite of the fact that the US has the most advanced healthcare system in the world with the highest healthcare expenditure, which according to the National Centre for Health Statistics (2020) was $4 trillion in 2020 constituting about 20% of its gross domestic product. This indicates that there has been a pre-existing financial vulnerability threatening the long-term viability of global public healthcare organizations and systems. Cullinan et al. (2021) in their study acknowledged that for public hospitals to serve the people better they must have a positive financial margin that enables them to be in a position to not only fulfil unexpected revenue shortfalls and expenses but also to invest in new medical diagnostic technologies and treatments. The declining healthcare margin, therefore, poses a serious threat to the future of several public hospitals in the United States (US) and the world in general (Alfonso et al., 2021).

A similar trend has been witnessed in the United Kingdom (UK) where most state-owned public hospitals are relying on government loans to offset their operational costs. According to the Department of Health and Social Care (DHSC) (2019), the amount of money advanced to National Health Service (NHS) hospitals in England have over the years increased, an indication that most of the hospitals have been experiencing prolonged financial difficulties. For instance, from 2016/17 to 2018/19 financial year this amount doubled from £4.7 billion to £10.1 billion. In the 2015/16 financial year, two-thirds of cash-strapped public hospital trusts were in dire need of emergency bailouts to meet their short-term financial needs such as payment of utility bills, staff salaries, and buying of drugs (McKee, et al., 2021). This pre-existing financial vulnerability in the public healthcare system according to Charlseworth et al. (2021) poses a greater financial risk to most national hospitals in the UK and that is the reason why the COVID-19 pandemic almost brought it to a near collapse (Anderson et al., 2022).

In Asian countries like India, inadequate allocation of the healthcare sector has pushed most state-run national hospitals into an indeterminate state. According to WHO (2020),

India has one of the lowest healthcare expenditures which is much lower than that of most low-income countries in Asia like Nepal and Sri Lanka (Sriram & Khan, 2020). Even though the COVID-19 pandemic pushed Indian health expenditure to 2.1% of GDP in 2021/22 it has been all-time low at less than 1.3% in other subsequent years. A situation that makes most national hospitals rely on out-of-pocket healthcare expenditures as the alternative source of healthcare financing exposes most households to unprecedented financial distress (Mishra & Mohanty, 2019).

In Africa, the financial situation of national public hospitals is even worse than in American, European, and Asian countries. Most of the studies like that of Ataguba (2021), attributes it to a funding crisis inherent in most African countries because of multiple factors like the ever increasing national debt, falling GDP, budget cuts, declining sources of external funding, rising number of the uninsured, unemployed and ageing population. These factors coupled with the rising cost of healthcare costs have relatively increased the financial vulnerability of most national hospitals under the Ministry of Health (Jakovlejevic, et al., 2021).

The trend is not different in Kenya, as the National Referral Hospitals are struggling to remain afloat, as they have been occasioned by perennial cash flow deficits, declining sources of health funding, and overreliance on uncertain government and donor financing. By 2020, almost all National Referral Hospitals such as Moi National Referral Hospital, Kenyatta National Referral Hospital and Mathari National Referral Hospital, experienced declining net margins and incessant funding deficits. Their pre-existing financial vulnerability according to WHO (2020) almost led to their near collapse during the COVID-19 pandemic, raising questions about their overall financial sustainability (MOH, 2017; MOH, 2020; Universal Health Coverage, 2018).

1.1.1 Healthcare Financing

In the backdrop of global economic uncertainties and pandemic, healthcare financing is increasingly becoming a global challenge threatening the future of most public healthcare organizations and systems. Therefore, there is a pressing need for healthcare financing strategies and reforms that will assist in the provision of quality, equitable, affordable, and accessible public healthcare in national hospitals (Brundtland, 2022). Healthcare financing according to Kaminska et al. (2021) plays a very fundamental role in a health system by ensuring there are sufficient financial resources to satisfactorily meet the

healthcare requirements of a given population. Extant literature like that of Ifeagwu et al. (2021), acknowledges that healthcare financing influences affordability, equitability, and accessibility of public healthcare in most national hospitals. This implies that healthcare financing is not only vital in strengthening the public healthcare sector but also in providing equitable healthcare to the public without exposing them to unprecedented financial burdens or hardship (Tshering, 2021).

Healthcare financing according to UNDP (2019) is significant, as it is a vehicle through which most countries will achieve Universal Health Coverage goals, which seeks to create healthcare systems and organizations that are resilient and financially sustainable. Health being an important component of sustainable development in any country, UHC goals need to be at the centre of every socio-economic debate, as they go a long way in creating productive individuals in the country, therefore, lowering poverty levels and health inequalities. Despite the immense gains associated with Universal Health Coverage, there are substantial health inequities and gaps that exist in lower- and middle-income countries always attributed to dysfunctional public healthcare financing mechanisms (UNDP, 2015).

Healthcare financing systems around the globe vary from one country to another. In developed countries, healthcare financing is robust and incorporates various innovative forms of financing as contrasted to developing countries. In China, for instance the national hospitals depend on government funding, out-of-pocket and social health insurance; however as the healthcare costs increase as the aging population rise and demand of secondary and tertiary increase; the financial sustainability of these hospitals have been challenged prompting containment measures. Similarly, in Japan the trend is same even despite having a well robust public healthcare system funded by a mix of government funding and personal insurance and out-of-pocket; it is being faced with sustainability challenges that has resulted to constant reforms to improve public healthcare in its national and regional hospitals (Logarajan et al., 2022; Kuroswki, et al., 2021).

In most developed nations, public healthcare funding is close to or above 15% of GDP (WHO, 2020). According to UNECA (2019), African countries spend less than 2% of US$ 10 trillion spent on health globally in 2015. This is despite it having 16% of the world's population and bearing 26% of the disease burden in the world. On average, out-

of-pocket healthcare expenditure is 36%, government healthcare expenditure accounts for 35%, and donor health funding accounts for 22% of the total health spending in Africa (WHO, 2022). In Kenya, just like in other African countries, the government budgetary allocation to the public health sector has been low as it ranged between 3.7% and 5.0% for the period 2019-2021, which is way below Abuja's pronouncement of allocating 15% of the national budget to finance healthcare.

In most of the studies done like that of Logarajan et al. (2022), out-of-pocket financing was found to be a retrogressive form of healthcare financing as it increased the financial vulnerability of most households pushing them into financial hardship and abject poverty. It was found to be prevalent in most middle and low-income countries with declining fiscal capacities. Most of the studies measured out-of-pocket financing using catastrophic health expenditure, which measures the amount of a household income relative to the medical expenditure incurred likely to expose him or her to financial distress (Ahmed, et al., 2022; Eze et al., 2022).

In other inquiries like that of Fleming et al. (2021), government financing was found to be the most populous way that financed most national public hospitals run by the state. In those studies, they assessed government financing as a determinant of the healthcare financing mix. In Sergi et al. (2019) and Fünfkirchen et al. (2018) studies, government financing was measured in terms of the amount of public funds or money apportioned to finance public healthcare as a percentage of the national budget (Abdumalik et al., 2019; Kiross et al., 2020).

Donor financing was also accentuated by several studies like that of Gautier & Ridde, (2017) as a healthcare financing mechanism that is commonly used to finance public hospitals in underdeveloped nations. In those studies, the donor dependency ratio was used to measure the degree to which a public healthcare organization depends on external sources of funds (Marten, 2022; Patenaude, 2021; (Onwujekwe, et al., 2019; SSennyonjo et al., 2021; WHO, 2022).

National Hospital Insurance Fund (NHIF) financing was also highlighted in a number of surveys, like that of Barasa et al. (2018) as the public healthcare financing mechanism that is becoming more widely accepted even if its implementation is being hampered by the existence of a large uninsured population working in informal sectors in most developing nations (Umeh, 2018). In several inquiries like that of Mbau et al. (2020) and

Lyszczarz & Briggs (2014), NHIF financing is measured based on the degree of NHIF uptake.

1.1.2 Financial Leverage

Financial leverage is described by Dalci & Ozyapici (2018) as a process through which an entity or organization borrows funds to fund its projects or purchase an asset that is expected to generate enough revenue streams to repay the loaned-out funds with interest and generate a profit. For capital-intensive hospitals to provide top-notch healthcare services, they require a colossal amount of financial resources that can be raised in different ways including borrowing. This emphasizes the significance of financial leverage as a critical indicator that should not be overlooked in financing public hospitals (Appiah et al., 2020; Adelino et al., 2022).

In the opinion of Barnes et al. (2018) financial leverage is a source of funding pursued by those entities or organizations intending to expand their assets or operations base, and expecting to generate a return. According to Huang et al. (2018), most organizations are funded by a mix of equity and debt, where some are highly geared as compared to others. If an organization is deemed to be highly leveraged it means that it is financing its operations or assets with more debt than equity, and may suggest that its ability to repay its debts is highly impaired (Samo & Murad, 2019).

Though financial leverage increases the amount of an organization's earnings as a percentage of its overall assets; it also increases its likelihood of incurring losses especially when it does not earn enough returns to offset the interest expense associated with its debt. This is a problem because it predisposes the organization to financial risk especially when it is unable to repay its debts (Bwana, 2018).

In Ramli & Rasedee (2020) studies, financial leverage has been assessed based on its overall influence on the financial performance of the organization. Their results indicated that financial leverage has a strong significant influence on financial performance and stability of most for-profit and not-for-profit organizations. Al-Slehat et al. (2020) in their study specifically noted that financial leverage influences the short-term and long-term financial stability of a firm or organization. As such this study used financial leverage to moderate the link between healthcare financing mechanisms and financial sustainability of National Referral Hospitals offering secondary and tertiary healthcare services to the

general public. The study sought to assess how the proportion of debt acquired by these hospitals influences their healthcare financing options and their ultimate financial sustainability (Colenda et al., 2020).

In (Ahsan et al. 2016; Tenas & Arimany-Serrat, 2018) studies, financial leverage has been measured using the debt-to-capital ratio, debt-to-assets ratio, debt-to-earnings before interests and taxes (EBIT) ratio, and total debts to total assets. In all these measures debt is compared and contrasted against various financial metrics, with an emphasis on the amount of debt acquired by an entity, and its ability to repay. This is largely because as the proportion of an entity's debt to assets/capital/earnings rises so does the amount of its financial leverage. Consistent with Hasmi et al. (2020) financial leverage is favourable only when the amounts of funds borrowed are invested in assets or operations that yield more returns than their interest expenses. Financial leverage is sorted after by most of those organizations, which either are unable or are able but do not wish to acquire more capital that might reduce their earnings per share of their existing shareholders (Chang, et al., 2019).

1.1.3 Financial Sustainability

The financial sustainability of the public healthcare system is central to most health policy discussions in most developing nations. According to Kuroswki et al. (2021), this is due to the ever-rising global disease burden, rising healthcare costs, and dwindling sources of healthcare financing. Based on Ifeagwu et al. (2021) study, most governments in developing nations are experiencing difficulties in financing the public healthcare sector due to rising national debt and fiscal pressures that have impaired their overall ability to finance the health sector more sufficiently in conformity to various international health treaties and declaration.

The conceptualization of financial sustainability differs from one study to another, in some studies like that of Mills & Kanavos (2020), and Mynit et al. (2019) financial sustainability is described as the capability of an organization or investment project to produce expected returns hence resulting to sustainable value creation to its stakeholders. In other studies, like that of Nyandekwe et al. (2020) financial sustainability is defined as the capacity of an entity or organization to maintain financial stability both in the short-run and long-run. It is one of the most essential control parameters that inform investment decisions. This is because it reduces the likelihood of insolvency and refinancing risks.

Gleibner & Gunther (2022) in their attempt to develop a conceptual measure of financial sustainability, assessed financial sustainability based on an organization's ability to survive; organization growth; attractive risk-return profile, and earnings risk exposure. Further, this study also postulated that financial sustainability is centred on the long-term financial security of an organization (Kruse & Jeurissen, 2020).

Rottkamp (2020) study opined that financial sustainability is a key indicator of an entity or organization's ability to remain financially viable for long enough to fulfil its purpose of existence. Financial sustainability is thus tied to its operational efficiencies, such as its ability to source the requisite funding it requires to acquire assets or fund its projects that ultimately influence its long-term goals. Organizations with challenges in financing their day-to-day operations are at an increased chance of experiencing liquidity problems that may curtail their future operations and survival (Padila et al., 2012).

Bisogno et al. (2017) study, surmised that financial sustainability stretches beyond the short-term corporate goal of making a profit. It is thus important to both for-profit and not-for-profit organizations. In consonance with Alshubiri (2020) study, most not-for-profit organizations often experience difficulties in not only establishing but also maintaining financial sustainability. This is largely due to limited financial resources and overdependence on external financing. In numerous inquiries like that of Pratici et al. (2022) source of financing was found to be a key determinant of the long-term financial stability of the not-for-profit organization.

The current global economic uncertainties and pandemic disruptions have elicited debates on financial sustainability of most global public healthcare systems, such as public hospitals whose pre-existing financial vulnerability almost led to their near collapse in 2020. As mentioned by Khullar et al. (2020), the pre-existing financial vulnerability is attributed to challenges in the optimization of sources of health funding. Profoundly, much emphasis is therefore being laid on how healthcare financing can be optimized to enhance financial stability which is critical in the realization of the third sustainable development goal of universal healthcare coverage alongside other economic goals of a given nation (WHO, 2020). In a considerable number of inquiries like that of Ejiogu et al. (2020), financial sustainability of most organizations was measured using the asset sustainability ratio, total debt service cover ratio, operating efficiency, and financial margin (Abuosi, 2019; Raza, Gillani et al., 2020).

1.1.4 National Referral Hospitals in Kenya

The National Referral Hospitals in Kenya are run and managed by the government of Kenya through the Ministry of Health (MOH). As of 2020 they are five in number and include Moi National Referral Hospital (MTRH), Kenyatta National Hospital, Mathari National Referral Hospital, National Spinal Injury Referral Hospital, and Kenyatta University National Referral Hospital. These National Referral Hospitals are largely funded through government contributions channelled through the Ministry of Health. According to WHO (2022), the other commonly used form of public healthcare financing includes out-of-pocket expenditure, donor financing, and through National Health Insurance Fund (NHIF) (MOH, 2016).

In recent years they have been encountering financial uncertainties evident through incessant negative margins, reserves, and fluctuation in sources of healthcare funding that are key in bolstering both their short-term and long-term survival. According to WH0 (2020), National Referral Hospitals play a key role in strengthening public healthcare in any given country. They ensure that the general public gets quality, equitable, affordable, and accessible specialized healthcare. Most specialized public healthcare offered by these hospitals is costly and often exposes most households to financial hardships especially those that depend mostly on out-of-pocket expenditures, have no insurance, or whose insurance cover is insufficient in covering their medical bills.

Consequently, if the financial woes bedevilling the National Referral Hospitals are not well investigated and addressed they can potentially result in an unprecedented public healthcare financial bubble. The financial vulnerability of these National Referral Hospitals was evident during the COVID-19 pandemic which revealed serious liquidity and funding problems bedevilling them. Nonetheless, little attention has been paid to these public healthcare organizations, which are not-for-profit organizations yet they play a very important role in creating a healthy labour force necessary for economic development (Asante et al., 2020; Chege et al., 2019). In that regard, there was a need to probe the statistical relationship that exists between healthcare financing and financial sustainability of these hospitals, which are a key component in the public healthcare system of any given country.

1.2 Statement of the Problem

Most of the National Referral Hospitals in Kenya have been struggling to remain afloat due to financial uncertainties and a looming healthcare financing crisis. As evident in Kenyatta National Referral Hospital, which has been experiencing incessant deficits and declining net margins. In 2017 and 2018, its revenue deficit rose from 905 million to 1.1 billion respectively, widening the healthcare financing gap as it required more funds to offset the deficit. In the same period, its cash and cash equivalents declined from 1.15 billion to 851 million (Kenyatta National Hospital, 2018). As was the case with Moi National Referral Hospital which recorded negative reserves or accumulated losses of 200 million and 167 million in 2017 and 2018 respectively (Office of the Auditor General, 2019). Kenyatta University Teaching Referral Hospital though had a positive net margin its healthcare financing was over-dependent on government grants at 1.41 billion and out-of-pocket payments at 90 million followed by donor funding at 11 million in 2019/2020 financial year (Office of the Auditor General, 2020). The same trend was evident in Mathari National Referral Hospital whose overall sources of funding and net margins were uncertain and declining (MOH, 2020). The pre-existing financial vulnerability of most of these National Referral Hospitals was exposed during the time of the COVID-19 epidemic which almost pushed the entire public healthcare system into a near collapse (Brundtland, 2022).

Even though there have been attempts by the government to increase the health budgetary allocation to National Referral Hospitals under the Ministry of Health, it is still not closer to the Abuja healthcare financing threshold of allocating at least 15% of a country's budget to public healthcare to avert a public healthcare financial crisis. This is despite the ever-rising MOH total expenditure that has risen from 62 billion to 92.7 billion in 2017 and 2019 respectively. As well as the declining external public healthcare funding that has declined from 19.9 billion (68%) to 15.3 billion (44%) in 2017 and 2019 respectively. These trends raise serious concerns about the financial sustainability of National Referral Hospitals in Kenya that is necessary for the accomplishment of Universal Health Coverage (UHC) and Sustainable Development Goals (SDG) on the provision of quality, affordable, equitable, and accessible public healthcare (MOH, 2020; WHO, 2020).

Existing studies on healthcare financing and financial sustainability of public healthcare organizations have elicited mixed and contradictory findings. For example, Asante,

Wasike, & Ataguba (2020) study, established that there is a significant positive statistical relationship between healthcare financing mechanisms and financial sustainability of state-owned hospitals in Sub-Sahara Africa. Contrariwise, Ifeagwu et al. (2021) reported that there is a negative statistical relationship between healthcare financing strategies and financial sustainability, while Habicht et al. (2019) while examining financial sustainability of national health insurance in Estonian public hospitals found no significant statistical relationship (Schieber et al., 2012. The varied, conflicting, and inconclusive results on the statistical relationship between healthcare financing and financial sustainability showed that there was a substantial empirical gap to be addressed by the study being undertaken that sought to inquire about the statistical relationship between healthcare financing and financial sustainability of National Referral Hospitals (NRH) under the Ministry of Health.

1.3 Research Objectives

1.3.1 General Objective

The fundamental aim of this probe was to investigate the statistical relationship between healthcare financing and financial sustainability of National Referral Hospitals (NRH) in Kenya.

1.3.2 Specific Objectives

More specifically, this probe intended:

i. To examine the statistical relationship between out-of-pocket financing and financial sustainability of National Referral Hospitals.
ii. To establish the statistical relationship between government financing and financial sustainability of National Referral Hospitals.
iii. To assess the statistical relationship between donor healthcare financing and financial sustainability of National Referral Hospitals.
iv. To find out the statistical relationship between NHIF financing and financial sustainability of National Referral Hospitals.
v. To evaluate the moderating effect of financial leverage on the statistical relationship between healthcare financing and financial sustainability of National Referral Hospitals.

1.4 Research Hypotheses

This probe was hinged on five hypotheses exemplified below:

$H_{01:}$ Out-of-pocket healthcare financing has no statistically significant relationship with financial sustainability of National Referral Hospitals.

H_{02}: Government healthcare financing has no statistically significant relationship with financial sustainability of National Referral Hospitals.

H_{03}: Donor healthcare financing has no statistically significant relationship with financial sustainability of National Referral Hospitals.

H_{04}: NHIF financing has no statistically significant relationship with financial sustainability of National Referral Hospitals.

H_{05}: Financial leverage does not moderate the relationship between healthcare financing and financial sustainability of National Referral Hospitals.

1.5 Significance of the Study

The results of the current study shall be of profound importance to the Ministry of Health, as it shall form the basis for the national healthcare financing policy. The study which delves into how healthcare is financed in Kenya will provide the MOH with insights on the optimal sources of healthcare financing they should explore to bolster financial sustainability of the public healthcare organization which is important in ensuring equity in access to healthcare services among all citizens, which is critical in the realization of Vision 2030, Universal Health Coverage (UHC) and Sustainable Development Goal (SDGs). This research shall identify areas in healthcare financing that requires urgent intervention by both MOH and WHO that will go a long way in bolstering the public healthcare system in underdeveloped nations characterized by over-dependence on OOP and donor funding.

This study is beneficial to the management of National Referral Hospitals as it shall enlighten them on the numerous factors that predispose most patients to catastrophic health expenditure and ways through which such phenomenon can be alleviated to increase overall access to quality and affordable healthcare, free from distress financing. Through this study, management shall be in a position to purposefully discover the

numerous healthcare financing options and how each influences financial sustainability of their hospitals, enabling them to take proactive actions.

The findings of this study shall enormously contribute to the current body of knowledge on public healthcare financing which is the top agenda of most governments in the world. The study shall specifically evaluate the knowledge gaps that exist, which shall form the basis for further research. Scholars shall also benefit from the research methodologies used as they can easily replicate the results in different contexts, therefore, increasing the validity of the findings therein, as they are easily generalizable to a larger population. The study is of significance as it bolsters public finance theories, policies, and practices in healthcare financing that is fundamental in ensuring the fiscal and financial sustainability of public health systems. Most importantly, this study will also be beneficial to scholars in the discipline of public health finance and health financial economics which has received little attention from most finance scholars.

1.6 Scope of the Study

The study was undertaken in National Referral Hospitals in Kenya under the MOH that provide secondary and tertiary healthcare. The target population consisted of five National Referral Hospitals as of 31st December 2021. The study endeavoured to inquire about the statistical relationship between healthcare financing and financial sustainability of National Referral Hospitals in Kenya. Further in this study, the dependent variable included financial sustainability of National Referral Hospitals, whereas the independent variables included: out-of-pocket healthcare financing, government healthcare financing, donor healthcare financing and NHIF financing. The study hinged on resource dependence theory, Musgrave's theory of public finance, the theory of demand in healthcare, resource-based view theory, and the free cash flow theory. It adopted an explanatory study design and used census sampling to sample all five National Referral Hospitals (NRH) in Kenya.

The National Referral Hospitals (NRH) were chosen because they are under the MOH and receive funds directly from the National government budget every fiscal year (FY). Also, the amount allocated to MOH as a percentage of the national annual budget is way below the Abuja healthcare financing threshold of about 15% of a country's budget. The study covered financial and fiscal data from 2019 to 2021. The reasons for the choice of this study are manifold; firstly, is because within this period most level five hospitals such

as Kenyatta University Referral Hospital, National Spinal Injury, and Mathari Teaching Referral Hospital; were elevated to National Referral Hospitals and the data available in their current status as National Referral Hospitals hospital is from 2019/2020 fiscal year. Secondly, this study period provides current trends and patterns of the interface between healthcare financing and financial sustainability of National Referral Hospitals before, during, and post coronavirus epidemic. The study focused on four major ways through which public healthcare is financed in Kenya.

1.7 Limitations of the Study

This study being quantitative concentrated on multiple observations that required the use of aggregate data in the analysis to prevent pseudo-replication. Aggregation of all the observations can predispose a researcher to ecological fallacy, of drawing conclusions about individuals based on aggregate, which may not always be true. To alleviate this problem the researcher analysed the plausibility of the data before beginning descriptive and inferential statistical analysis. Future research should focus on qualitative and quantitative aspects of data to alleviate this limitation as well as enhance the validity of the findings. Access to historical financial data from some hospitals was a challenge owing to the fact that most are not obliged to upload their financial statements on their respective websites. To overcome this, the researcher sought permission from management to get access to financial reports that are not publicly available. It also relied on audited financial reports published by the Office of Auditor General on their websites.

1.8 Organization of the Study

The thesis consisted of five sections where the first section delved into establishing the context and background of the problem under review. It highlighted the aims, hypotheses and scope of the probe. The second section delved into the theories fundamental to this research as well as the empirical review of the literature that highlights the salient gaps therein. It also outlined the conceptual framework that explained the nature of statistical relationships that existed between healthcare financing and financial sustainability of National Referral Hospitals (NRH). The third section presented the research methodologies utilized in this study. More specifically, it outlined the target population, methods, techniques, and procedures used in sampling, assembling and analysis of the collected data. Lastly, section four and five highlighted the results, concluded and offer policy prescriptions respectively.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This section reviewed and evaluated theories and empirical studies conducted on healthcare financing and financial sustainability of National Referral Hospitals. It identified the extant knowledge gaps and demonstrated how the current study filled in those gaps. The theoretical review in particular delved into the salient theories upon which this research was hinged; whereas the empirical review probed into the current body of knowledge, and identified studies relating to the objectives of the study and indicated the conceptual, methodological, and contextual gaps that existed therein.

2.2 Theoretical Review

The theoretical section introduces and discusses the pertinent theories anchoring this study. The public health finance theories assessed include resource dependency theory, Musgrave theory of public finance, theory of demand of healthcare, and resource-based view theory, which provide a theoretical framework for not only understanding the phenomenon under study but also describing the statistical relationships that exist among variables under study.

2.2.1 Resource Dependency Theory

This theory was proffered by Pfeffer and Salancik (1978) who argued that the external resources of an entity or organisation influence its overall behaviour. The theory often examines the relationship between an entity or organization and the resources they require to be operational. The resources that an entity or organization needs may be in the form of raw materials, human capital, or external funding. The resource dependency phenomenon may arise if one institution or organisation has most of resources than the other, which will be forced to depend on such an organization. Whenever there is high dependency, uncertainty rises, as the organisation dependent on the other faces the risk of external control that can substantially affect the operation of an entity or organisation.

According to this theory, the entity or organization that lacks critical or essential resources shall find itself trying to establish relationships with entities or organizations with the resources it requires while reducing dependence on others and increasing others' dependency on it. This theory assumes that the environment within which an entity or

organization operates has limited and valuable resources necessary for an entity or organizational survival and success, which in turn becomes a problem to it due to uncertainty in resource acquisition. The theory also assumes that the organizations in the dependence loop often work towards related objectives to not only acquire or gain control over resources that decreases their dependence on other organizations but also gain control over those resources that increase others' dependency on them. According to this theory, an organization can reduce its dependencies by coming up with strategies geared at enhancing its bargaining leverage in resource acquisition (Fowles, 2014).

This theory according to Hillman, Withers, & Collins (2009), has been widely applied in many disciplines explaining how well organizations can reduce their overall dependence on others and the uncertainty it causes. In particular, this theory is useful in explaining the dependency on external funding among not-for-profit organizations (NFPOs). As evident in Mitchell (2014) in his study on resource dependence among NGOs in the US, noted that, for NGOs to reduce resource dependence they need to diversify their sources of funding which will, in turn, help them to resist external control. This was the case, in yet another study by Khieng and Dahles (2015), who noted that NGO dependence on foreign aid contributed to the unpredictability of funding both in the short-run and long-run. It also resulted in reduced organizational autonomy. The most predictable sources of funding with the potential to increase autonomy were from commercial activities, which also conflict with their mission goals. These two studies contribute to resource dependence theory by introducing new perspectives on the applicability of this theory in developing nations. They also offer strategic responses geared at reducing external resource dependence and increasing their autonomy in their operations and fund-sourcing decisions.

This theory relates to this study in the sense that, public healthcare facilities (hospitals) are Not-For-Profit Organizations (NFPOs) as such they get their funds from individuals, governments, and donors. There is an overreliance on donor funding to fund various subsectors of health such as immunization, TB, and HIV/AIDS programs that predispose the health sector to uncertainty owing to an increasingly demanding resource environment coupled with declining donor funding in recent years. The financial overdependence on donations to fund the public healthcare system in Kenya raises serious questions about its financial sustainability (Fowles, 2014; Malatesta & Smith, 2014).

2.2.2 Musgrave Theory of Public Finance

This theory was propounded by Musgrave (1959), who posits that the role of government in any economy is divided into three functional categories that include: income distribution (equality), resource allocation (efficiency), and maintaining macroeconomic stability. The public goods and services being provided by the government were meant to fulfil the social and merit wants of citizens within a given nation. The government's role in the economy is essential in the correction of market failures and allocation of public goods and services that are non-excludable and non-rival. The health sector is an essential public good that if left to the private sector alone can result in unprecedented health inequities and inequalities; constitutes merit wants, which cannot be left to the market allocation that can be to the detriment of the poor and marginalized.

The central idea of Musgrave's theory is that the market economy is vulnerable to serious market malfunctioning in various aspects and that calls for government intervention to provide corrective measures. This theory builds on Wagner's (1883) theory of public finance which postulated there exists a relationship between government expenditure and economic growth since as the income of a given country expands the public expenditure increases to keep up with increased administrative and social functions of the government. Wagner’s law of increased government activities is catalysed by three driving forces that include industrialisation, increasing outcomes, and most importantly social progress. This implies that as the income per capita in any industrialized nation increases the public sector rise in relative significance. As per capita rises it also means that the demand for redistribution of national resources also increases (Musgrave, 1959).

The Musgrave theory surmises that the ultimate growth in government spending is often influenced by a pattern of economic growth and development experienced in a country. The Musgrave theory explains the main role of government in public resource allocation in the economy, which is important in health financial economics. The government being the greatest contributor to healthcare financing has a duty to allocate sufficient economic resources to the healthcare sector just as with any other sector of the economy (Wagner & Weber, 1977).

2.2.3 Theory of Demand in Healthcare Finance

The law of demand is credited and attributed to John Locke, James Steuart and Adam Smith (Smith, 1776, as cited in Getzen & Kobernick, 2022). Over the years the theory of demand has been applied almost in all fields to explain how changes in prices influence the quantity demanded by an individual, household, or entity at *ceteris paribus*. According to the theory of demand as the price of a good or service rises the quantity demanded declines, similarly as the price falls the quantity demanded increases as more people can afford it (Jaunky & Jeeto, 2022; Kwarteng et al., 2021).

The law of demand applies in healthcare financing as in other markets. According to Roberts, et al. (2021) as the price of public healthcare raises the consumption of public healthcare will decrease. Conversely, as the price of public healthcare declines the consumption of public healthcare will increase allowing more households to access it. This theory of supply and demand relates to out-pocket healthcare financing. Implying that as the out-of-pocket healthcare expenditure increases individuals' and households' healthcare consumption shall decline (Parmar & Banerjee, 2019; Zweifel, 2022). According to Bremer (2014), the increase in out-of-pocket healthcare expenditure often creates a substantial obstacle to healthcare access as fewer people can afford it. The foregone healthcare expenditure and financial burden due to out-of-pocket payments result in poor health outcomes and increased financial vulnerability of most low-income earners, especially those with chronic ailments (Wellay, et al., 2018).

The key assumptions anchoring this theory are though individuals and households value health they do not value it over everything else, as if they do so, they will not be in a position to meet other basic needs. It also assumes that individuals have inadequate income from which they finance their healthcare. According to Grossman's theory, health is a capital good since it increases the number of days one is healthy enabling one to participate in meaningful economic activities (Hartwig & Sturm, 2018). Though this theory by Grossman has immensely contributed to the discipline of health economics in explaining the demand for health relative to the traditional theory of demand, it has been criticized for generalizing and assuming that all healthcare is preventative, neglecting its curative aspects of it (Eze, 2018; Mhlanga & Garidzirai, 2020).

2.2.4 Resource-Based View Theory

This theory of resource-based view was proffered by Wernerfelt (1984) and thereafter popularized by Barney (1991). The central proposition of this theory is that an organization that has resources if well harnessed can give it a competitive advantage enabling it to have a tremendous long-term financial performance. These resources according to Freeman et al. (2021) can either be non-financial or financial. They enable an organization to implement financial strategies that not only increase effectiveness but also the efficiency of the organization. These valuable and scarce resources if well harnessed can go a long way in bolstering both its short-term and long-term financial viability (McGahan, 2021).

This theory surmises that the resources must be heterogeneous, implying that the resources owned must differ from one organization to the other. It argues that if all the organizations have similar capabilities and resources there will be no need to incorporate varied strategies and as such competitive advantage cannot be realized. It also supposes that resources must be immobile meaning that they cannot move across other organizations in the short run; as such organizations cannot be able to imitate or implement other organizations' strategies. Over and above the two assumptions this theory is anchored on the assumption that the resources being owned by an organization must be valuable, rare, and imitable to give it a competitive advantage (Ashcroft, 2022).

The major criticism of this theory is that its general applicability is limited as it does not consider the confluence of factors surrounding the resources. This is largely because it assumes that an organization should constantly use its internal resources to generate a competitive advantage. Therefore, whenever cutting-edge technology arrives in the industry or market, this theory is limited in its applicability (Freeman et al. 2021).

This theory relates to this study in the sense that it emphasizes those organizational resources capable of promoting innovative implementation strategies to bolster organizational advantage and financial sustainability. In consistence with this theory, the financial sustainability of public healthcare organizations is dependent on the organization's ability to seek institutional advantage through innovative healthcare financing strategies relative to other healthcare organizations (Wetering et al., 2018).

2.2.5 Free Cash Flows Theory

This theory on free cash flows was proposed and popularized by Jehnsen (1986) and states that stakeholders or managers with free cash flow in any organization will often invest it in projects with lower Net Present Values as opposed to paying it as dividends to shareholders. Free cash flow according to this theory refers to cash flow that remains after repaying creditors, paying dividends and interests to shareholders of a given organization. It constitutes a residual value that can be used in the valuation of an organization. This theory asserts that debt financing is key to ensuring free cash flows are well managed by ensuring the manager's interests are aligned with those of other stakeholders within an organization (Kadioglu & Yilmaz, 2017).

According to this theory, excessive free cash flows in a given organization translate to over-investment in projects with negative returns (net-present-values). Even though this is beneficial to managers through increased control of more wealth or assets, it significantly decreases the profitability of an organization. Ali et al. (2018) in their study claim that managers are willing to utilize the free cash flow that remains on other projects rather than giving out dividends to shareholders. They can also use the free cash flow on unnecessary personalized expenditures.

The theory of free cash flow relates to this study in the sense that managers of hospitals have a responsibility of holding cash and using it on investments that may indeed influence short-term and long-term financial performance. In this study, financial sustainability of National Referral Hospitals is realized when they have adequate and optimal free cash flow that is invested in activities with a positive net present value that enables them to be operational for a longer time, without suffering financial distress (Nguyen & Nguyen, 2018).

2.3 Empirical Review

The empirical review delved into establishing methodological, theoretical and conceptual, and contextual gaps that existed in numerous studies relating to the specific objectives of this study. This sub-section in particular assessed the statistical relationship that exists between healthcare financing and financial sustainability of National Referral Hospitals in Kenya.

2.3.1 Out-of-pocket Healthcare Financing and Financial Sustainability

There are numerous studies done on the statistical relationship between out-of-pocket financing and financial sustainability of public healthcare organizations, like Ataguba & McIntyre (2017) who assessed the incidence of healthcare financing in South Africa, by relying on data from South Africa income and expenditure survey between September 2011 and August 2012. The study sampled a total of 27,665 households and used the Lorenz curve and Kakwani index to measure the progressivity of OOP. The findings from the assessment of OOP progressivity revealed that OOP is more regressive as more than 20% of poor households pay more as a proportion of their total income relative to 20% of rich households. The study however had methodological and contextual data as it relied on the Kakwani index of measuring OOP progressivity, which does not show the long-term influence of OOP on public healthcare. It just focused on the short-term effect. Also, the study was conducted in South Africa with a more advanced public healthcare system relative to other low-income countries in Africa; as such the findings of this study cannot be generalized in such countries, prompting further study.

A similar study by Kilci (2021) while using Residual Augmented Least Squares (RALS) procedures to investigate financial sustainability of healthcare indicators in Turkey, found that the rising healthcare financing from OOP has a causal influence on a household financial ability in both short-run and long-run. The study relied on OECD, World Bank, and Turk STAT health statistics data from 1999 to 2018 and used the ADF unit root test to assess financial sustainability of health expenditure. The use of the unit root test procedure meant that the researcher had to disregard information that is contained in non-normal errors, lowering the efficiency of the result. The current study used multiple regressions to regress OOP against financial sustainability of National Referral Hospitals in Kenya to evaluate the magnitude of the statistical relationship therein relative to that of other healthcare financing sources being assessed. The study also relied on the most recent data from 2019 to 2021 that was relevant in showing recent trends and patterns in the use of OOP as a source of healthcare financing source.

Malik & Syed (2012) study examined the socioeconomic determinants of OOP in healthcare in Pakistan, using the method of Ordinary Least Squares (OLS) to estimate the multiple linear regression model of out-of-pocket health expenditure. It sampled a total of 76,250 households from the Pakistan Living Standard Measurement Survey for the period

2004-2005 and a sub-sample of 14,708 households drawn from the Pakistan Household Integrated Economic Survey. The study also used multi-stage cluster sampling and multiple regressions to regress determinants of OOPS that included health, social, demographic, and economic variables. The results indicated that non-food expenditure was the most significant predictor of out-of-pocket healthcare spending among most households.

Nonetheless, Malik & Syed (2012) only examined the short-term effect of determinants on the healthcare system it did not look into the long-term effect of OOP on financial sustainability, a gap that was filled by the current research. Its regression model only regressed socio-economic determinants of household OOP; the current study regressed determinants of OOP against financial sustainability to see how each determinant of OOP influences financial sustainability of National Referral Hospitals.

The negative impact of out of pocket financing was encapsulated in Mishra & Mohanty (2019) study on out-of-pocket payments and distress healthcare financing in India, who observed that out-of-pocket expenditure predisposed most households from poorer states to distress financing. The study predicted that the chances of a household seeking maternal delivery to face distress financing were 0.31 and 0.09 among mothers from poor and rich backgrounds respectively. This insinuates that out-of-pocket expenditure has a negative impact on poor households' ability to access maternal healthcare. The study also observed that high out-of-pocket expenditure predisposes most households to distress financing which was common among the poor, less educated, and those seeking private healthcare. Subsequently, distress financing may reduce the ability of those households to finance healthcare.

Though the highlighted studies overtly show that out-of-pocket payments are regressive and a major barrier to healthcare access, they are faced with numerous contextual and methodological gaps that are to be filled by the current research which infused a cocktail of mixed research methodologies to offset the weakness inherent in their methodologies. For instance, since most of the studies adopted the Kakwani Index wich measures the ability of a healthcare financing system to correct inequities in access to health; the current study assessed out-of-pocket financing as a percentage of private expenditure, to assess it against other public healthcare financing mechanisms used in National Referral Hospitals.

2.3.2 Government Healthcare Financing and Financial Sustainability

There is a wide range of studies that examined the statistical relationship between government financing and financial sustainability of public healthcare organizations. The most notable one is that of Kairu et al. (2021), who while conducting a cross-sectional study on five purposely selected counties in Kenya found out that there is a positive relationship between government funding of public hospitals and its future stability. The major weakness of this study is that it relied purely on qualitative data. The current investigation carried out a quantitative analysis to assess the statistical relationship between government healthcare financing and financial sustainability of National Referral Hospitals. Kairu et al. (2021) study also relied on a non-probabilistic method to arrive at the sample, to alleviate this; the present study employed a probabilistic sampling method to ascertain the generalizability of the previous study's conclusions.

Another study is that of Binyaruka et al. (2021) who carried out a cross-sectional assessment of 432 health personnel drawn from 42 public hospitals in Pwani and Dar es Salaam in Tanzania. The study adopted a multi-level mixed-effect logistic regression to investigate the factors influencing healthcare financing. The study also concluded that government funding of national hospitals is a factor that had much influence on informal payment for healthcare. When the government spending on health was low, the households had to spend more. According to Binyaruka et al. (2021) high out-of-pocket health, expenditure is regressive, inefficient, inequitable, and a barrier to the achievement of universal health coverage (UHC) goals. This study failed to consider the causality and moderation effects of financial leverage on healthcare financing, which were captured by the current investigation.

Karaman et al. (2020) while using stepwise multiple regression, to investigate the statistical relationship between government healthcare spending and health outcomes of thirty OECD countries, found that public healthcare expenditure per capita has a positive significant influence on long-term health outcomes or indicators. The result further indicated that public health expenditure per capita negatively affected infant mortality while positively affecting females and life expectancy at birth. The study thus concluded that public healthcare spending per capita significantly influenced infant mortality and life expectancy of both genders at birth. As such increasing government spending on health will significantly influence the financial sustainability of a given healthcare

system. This study evaluated 30 OECD countries that have distinct economic structures from those found in developing countries making the applicability and generalizability of its findings in the Kenyan context which is a low-income country difficult. Besides this study considered a few health indicators yet there are many factors influencing different countries, creating substantial conceptual and contextual gaps (OECD, 2020).

Zhou (2021) used Tobit regression and Simar regression to examine the statistical relationship that existed between various factors influencing the financial efficiency of healthcare in emerging countries. The study deduced that there was no effective statistical relationship between public health expenditure and financial sustainability of national hospitals. Zhou (2021) study was limited to World Bank's development indicators for 21 countries from the period 2000-2018. This current study focuses on quantitative data drawn from financial reports. The countries included in Zhou (2021) study have different political, economic, and regulatory structures generalizing its findings in the Kenyan context is impractical. The previous study also does not factor in the moderation impact of financial leverage in the causal relationship between healthcare financing and financial sustainability of National Referral Hospitals.

In some studies, like that of Mays & Smith (2011) who used a multivariate regression model for panel data drawn from 1993, 1997, and 2005 US census surveys, to estimate the influence of public health spending on each mortality measure while controlling for any community attributes influencing public health; found out that public health spending was the most consistent determinant of community-level preventable mortality. The study, therefore, concluded that additional public spending on health is likely to result in significant improvements in public healthcare in national hospitals over time. Implying that increasing government spending in national hospitals, communities, or societies with historically low levels of spending is likely to generate substantial, measurable, and sustainable health gains (Rhaghupathi & Raghupathi, 2020).

The findings were in disagreement with Sáez et al. (2017) and in agreement with Reeves et al. (2015) study that used a cross-national longitudinal model to assess the effects of alternative public financing mechanisms on public healthcare organizations in 89 middle and low-income countries. This indicated that there is an empirical gap that was addressed by the current study. Most of the studies conducted on the statistical relationship between government healthcare financing and financial sustainability of

public healthcare organizations suffer a plethora of contextual, methodological, empirical, and conceptual gaps that are to be filled by this robust study.

2.3.3 Donor Healthcare Financing and Financial Sustainability

A growing body of literature examining donor healthcare financing and financial sustainability of national public healthcare organizations has elicited different results. For instance, Macha et al. (2012) in their study that employed descriptive and thematic content analysis, to examine the factors influencing the burden of healthcare financing in Tanzania, South Africa, and Ghana found that donor healthcare financing had a strong influence on overall healthcare financing in public healthcare organizations. The study relied mostly on focused group discussions, in-depth interviews, and quantitative household surveys. The study employed a concurrent triangulation approach to corroborate and confirm findings obtained from the three countries. It concluded that donor healthcare financing is important in the realization of healthcare financing equilibrium, as it fill-in a country's healthcare financing gaps strengthening public healthcare systems (Macha et al., 2012). Unfortunately, this study fails to show and quantify the statistical relationship between the numerous factors influencing the burden of healthcare financing, and financial sustainability of national referral hospitals. It also based its results largely on qualitative data that could not provide a conclusive argument on the statistical relationship that exists therein. Another drawback is the use of mean on the household data from South Africa and Ghana while excluding Tanzania, making comparisons between the three countries difficult.

The findings of Macha et al. (2012) were corroborated by another study by Nguyen et al. (2020), which used mixed methods research design to evaluate the influence of external funding on financial sustainability. The study relied on qualitative data gotten from financial reports for the period 2011-2019, and 16 in-depth interviews with key informants from the MOH, Ministry of Planning, and Investment in Vietnam. Though the study found out that external funding influences financial sustainability, it did not make an effort of quantifying its effect by employing descriptive and inferential statistics as was the case in the current study. The investigation was also carried out in Vietnam with distinct political, social, and economic characteristics than Kenya, making it difficult to generalize its results in Kenya.

Another study on donor healthcare financing is that of Mwangi (2019) who used Pearson correlation, linear regression, and ANOVA to determine the factors influencing financial sustainability of universal health coverage. The study found that sustainable external funding of health has a ($r = 0.756$, $p < 0.05$) positive and significant influence on financial sustainability of UHC. Unlike this study, the current study sought to examine the statistical relationship between specific healthcare financing sources and financial sustainability of National Referral Hospitals without limiting itself to universal coverage of health (UHC). Mwangi (2019) study only assessed the influence of sustainable funding on UHC using a case study of KEMSA, whose results are not easily generalizable in the entire public healthcare system. The current study widens the scope to include all National Referral Hospitals (NRH) that are under MOH. Though Mwangi (2019) argued that donor funding plays a fundamental role in financing health, she failed to provide sufficient proof of this finding creating a substantial empirical gap that was filled by the current study.

Similarly, Ndung'u (2018) study on the determinants influencing sustainability of health projects financed through donor financing, and using a chi-square (non-parametric test), established that external resource mobilization has a significant influence on the sustainability of health projects. The study concluded that inefficiencies in resource mobilization of donor funds and poor funds management can influence financial sustainability of a given health project. As such the study recommended the need for efficient external funds mobilization, monitoring, evaluation, and reporting practices. The main weakness in this study is the use of the chi-square test, which suffers from a plethora of pitfalls, for instance, it does not provide information on the strength of the statistical relationship. The current study offset this weakness by employing both Pearson correlation, to assess both the direction and strength of the linear relationship. Ndung'u (2018) study also concentrated on one donor-funded health project in Meru County, however, the present probe delved into the overall donor financing of NRH in Kenya.

Cheluget & Wamuyu (2020) study that used multiple regression to model the relationship between source of funds and sustainability of health projects financed through donor aid, established that there exists a positive relationship between source of funds and sustainability of donor-financed health programs. The probe used government policy to moderate the relationship between the source of funds and sustainability of donor financed health programs. It employed a census research design to survey a total of 137

respondents working on the identified donor-funded project. Nonetheless, the current study contends that this evidence was not conclusive as the study only focused on one donor-funded health project and its target population was too small for its results to be generalized to the whole country.

2.3.4 NHIF Financing and Financial Sustainability

There are a considerable number of studies carried out on the statistical relationship between National Health Insurance Fund (NHIF) financing and financial sustainability of National Referral Hospitals, such as that of Odeyemi and Nixon (2013) who while examining equity in healthcare through the national health insurance in Ghana and Nigeria found out that national health insurance plays an important role in promoting universal health coverage goals by making the healthcare more equitable, affordable and accessible. However, this study fails to link national health insurance funding to the long-term survival of national referral hospitals, as is the case with this current study.

Basaza et al. (2017) inquiry on a household's ability to pay for NHIF among 381 public servants in South Sudan and established that there is an relationship between the national health insurance fund and one's ability to pay for their medical expenses. It was established that those with national health insurance fund cover were more likely to have an increased ability to meet future medical expenses with ease. However, this study failed to show whether NHIF as a healthcare funding mechanism influences the financial sustainability of National Referral Hospitals. The study also depended on qualitative measures of data collection and analysis, a weakness that was alleviated by the current study which is entirely quantitative.

This was in consonance with yet another study by Barasa (2018) who while examining the implication of Kenya National Hospital Insurance Fund reforms on Universal Health Coverage (UHC), found that NHIF financing is an equitable and efficient healthcare financing mechanism that strongly influences the sustainability of UHC. Nonetheless, the study was largely qualitative and it only limited itself to Universal Health Coverage, as opposed to the current study that evaluates the statistical relationship between NHIF financing and financial sustainability of National Referral Hospitals.

In Okungu (2018) probe on sustainability of NHIF financing mechanisms, it was found that NHIF financing is an issue of concern, especially in the informal sector as most

people work in this sector. The study in particular noted that due to the limited capacity of those in informal sectors, insurance financing can be somewhat unsustainable compared to other healthcare financing mechanisms. The study however focused on assessing the financial sustainability of non-contributory and contributory healthcare financing mechanisms in financing Universal Health Coverage.

Mumenya (2018) study on the influence of NHIF outpatient system on financial sustainability of public hospitals and using a descriptive study design to evaluate 6 sub-county hospitals in Nakuru county, found that an increase in NHIF capitation and extent of utilization resulted in low financial sustainability of sub-county hospitals. The study also discovered that NHIF as a form of healthcare financing in outpatient departments accounts for about 25% of the variation of their financial sustainability. The study however focused on sub-county hospitals within one county and did not focus on national referral hospitals as is the case with this current study

2.3.5 Financial Leverage, Healthcare Financing and Financial Sustainability

Financial leverage is defined by Enumah and Chang (2021) as the degree to which a public hospital uses debt to finance its operations due to fiscal, economic, and financial constraints. Financial leverage is often pursued by those public healthcare organizations with financial deficits and seeking to take advantage of the benefits associated with it while minimizing the risks related to its use (Huang et al., 2016; Turner et al., 2015).

Senarathne and Perera (2022) while examining the financial determinants of public health organization's performance in Sri Lanka and using panel data of five sampled listed healthcare organizations from 2013 and 2019 found that there was a significant negative relationship between financial leverage and relationship between financial determinants and financial stability of public hospitals. In this probe, financial leverage is measured using the debt-to-equity ratio while the organization's performance was measured using the return on capital employed. Nonetheless, this study suffered from a number of methodological weaknesses that arose from the use of EViews 10 which lacked both the instrument summary and Generalized Method of Moments (GMM) EGLS diagnostic tools, a situation that made the researcher drop some instruments from the GMM regression model. To overcome this weakness, the current study employed a more robust moderation empirical model (Senarathne & Perera, 2022).

Most of the studies that used financial leverage as a moderating variable continue to elicit mixed findings, with some studies like that of Abubakar (2016) which, while sampling five healthcare organizations listed on the Nigeria Stock Exchange for the period 2005 to 2014, and using Pooled Ordinary Least Squares (POLS) and using median, mean, maximum and minimum; reported that long-term debt ratio (LTDR), short-term debt ratio (STDR); have a positive significant influence on the nature of the relationship that exist between healthcare financing mechanism and financial stability of healthcare organizations. In this study, financial performance was measured using return on equity (ROE) and it was recommended that healthcare organizations should endeavour in incorporating a certain proportion of their debt with equity in a debt-to-equity ratio of about 1:2. However, this study only focused only on listed public healthcare organization and disregarded those that were not listed, a gap that was filled by the current investigation (Abubakar, 2016).

Other studies like that of Ramamonjiarivelo et al. (2015) who while investigating the statistical relationship between financial distress and the privatization of public hospitals; found that financial leverage significantly influences financial sustainability of a public hospital. It observed that highly financially leveraged public hospitals were at an increased risk of being financially distressed and were at increased odds of being privatized than those which are less financially distressed. Privatization according to Haghdoost et al. (2022) eases the financial burden of running public hospitals, which is highly criticized as it increases healthcare access inequities as only the rich can afford private healthcare services (Turner & Wright, 2022).

Ozyapici and Dalci (2018) while examining moderation influence of financial leverage on the statistical association between working capital and financial performance of 52 public hospitals listed in Europe; found that financial leverage significantly influences the statistical relationship between the cash conversion cycle and financial profitability. It was found that increasing the span of cash conversion in those hospitals with high financial leverage is likely to decrease their overall profitability. Likewise, when you increase the span of the cash conversion cycle in those public hospitals which are lowly leveraged it is likely to boost their overall profitability.

This corresponds with another study by Bem et al. (2015), which found that there is a positive statistical relationship between financial leverage (short-term and long-term debt)

and the profitability of public hospitals. This is after it sampled a total of 333 public hospitals in Hungary, Slovakia, Poland and the Czech Republic, where financial performance and sustainability were measured using return on assets (ROA). Empirical results from the numerous studies assessing the influence of financial leverage on healthcare financing and financial sustainability have been mixed and divergent as some indicated there is a positive significant statistical relationship while others indicated that there was a negative statistical relationship. Most of the studies reviewed in this subsection were conducted in other countries which are economically, politically, and socially distinct compared to Kenya.

2.4 Empirical Review and Gaps Summary

The major studies highlighted in the empirical review section are summarized in the subsequent table.

Table 2. 1:

A Summary of Empirical Studies and Gaps

Author	Topic	Methodology/ Variables	Major Findings	Gaps in Research	How the Study Filled the Gap
Ataguba & McIntyre (2017)	Determinants of Public health funding in South Africa	Lorenz curve and Kakwani index to measure the progressivity of OOP	Found out that OOP is more regressive as more than 20% of poor households pay more as a proportion of their total income relative to 20% of rich households.	It relied on the Kakwani index for measuring OOP progressivity, which does not show the long-term influence of OOP on public healthcare in South Africa. It just focused on the short-term effect.	Measured OOP as a percentage of private health expenditure. Focused on the long-term effect of OOP on financial performance
Kilci (2021)	A study on financial sustainability of healthcare indicators for Turkey under the health transformation program	Residual Augmented Least Squares (RALS) procedures	Healthcare financing from OOP has a causal influence on a household's financial ability in both short-run and long-run	The study was carried out in Turkey and based its findings on a root test that often disregards the information contained in non-normal errors. The study relied on obsolete data from 1998.	Relied on the most recent data from 2019 to 2021 that is relevant in showing recent trends and patterns in the use of OOP as a source of healthcare financing source
Malik & Syed (2012)	Socio-economic factors influencing OOP and public healthcare in Pakistan for the period 2004-2005	Multi-stage cluster sampling and multiple regression	The results indicated that non-food expenditure was the most significant predictor of OOP health expenditure among most households.	It only examined the short-term effect of determinants on the healthcare system it did not look into the long-term effect of OOP on financial sustainability.	Examined the long-term effect of OOP on financial sustainability of public hospitals in Kenya. Used GLS regression

Kairu et al. (2021)	Examining health facility financing in Kenya in the context of devolution	A cross-sectional study in five purposively selected counties in Kenya	The study concluded that government funding of health facilities influences their future stability	The major weakness of this study is that it relied purely on qualitative data. It also relied on a non-probabilistic sampling method	Incorporated descriptive and inferential statistics
Binyaruka et al. (2021)	Supply-side factors influencing informal payment for healthcare services in Tanzania	Cross-sectional survey. Uses multi-level mixed-effect logistic regression	The study found that government funding is a factor that had much influence on informal payment for healthcare.	This study failed to consider the causality and moderation effects of financial leverage on the statistical relationship between healthcare financing and financial sustainability	Used financial leverage as the variable moderating the statistical relationship
Karaman et al. (2020)	Investigated the causal relationship between government healthcare spending and health outcomes of thirty OECD countries	Used a stepwise multiple regression	Found that public healthcare spending per capita has a positive significant influence on long-term health outcomes or indicators	Having been conducted in 30 OECD countries its findings are not easily generalizable in developing countries like Kenya,	The study considered a few health indicators though are many factors
Macha, et al. (2012)	Factors influencing the burden of healthcare finance and the distribution of healthcare benefits in Ghana, Tanzania, and South Africa	Employed descriptive and thematic content analysis. Employed concurrent triangulation approach	The study found that donor healthcare financing had a strong influence on overall healthcare financing.	This study fails to show and quantify the statistical relationship between the numerous factors influencing the burden of healthcare financing, and financial sustainability. It did not provide a conclusive argument on the statistical relationship	Used quantitative methods of data collection and analysis. Used mean and standard deviation to compare data obtained from different national referral hospitals in Kenya

Nguyen et al. (2020)	External funding reduction of health programs: Exploring options for financial sustainability in Vietnam	Used mixed methods research design. It relied on qualitative data obtained from financial reports for the period 2011-2019	The study found that external funding influences financial sustainability	It was purely qualitative. Lack of generalizability in its findings.	Incorporated quantitative methods
Mwangi (2019)	Sustainability of universal health coverage: A case of Kenya Medical Supplies (KEMSA)	Used Pearson correlation, linear regression, and ANOVA	The study found that sustainable external funding of health has a ($r = 0.756$, $p < 0.05$) positive and significant effect on financial sustainability of UHC	Focused only on sustainability of UHC by narrowing to one case study of KEMSA, making generalizability of its findings on the national public healthcare system difficult.	Focused on financial sustainability of national public hospitals under MOH
Abubakar (2016)	Financial leverage and financial performance: evidence from the healthcare sector of the Nigerian Stock Exchange	Used Pooled Ordinary Least Squares (POLS) and used median, mean, maximum and minimum	Found that long-term debt ratio (LTDR), and short-term debt ratio (STDR); have a positive significant statistical relationship on the financial performance of healthcare organizations.	Focused mostly on the short-term effect of financial leverage on financial performance	Focused entirely on the long-term effect of financial leverage on financial performance (financial sustainability)
Ozyapici and Dalci (2018)	Moderation impact of financial leverage on profitability of 52 listed public	Used Pooled OLS, Fixed Effects Method (FEM), Random Effects	Found that increasing the span of cash conversion in those hospitals with high	Focused only on listed public hospitals and excluded those that are not listed.	Focused on national public hospitals in Kenya. Assessed financial

	hospitals in Europe	Model (REM), and Pearson Correlation	financial leverage is likely to decrease its overall profitability.	It assessed financial leverage in the context of working capital management	leverage in the context of healthcare financing and financial sustainability
Basaza et al. (2017)	Willingness to pay for National Health Insurance among 381 public servants		It found out there is a link between national health insurance fund and one's ability to pay for their medical expenses	It failed to show whether NHIF as a healthcare funding mechanism influences the financial sustainability of National Referral Hospitals.	Assessed the quantitative aspects of the statistical relationship between NHIF financing and financial sustainability
Odeyemi and Nixon (2013)	Examining equity in healthcare through the national health insurance in Ghana and Nigeria	Comparative study design	It found that national health insurance plays a significant role in promoting UHC goals by making healthcare more equitable, affordable and accessible.	Failed to link national health insurance funding to the long-term survival of national referral hospitals	Assessed the statistical relationship between NHIF financing and financial sustainability of national referral hospitals
Barasa (2018)	The implication of Kenya National Hospital Insurance Fund reforms on Universal Health Coverage	Qualitative review of NHIF reforms from 2010-2017	It found that NHIF financing is an equitable and efficient healthcare financing mechanism that strongly influences sustainability of UHC.	The study was largely qualitative and it only limited itself to Universal Health Coverage	The study expanded the scope and focuses on the long-term effect of NHIF on financial sustainability of national referral hospitals

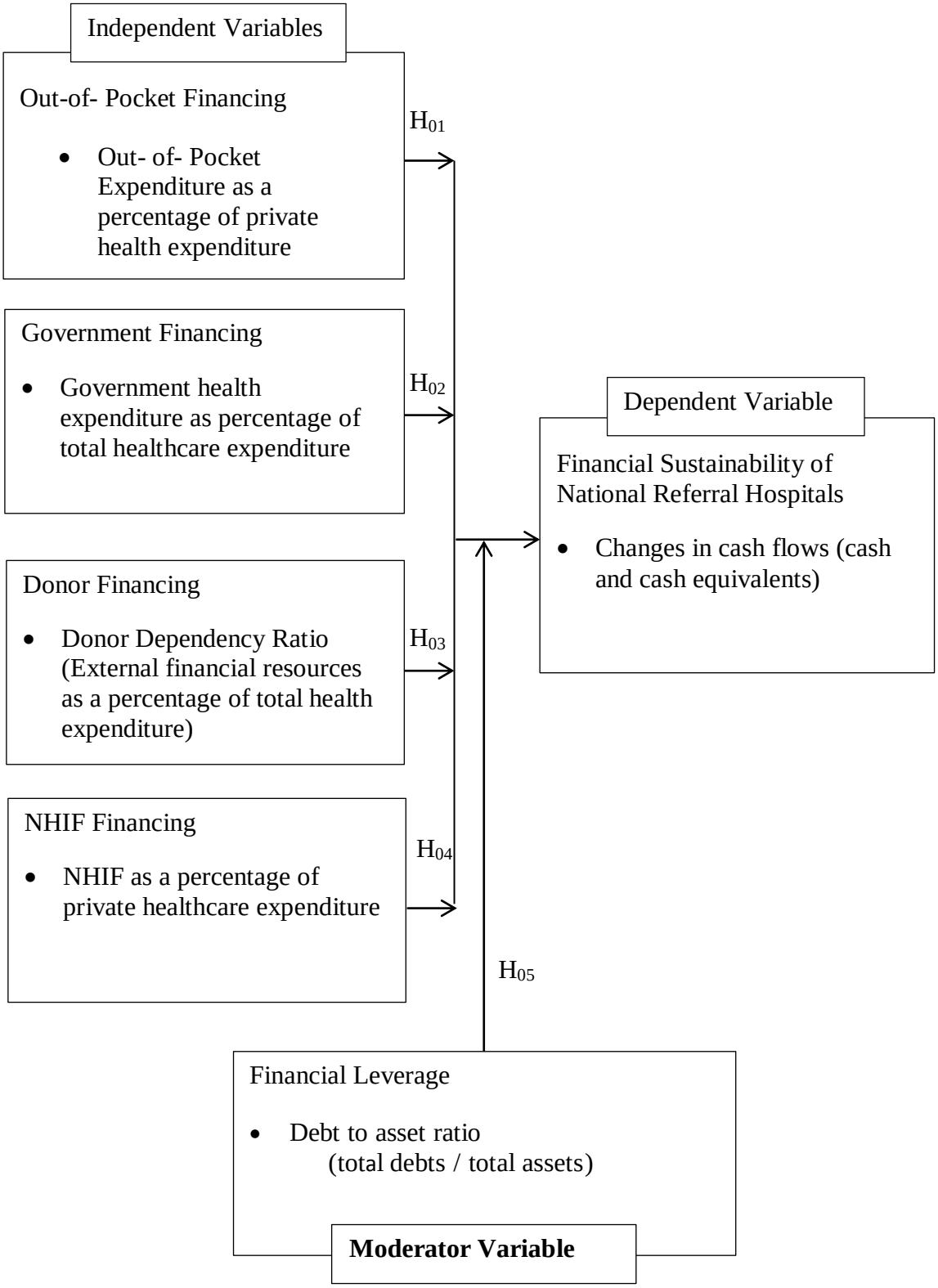
Source: Researcher (2024)

2.5 Conceptual Framework

The visual representation of the interrelationship among variables under review was exemplified in figure 2.1. The independent variables consist of major public healthcare financing mechanisms, which include out-of-pocket (OOP) healthcare financing, government healthcare financing, donor healthcare financing and NHIF financing; while the dependent variable comprises of financial sustainability of National Referral Hospitals, and the variable altering the strength of the statistical relationship among the two variables is financial leverage.

Figure 2. 1:

Conceptual Framework



Source: Researcher (2024)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

In this section, researcher outlined methodologies, designs, techniques, and procedures used in data collection and analysis. It also elucidated the diagnostic tests carried out on models and data sets under assessment by the researcher. As well as outlining, the ethical issues considered throughout the research process.

3.2 Research Philosophy

In this probe on healthcare financing and financial sustainability of National Referral Hospitals, the study embraced a positivism philosophy that is usually hinged on epistemology. It is a philosophical belief that purports that the only sound or authentic source of knowledge is that which is grounded on scientific evidence and can easily be verified through scientific approaches, methods, and statistical or logical proof. Positivism philosophy was appropriate since it is empirically based, definite, verifiable, replicable, predictable, and relies heavily on quantitative methods of data collection, such as official statistics that have high reliability and representativeness (Creswell & Creswell, 2018; Saunders, Lewis, & Thornhill, 2012).

3.3 Research Design

The study embraced an explanatory study design that is ideal for research problems that are not exhaustively investigated by previous inquiries. This research method and technique was suitable in providing an understanding of the statistical relationships between healthcare financing and financial sustainability of National Referral Hospitals (NRH) in Kenya that had not been adequately and conclusively investigated by most of the past studies. The research design allowed the researcher to assess whether healthcare financing had a positive, negative or no statistical relationship with financial sustainability of NRH (Creswell & Creswell, 2018).

3.4 Empirical Model

In this study, a panel data model was utilized to examine the statistical relationship between healthcare financing and financial sustainability of National Referral Hospitals in

Kenya. This model was ideal as it enabled the researcher to assess quarterly data from the five NRH for the period 2019-2021; which resulted to a total of 60 observations.

3.4.1 Model Specification

The study adopted a Generalized Least Square (GLS) panel model with random effects to model the linear regression. GLS estimator according to Hill Griffiths, & Lim (2018) is appropriate as it is more robust compared to OLS. It solves the problem of outliers, heteroscedasticity and biasness and is regarded as the best linear unbiased estimator. The GLS panel model used is illustrated in equation 3.1.

$$\mathbf{FS} = \propto + \beta_1(\mathrm{OOP})_{it} + \beta_2(\mathrm{GF})_{it} + \beta_3(\mathrm{DF})_{it} + \beta_4(\mathrm{NHIF})_{it} + \mu_i + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots (3.1)$$

Where:

FS = Financial sustainability; OOP = out-of-pocket financing; GF = government financing; DF = donor financing; μ_i =disturbance terms (entities that are in between); ε_{it} =disturbance terms (entities that are within within); α =intercept; I = 1,2…5 (Number of NRH under study); β = parameter of independent variables; t =2019-2021.

To ascertain whether the GLS regression model had random or fixed effects, the study conducted a Hausman test, where the results indicated that the most suitable model effect was random (Greene, 2018).

3.4.2 Moderating Effect of Financial Leverage

This study used Whishman and McClelland (2005) two steps procedure to evaluate whether financial leverage moderates the statistical association between healthcare financing and financial sustainability of National Referral Hospitals.

In the first step, the researcher expressed the moderator (financial leverage) as an independent (predictor) variable alongside the other independent (predictor) variables, as outlined in equation 3.2:

$$\mathbf{FS_{it}} = \beta_0 + \beta_1(\mathrm{OOP})_{it} + \beta_2(\mathrm{GF})_{it} + \beta_3(\mathrm{DF})_{it} + \beta_4(\mathrm{NHIF})_{it} + \beta_5(\mathrm{FL})_{it} + \varepsilon \ldots\ldots (3.2)$$

In the second step, the moderation effect was assessed by incorporating both the independent (predictor) variables and moderating variable as demonstrated in equation 3.3.

$$\mathbf{FS}_{it} = \beta_0 + \beta_1 \mathrm{OOP}_{it} + \beta_2 \mathrm{GF}_{it} + \beta_3 \mathrm{DF}_{it} + \beta_4 \mathrm{NHIF}_{it} + \beta_5 \mathrm{FL}_{it} + \beta_6 (\mathrm{OOP} * \mathrm{FL}_{it}) + (\beta_7$$

$$\mathrm{GF} * \mathrm{FL}_{it}) + \beta_8 (\mathrm{DF} * \mathrm{FL}_{it}) + \beta_9 (\mathrm{NHIF} * \mathrm{FL}_{it}) + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.3)$$

Where: FS = Financial sustainability; OOP = out-of-pocket financing ; GF = government financing; DF = donor financing; FL = financial leverage $\beta_0 - \beta_9 =$ coefficients; ε = error term ; i = National Referral Hospital; t = time; * = interaction term

According to Whishman and McClelland (2005), if financial leverage is significant in the first model 3.2 and the subsequent interactions in model 3.3 is insignificant, it implies that it is an explanatory variable as opposed to a moderating variable. Likewise, if the contrary happens means that the moderating variable, which in this case is financial leverage moderates the statistical relationship between healthcare financing and financial leverage.

3.5 Operationalization and Measurement of Variables..

This section describes how various variables under probe were defined and measured.

Table 3. 1:

Variables Definition, Indicators and Measurement

Variable Type	Variable	Operationalization	Indicator/Measurement	Scale
.Dependent Variable	Financial Sustainability of Public Healthcare	Measures the capability of an entity to maintain broader sources of financing that enable it to be operational for a longer period without facing any financial distress	Changes in cash flows (Where a positive change in cash and cash equivalents means there is financial sustainability while a negative change in cash flows means there is financial unsustainability)	Ratio
Independent Variables	Out-of-pocket financing	Healthcare expenditures that are directly incurred by patients or households	Out-of-pocket expenditures expressed as a percentage of private healthcare expenditure	Ratio

	Government financing	Amount of funds allocated to healthcare by the government from its annual budget	Government healthcare expenditure as a percentage of the total national budget	Ratio
	Donor Financing	Amount of healthcare funds derived from domestic or international donors for improvement of the health sector.	Donor dependence ratio [External funding/Total funding]	Ratio
	NHIF financing	Financing public health using national health insurance fund	NHIF as a percentage of private healthcare expenditure	Ratio
Moderating Variable	Financial leverage	Amount of debt used to finance healthcare	Debt to asset ratio	Ratio

Source: Researcher (2024)

3.6 Target Population

According to Tashakkori, Johnson, & Teddlie (2020), target population is referred to as the entire group of individuals or objects within a given community or organization that a researcher or scientist is interested in investigating and generalizing the findings and conclusions of the study being carried out. The target population constituted five National Referral Hospitals under the Ministry of Health as of 31st December 2021. The unit of analysis for this research was all National Referral Hospitals providing specialized secondary and tertiary healthcare in Kenya. It included all National Referral Hospitals that receive funds from the national government and have been operational for the period under study.

3.7 Sampling Design

To adequately answer the research problem, this study adopted a census method of sampling where it sampled all five National Referral Hospitals in Kenya that include: Moi National Referral Hospital, Kenyatta National Referral Hospital, Mathari National

Referral Hospital, National Spinal Injury Referral Hospital, and Kenyatta University National Referral Hospital; as they are few and are all under the Ministry of Health that receives the money directly from the national government. A complete enumeration of all units in a population, which in this case includes all National Referral Hospitals, yields data with a high degree of precision.

3.8 Data Collection Instruments and Procedures

This section outlines the instruments and procedures used to collect research data from the field.

3.8.1 Data Collection Instruments

The study purely depended on secondary data collected from numerous financial reports of National Referral Hospitals under study for the period 2019-2021 using the secondary data abstraction tool annexed in the appendix. Data collection using this method is fast, economical and easily accessible as opposed to primary data due to privacy issues relating to patient data (Wrench et al., 2018).

3.8.2 Data Collection Procedures

The study began by acquiring a research license from NACOSTI to be authorized to gather the relevant research data. The researcher also notified all relevant government agencies, and the senior management of the five National Referral Hospitals of the intent to conduct research and collect data from their respective institutional databases, corporate, economic surveys, and financial reports (Babones, 2014). Thereafter, the researcher used secondary data gathering instruments to assemble secondary data from hospitals' financial reports using the data abstraction tool annexed in the appendix. The collected data underwent data cleaning to ensure relevant data was obtained.

3.9 Data Analysis and Presentation

The analysis began with a data cleaning exercise, where the collected data was screened for incompleteness and inconsistencies, as well as polished to get rid of superfluous or incorrect data. The next step involved slicing and dicing the data to gain a meaningful understanding of the statistical relationship between the predictor and dependent variables under study. To achieve this, the study employed descriptive and inferential analytics that

included mean, standard deviation, regression and t-test; to evaluate the data using EViews applications version 12.

3.9.1 Diagnostic Tests

The numerous diagnostic tests carried out include a test on normality, multicollinearity, heteroscedasticity, stationarity and model stability.

3.9.1.1 Normality Test

Normality assumes that the residuals of a classical linear regression should bear a normal distribution. The study employed Shapiro Wilk test of normality which evaluates whether the population of a given study is normally distributed. This method is appropriate when dealing with relatively small samples of less than 50, as was the case in this study that was investigating four National Referral Hospitals in Kenya. In this normality test, the null hypothesis (H_0) states that the data is obtained from a population with a normal distribution. If the P-value is above 0.05 ($P > 0.05$), then we fail to reject the null hypothesis as the data is drawn from a normal distribution (Turner, 2020).

3.9.1.2 Multicollinearity Test

Multicollinearity ensues when various independent variables in multiple regression are exceedingly linearly related (correlated). To test for multicollinearity in the regression model, this research carried out a variance inflation factor test (VIF). As a general rule, if the VIF is 1 the variables under consideration are correlated in any way and are between one and five, the variables are said to be partly correlated. If the variance inflation factor is above five then the predictor or independent variables are highly correlated (Hatcher, 2013).

3.9.1.3 Heteroscedasticity Test

Heteroscedasticity occurs when the residuals in a regression model are not homoscedastic as a variance of residuals is not constant over a given period. The study used the Bresuch Pagan heteroscedasticity test to assess whether heteroscedasticity exists or not. If the Lagrange Multiplier (LM) statistic is more than chi-square critical values($LM > x^2$), H_0 has to be rejected, suggesting that there is heteroscedasticity (Wilcox, 2019).

3.9.1.4 Stationarity Test

A data set is regarded as stationary if its joint probability distribution is constant and does not change over time. All its statistical properties such as autocorrelation, covariance, variance and mean are also constant. Augmented Dickey-Fuller (ADF) unit root assessment was utilized to assess if there was stationarity within the data set. If the test statistic derived using the ADF test is lesser than the critical value when $P < 0.05$, the null hypothesis has to be rejected; as the data set is stationary as there is no presence of a unit root (Ullah, et al., 2019).

3.10 Ethical Considerations

Ethics is defined as a set of guidelines or protocols that guides a researcher on what is acceptable and unacceptable behaviour governing the research process to minimize the risks or harms to the respondents or environment. This study strictly observes the laid-out ethical considerations for conducting ethical research. To begin with, the researcher began by submitting the research proposal to the graduate school review board for authorisation to ascertain that the research designs used are ethically acceptable and are in line with Kenyatta University's research guidelines. Afterwards, the researcher sought a NACOSTI research permit to aid with the data collection. Equally, the study obtained informed consent from hospital administrators and all research participants assuring them that the data obtained were to be handled with the greatest discretion, confidentiality, and for academic purposes only. Moreover, the study adhered to scientific integrity by obtaining data from only credible sources, such as high-impact academic journals, official reports and scholarly books. All cited studies and works were duly considered using the latest American Psychological Association guidelines.

CHAPTER FOUR: RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

The ensuing section presented, interpreted and discussed the outcomes of this research. More specifically, it presented the descriptive analysis, diagnostic tests employed, hypothesis testing and tests for moderation.

4.2 Descriptive Analysis

This subsection delves into the descriptive statistics used to describe the statistical properties of the panel data obtained. It describes the distribution of the data as well as aid in the detection of outliers and spotting of patterns that exist between variables. The descriptive statistics employed in this study included mean and standard deviation. The mean was appropriate since it was more representative and inclusive of every value in the data set; on the other hand, the standard deviation was suitable as it is the most commonly used measure of dispersion that shows the average distance of each score from the mean of a given distribution and is less affected by variability in the sample size as opposed to other measures of dispersion. The result from the statistical analysis is as summarized below: where N denotes the number of observations in a panel data set.

Table 4. 1:

Descriptive Statistical Analysis Results

	N	Minimum	Maximum	Mean	Std. Deviation
Financial Sustainability	60	0.170	0.391	0.251	0.0654
Out-of-pocket Financing	60	0.6500	0.7700	0.7073	0.0698
Government Financing	60	0.0220	0.1300	0.0752	0.0483
Donor Financing	60	0.0145	0.0540	0.0338	0.0202
NHIF Financing	60	0.1189	0.2389	0.1822	0.0192
Financial Leverage	60	0.0362	0.7462	0.2577	0.1695

Source: Study Data (2024)

Key: OOP; Out-of-pocket financing, GF; Government financing, DF; Donor financing, NF; NHIF financing, FL; Financial Leverage, FS; Financial Sustainability)

The results from descriptive analysis in table 4.1 point out that the mean and standard deviation of financial sustainability of National Referral Hospitals in Kenya; measured by

changes in cash and cash equivalents for the period 2019 to 2021, was 0.251 and 0.0654, respectively. The result indicates a moderately significant dispersion in financial sustainability from its mean, implying that most National Referral Hospitals are at a greater risk of being exposed to financial difficulties. The findings are in consonance with Ifeagwu et al. (2021) that changes in cash and cash equivalents are an optimal measure of financial sustainability.

In the same way, the results in table 4.1 show that out-of-pocket financing measured as a percentage of total private healthcare expenditure, had a mean of 0.7073 and a relatively high spread of 0.0698, with a minimum and maximum of 0.650 and 0.770 respectively.

Government financing measured as a percentage of total healthcare expenditure had a mean of 0.0752 and a low dispersion of 0.0483, with a minimum and maximum of 0.022 and 0.13 respectively. This suggests a moderately high variability in its values from the mean.

Table 4.1 equally indicates that donor financing measured as the amount of donor funds received relative to the total healthcare expenditure, had a mean of 0.0338 and a standard deviation of 0.0202; which indicated that the spread among the variables analysed low. Its minimum and maximum values ranged between 0.0145 and 0.054 correspondingly.

The results showed that NHIF financing measured as a percentage of private healthcare expenditure had a .mean of 0.1822and a standard deviation of 0.0192, with minimum and maximum values ranging between 0.1189 and 0.2389. It implies that most of its values are clustered around the mean. The low spread implies that the outcome of this variable had high consistency and predictability.

The results further indicated that financial leverage measured by a ratio of total debts to total assets, had a mean of 0.2577 and a standard deviation of 0.1695, which was the highest indicating that the dispersion of values from the mean was high as compared to other variables under consideration.

4.3 Diagnostic Tests

In this subsection, the researcher outlines and discusses the various analytical tests conducted to assess if there were any violations of the assumption of regression. It

specifically highlights the diagnostic test used to check for any violation and the remedy explored.

4.3.1 Normality Test

To assess whether the data was obtained from a population that is normally distributed, the study employed Shapiro Wilk method, which is a commonly used non-parametric test for normality. This method is suitable when the sample is less than 50, as was the case in this study that was investigating 5 National Referral Hospitals in Kenya. The main hypotheses for the normality test were as follows:

$H_{0:}$ The sample under review is obtained from a population distribution that is normal

H_a: The sample under review is obtained from a population distribution that is not normal

If $P \leq 0.05$ reject the null hypothesis, since the population distribution lacks normality, on the other hand, if $P \geq 0.05$ do not reject the hypothesis, as it has a normal distribution. The results on normality indicated that all p-values of variables under investigation were above 0.05 making the researcher not to reject the null hypothesis; as samples were obtained from pupation distribution that were normally distributed.

Table 4. 2:

Shapiro-Wilk Normality Diagnostic Test Results

	Statistic	df	Sig.
Financial Sustainability	0.845	60	0.608
Out-of-Pocket	0.814	60	0.195
Government Financing	0.820	60	0.121
Donor Financing	0.862	60	0.829
NHIF Financing	0.857	60	0.696

Source: Study Data (2024)

4.3.2 Multicollinearity Test

The study assessed the severity of multicollinearity using the Variance Inflation Factor which measures the magnitude of interrelationship between independent variables. This test was appropriate since excessive multicollinearity inflates the variance and type II error reducing the statistical power of the regression model. If the VIF ≤ 1 then the

variables are not correlated, but if the VIF is between 1 and 5 it means the independent variables are partly correlated. Moreover, if the VIF ≥ 5 then the independent variables under review are highly correlated. The VIF results of the correlation that exists among independent variables are summarized in table 4.3.

Table 4. 3:

Multicollinearity Diagnostic Test Results

Model			Collinearity Statistics	
	t	Sig	Tolerance	VIF
(Constant)	-3.345	.003		
Out-of-Pocket Financing	-.455	.245	.868	1.214
Government Financing	1.440	.126	.713	1.302
Donor Financing	-2.54	.012	.645	1.136
NHIF Financing	3.26	.000	.685	1.254

Source: Study data (2024)

4.3.3 Heteroscedasticity

To assess whether there was heteroscedasticity in the panel regression, the research used Bresuch Pagan method, which was based on the following hypothesis:

H_0: There is presence of homoscedasticity (residual variances are all the same or equal)

H_A: There is presence of heteroscedasticity (residual variances are not same or equal)

If the P-value is less than 0.05, the null hypothesis has to be rejected, and if P-value is more than 0.05 null hypothesis cannot be rejected. After performing the Bresuch Pagan test the results indicated that there was absence of heteroscedasticity as the p-value was greater than 0.05 and the null hypothesis was not rejected

Table 4. 4:

Bresuch Pagan Heteroscedasticity Test Results

	Value
Chi 2 (1)	2.658
Probability > Chi 2	0.0646

4.3.4 Stationarity test

To assess whether there was stationarity in the data set, the researcher used Augmented Dickey Fuller (ADF unit root) method which was based on the following hypotheses:

H_O: There is existence of a unit root in the panel data set

H_A: There is absence of a unit root in the panel data set

If the Augmented Dickey Fuller t-statistics < critical value when p-value is equal or less than 0.05, results in rejection of the null hypothesis; as it implies no existence of a unit root and the data is stationary.

Table 4. 5:

ADF Stationarity Test

Variables	ADF Test Statistics		Order of Integration	Remarks
	T-statistic Value	Critical value at 5%		
FS(t)	-4.256	-1.791	1(0)	Stationary
OOP(t)	-2.045	-1.835	1(0)	Stationary
GF(t)	-3.647	-1.206	1(0)	Stationary
DF(t)	-2.52	0.853	1(1)	Stationary
NF(t)	-2.242	0.157	1(0)	Stationary

Source: Study data (2024)

The stationarity test in table 4.5 indicates that the test-statistics of the variables out-of-pocket financing, government financing, donor financing and NHIF financing were lower than their respective critical values, implying that the researcher had to reject the null hypothesis as the variables in question were stationary at the level and integrated of order zero.

4.3.5 Model Specification

To decide on the most suitable panel model for this probe, the researcher employed Hausman method to decide whether to use a model with random or fixed effects. This test was based on the null hypothesis that the most appropriate model for this study is the one with random effects; and the alternative hypothesis that the most appropriate model is the one with fixed effects. In the event the probability value is greater than 0.05 we fail to reject the null hypothesis and choose the model with random effect; likewise, if the probability value is less than 0.05 we have to reject the null hypothesis as the most preferred model become the one with fixed effects. The result from this test is outlined in the ensuing table.

Table 4. 6:

Hausman Test Summary

Test Summary	Chi-square Statistics		Chi-square difference	Probability
Cross-section random	7.468		4	0.458
Variable	Fixed	Random	Variable Difference	Probability
Out-of-Pocket Financing	1.0405	1.0529	0.00004	0.268
Government Financing	0.1098	0.1074	-0.00242	0.382
Donor Financing	-0.1117	0.0061	0.00145	0.054
NHIF Financing	0.10397	0.13332	0.01419	0.0000

Source: Study data (2024)

The result indicates that the Chi-square statistics for Hausman test is more than 0.05, prompting a rejection of the null hypothesis; as the most appropriate model to assess the nexus between healthcare financing and financial sustainability of National Referral Hospitals was the one with random effects. This type of panel model according to Creswell and Creswell (2018) is more appropriate as it captures uncertainty arising from heterogeneity among groups within a given data set.

4.4 Panel Regression Analysis

The researcher performed a panel regression at a confidence level of 0.05 to investigate the statistical significance of hypotheses anchoring this study. The outcome from the various regression models on the direct and moderating effect of predictor and moderating variables respectively are presented and discussed in subsequent sections.

4.4.1 Test for Direct Relationship between Healthcare Financing and Financial Sustainability

The research was based on a set of five hypotheses on the nexus between healthcare financing and financial sustainability of National Referral Hospitals. To evaluate the statistical significance of the hypotheses under study a regression analysis was employed at a 0.05 significance level. The results of the regression model utilized in testing the hypotheses of this study are discussed in successive paragraphs on the basis of the specific aims anchoring this research. A Generalized Least Square (GLS) panel regression was employed in investigating the nexus between healthcare financing and financial sustainability of National Referral Hospitals. The hypothesis testing was guided by the following null hypotheses.

H_0: Out-of–pocket healthcare financing has no statistically significant relationship with financial sustainability of National Referral Hospitals

H_0: Government healthcare financing has no statistically significant relationship with financial sustainability of National Referral Hospitals

H_{03}: Donor healthcare financing has no statistically significant relationship with financial sustainability of National Referral Hospitals.

H_{04}: NHIF financing has no statistically significant relationship with financial sustainability of National Referral Hospitals.

H_{05}: Financial leverage does not moderate the statistical relationship between the predictor (healthcare financing) and outcome (financial sustainability) variables

Table 4. 7:

GLS Test Summary for Financial Sustainability

Variable	β Coefficient	Std. Error	t	P > /t/
Out-of-pocket healthcare financing	-0.396	0.365	-1.085	0.021
Government healthcare financing	2.174	0.659	3.299	0.001
Donor Healthcare Financing	-2.354	0.465	-5.062	0.000
NHIF Healthcare Financing	3.282	0.434	7.562	0.000
Constant)	-0.758	0.291	-2.605	0.031
Number of obs (quartely) = 60				
R-squared = 0.654				
F-statistics = 20.4, p = 0.031				
(*) indicates a 5% significance level				

Source: Study data (2024)

The results from the GLS test showed that F-statistics was 20.4 with a probability value of 0.031 and within the significance threshold of 0.05. This implied that healthcare financing had a significant statistical relationship with financial sustainability of National Referral Hospitals in Kenya. On the other hand, an r-squared of 0.654 means that healthcare financing explains 65.4% change in the dependent variable (financial sustainability).

The results for hypothesis H_{01} at a significance level of 0.05 showed that out-of-pocket healthcare financing had a coefficient of -0.396 and a p-value of 0.021 that was lower than 0.05 resulting in rejection of the null hypothesis; as the statistical relationship between out-of-pocket healthcare financing and financial sustainability was negative yet statistically significant. This result was in tandem with Mishra and Mohanty (2019) study in India that observed that out-of-pocket expenditure had a negative impact on households' financial abilities predisposing them to financial distress that may subsequently influence their future abilities to pay for health influencing financial sustainability of national referral hospitals that have indeterminate healthcare financing mechanisms.

Further results realized for hypothesis H_{02} tested at a significance level of 0.05 pointed out that government healthcare financing had a beta factor of 2.174 and a probability of

0.001 that was within the pre-specified alpha value of 0.05, prompting researcher to dismiss the null hypothesis. This insinuated that though government healthcare financing had a strong statistical relationship with financial sustainability it was statistically significant; contradicting an earlier probe by Karaman et al. (2020) who deduced that public healthcare spending has a negative influence on health outcomes of individuals and financial stability of public healthcare systems. It was also in disagreement with Zhou (2021) probe, which found that though public healthcare expenditure had a statistical relationship with financial sustainability it was statistically insignificant.

The results on the third hypothesis H_{03} assessed at a confidence level of 95% indicated that donor healthcare financing had a beta factor of -2.354 with a probability of 0.000 that was within the pre-specified alpha level ($p = 0.05$), prompting researcher to disregard the null in favour of the alternative hypothesis. This implied that donor healthcare financing had a stronger negative relationship with financial sustainability than out-of-pocket financing. At *ceteris paribus* for every one-unit increase in donor healthcare financing, the financial sustainability of National Referral Hospital declined by 2.354 units. This meant that an increase in donor healthcare funding increased dependency and vulnerability of National Referral Hospitals; especially if there are fluctuations due to diminishing donor funding. As dependency on donor funding increase, the National Referral Hospitals may have trouble in building their internal funding capabilities limiting impacting on its financial sustainability.

This outcome was in disagreement with Mwangi (2019) who discovered that external funding of health has a positive and discernible impact on sustainability of universal health coverage and public health organizations in general. This implies that though donor healthcare financing is a component of the healthcare financing mechanism it has less negative impact on the financial sustainability of National Referral Hospitals hence it has a reduced ability to alter the optimal healthcare financing balance that is crucial to its survival.

The fourth hypothesis H_{04} tested at a confidence level of 95% was NHIF healthcare financing, which had a beta factor of 3.282 and a probability of 0.001; which was within the predetermined threshold of 0.05, prompting the researcher to dismiss the null hypothesis. This implied that NHIF financing had a strong positive and statistically

significant relationship with financial sustainability compared to other healthcare financing mechanisms.

This also suggested that as the number of people using NHIF increases the financial sustainability of National Referral Hospitals is likely to increase; likewise, as the NHIF expenditure declines the financial sustainability of those hospitals is likely to be in limbo. This result corroborates Mumenya (2018) study, which deduced that NHIF capitation and its low utilization resulted in the decreased financial sustainability of sub-county hospitals.

4.4.2 Test for Moderation Effects of Financial Leverage

In the present probe, the researcher employed Whishman and McClelland (2005) two steps procedures to evaluate the effect of moderator (financial leverage) on the nexus between healthcare financing and financial sustainability of National Referral Hospitals in Kenya. The results of Whishman and McClelland (2005) are illustrated in table 4.8 and 4.9. In keeping with this moderation effect, the first step involved expressing the moderating variable (financial leverage) as a predictor variable; and the second step involved incorporating both the predictor variables and moderating variables.

4.4.2.1 Effects of Financial Leverage as a Predictor Variable

The results ensuing from the first step of moderation according to Whishman and McClelland (2005) are depicted in table 4.8.

Table 4. 8:

Effects of Financial Leverage as a Predictor Variable

Variable	β Coefficient	Standard Error	t	P > /t/
OOP Financing	-0.773	0.482	-1.604	0.217
Government Financing	0.691	0.368	1.878	0.144
Donor Financing	-2.01	0.375	-5.360	0.346
NHIF Financing	3.109	0.512	6.072	0.000
Financial Leverage	0.6055	0.214	2.829	0.250
Constant	-0.304	0.387	-0.786	0.000
F Statistics: 12.45				
Prob > chi2: 0.000				
(*) denoting a 5% significance level)				

Source: Study Data (2024)

The results obtained from the first step of moderation indicate that out-of-pocket financing, government healthcare financing, donor healthcare financing, NHIF healthcare financing, and financial leverage as a moderating variable were statistically significant in elucidating the fluctuations in financial sustainability measured by changes in cash and cash equivalents as F-statistic was 12.45 and probability figure at 0.000; which was lower than 0.05.

Results arising from financial leverage as a predictor variable depict that out-of-pocket financing had a negative beta coefficient of -0.773 with a probability of 0.217 greater than 0.05, an indication of a negative statistical relationship that exists between OOP healthcare financing and financial sustainability. This meant that a unit in out-of-pocket healthcare financing would trigger a 0.773 decrease in financial sustainability measured by the change in cash and cash equivalents.

The beta coefficient of government healthcare financing was ($\beta = 0.691$, p-value = 0.144) exemplifying a positive yet insignificant relationship that subsists between government healthcare financing and financial sustainability of National Referral Hospitals in Kenya. The outcome from the study further shows that donor healthcare financing had a ($\beta = -2.01$, p-value = 0.346) negative non-significant statistical relationship with financial sustainability; as was the case with NHIF healthcare financing that had a ($\beta = 3.109$, p-value = 0.000) positively significant statistical relationship with financial sustainability. This was dissimilar to that of financial leverage that yielded a ($\beta = 0.6055$, p-value = 0.250) statistically discernible relationship between healthcare financing and financial sustainability of National Referral Hospitals in Kenya. This is highly suggestive that financial leverage does not directly have an effect on financial sustainability measured through changes in cash and cash equivalents, as such has potential to moderate the statistical relationship between healthcare financing and financial sustainability of National Referral Hospitals.

4.4.2.2 Effects of Financial Leverage as a Moderator

This constitutes the second step of Whishman and McClelland (2005) moderation approach, to assess the moderation effect of financial leverage on the interaction nexus between healthcare financing and financial sustainability of National Referral Hospitals in Kenya. This interaction is well encapsulated in the ensuing table on moderation.

Table 4. 9:

Moderating Effects of Financial Leverage on Nexus between Healthcare Financing and Financial Sustainability

Variable	β coefficient	Standard Error	t	P > /t/
OOP Financing	-0.72278	0.34	-2.1258	0.003
Government Financing	0.684	0.395	1.7316	0.005
Donor Financing	-1.762	0.412	-4.2767	0.009
NHIF Financing	2.82	0.424	6.6509	0.074
Financial Leverage	0.8021	0.216	3.7134	0.056
OOP Financing*Financial Leverage	-0.4534	0.356	-1.2736	0.016
Government Financing*Financial Leverage	0.5952	0.516	1.1535	0.106
Donor Financing*Financial Leverage	-1.69	0.485	-3.4845	0.000
NHIF Financing*Financial Leverage	-2.341	2.436	-0.9610	0.116
Constant	-2.623	1.784	-1.4703	0.000
F Statistics: 17.62				
Prob > chi^2: 0.000				
(*) indicates a 5% significance level				

Source: Study Data (2024)

The interaction between financial leverage and other variables yielded an F-statistics of 17.62 and a probability of 0.000 implying that healthcare financing and financial leverage as a moderating variable significantly explained the variations in financial sustainability of National Referral Hospitals.

The coefficient of out-of-pocket healthcare financing (β = -0.72278, p-value = 0.003), exemplifies that out-of-pocket healthcare financing has a statistically non-significant negative effect on financial sustainability. The coefficient of government healthcare financing (β = 0.684, p-value = 0.005) depicts that government has a statistically non-significant positive effect on financial sustainability. The coefficient of donor healthcare financing (β = 1.762, p-value = 0.009) elucidates that donor healthcare financing has a statistically significant positive relationship with financial sustainability. The coefficient of NHIF healthcare financing (β = 2.82, p-value = 0.074) elucidates that NHIF healthcare financing has a statistically non-significant positive relationship with financial sustainability

The coefficients of financial leverage (β = 0.8021, p-value = 0.056) point out that financial leverage had a statistically non-significant positive relationship with financial sustainability. This, therefore, elucidates that financial leverage can be employed as a moderating variable instead of a predictor (explanatory) variable.

Further, table 4.9 shows the interaction effects of various variables with the moderating variable. The coefficient of the interaction between out-of-pocket healthcare financing (-(β = -0.4534, P-value = 0.016< 0.05) yielded a negative yet significant statistical relationship with financial leverage. In the same way, the interaction between government healthcare financing and financial leverage yielded (β = 0.5952, p-value = 0.106< 0.05) a positive yet non-significant statistical relationship. On the interaction between donor healthcare financing and financial leverage, it yielded a statistically significant negative statistical relationship with a beta coefficient of -1.69 and a probability of 0.000. While the interaction between NHIF healthcare financing and financial leverage produced (β = --2.341, p-value = 0.116> 0.05) a negative and non-significant statistical relationship. This signifies that a one-unit surge in the interaction between NHIF healthcare financing and financial leverage results in a decrease in financial sustainability of National Referral Hospitals.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The ensuing section summed up the study, by highlighting the most fundamental results and proposed policy prescriptions for bolstering financial sustainability of National Referral Hospitals. It endeavoured in outlining the contributions of this study in the creation of knowledge in the field of public health finance and health financial economics. This section also highlighted areas that required further investigation.

5.2 Summary of the Study

The statistical evidence elucidated that financial sustainability of most National Referral Hospitals is on the decline due to a skewed healthcare financing mechanism. This has been largely linked to the declining donor healthcare financing, slow adoption and utilization of NHIF financing options predisposing most Kenyans in unprecedented and regressive out-of-pocket healthcare financing pushing them further to financial distress and abject poverty.

This was coupled with sub-optimal reallocation of healthcare financing by the government, which is still below Abuja's pronouncement threshold of appropriating at least 15% of federal or domestic budget to public health. The incessant fluctuations in net margins, financial reserves and rapid changes in cash flows triggered the curiosity of the researcher to find the contributing factors to the financial vulnerability of most National Referral Hospitals, which was exposed during Corona virus pandemic that almost brought the entire public healthcare system into a deadlock in 2020.

It is against the backdrop of these circumstances, that the research endeavoured to explore the nexus between healthcare financing and financial sustainability of National Referral Hospitals in Kenya. More specifically it attempted to assess the statistical relationship between out-of-pocket healthcare financing, government healthcare financing, donor healthcare financing, NHIF healthcare financing and financial sustainability of National Referral Hospitals in Kenya. Moreover, it strived to evaluate the impact of moderator (financial leverage) on the statistical relationship between healthcare financing and financial sustainability of National Referral Hospitals.

The outcome of this study is pegged on the five specific objectives. In the first objective, the researcher sought to examine the statistical relationship between out-of-pocket healthcare financing and financial sustainability of National Referral Hospitals. The null hypothesis fundamental to this objective indicated that out-of-pocket healthcare financing had a statistically significant negative relationship with financial sustainability. The research findings under moderation effect of financial leverage indicated that out-of-pocket healthcare financing still had a negative and statistically significant relationship with financial sustainability.

In the second objective that strove to establish the statistical relationship between government healthcare financing and financial sustainability of National Referral Hospitals. The research found that government healthcare financing had a statistically significant and positive relationship with financial sustainability of National Referral Hospitals. The results on moderating effect of financial leverage on the statistical relationship between government financing and financial sustainability was positive and statistically non-significant.

In the third objective that endeavoured to assess the statistical relationship between donor healthcare financing and financial sustainability of National Referral Hospitals. The upshots from the study discovered that donor healthcare financing had a strong negative and statistically significant relationship with financial sustainability as compared to out-of-pocket financing. Correspondingly, the moderating effect of financial leverage on the statistical relationship between donor healthcare financing and financial sustainability of National Referral Hospitals in Kenya had a negative and significant effect on the statistical relationship between donor healthcare financing and financial sustainability.

In regard to the fourth objective which, endeavoured to find out the statistical relationship between NHIF healthcare financing and financial sustainability of National Referral Hospitals. The results from the study showed that NHIF healthcare financing had a positive and most significant statistical relationship with financial sustainability. Equally, on the moderation effect of financial leverage on the statistical relationship between NHIF healthcare financing and financial sustainability; the outcome of the study suggested that it has a negative and non-significant statistical effect.

In the fifth objective on the moderating effect of financial leverage on the statistical relationship between healthcare financing and financial sustainability of National Referral

Hospitals, the study established that financial leverage only moderate the relationship between out-of-pocket financing and financial sustainability; as well as the relationship between donor healthcare financing and financial sustainability. Nonetheless, financial leverage did not exhibit meaningful moderation effect on the relationship between government healthcare financing and financial sustainability. Equally, it did not moderate the relationship between NHIF financing and financial sustainability of National Referral Hospitals.

5.3 Conclusion

Overall, the outcomes of this study provide fundamental perspectives into the nexus between healthcare financing and financial sustainability of National Referral Hospitals in Kenya and put on spotlight the major issues that need further investigation. The findings of this investigation attest that there exists a strong relationship between healthcare financing and financial sustainability of National Referral Hospitals, and there is an increased need to re-evaluate the traditional financing mechanism that is highly skewed despite its significance in the creation of a robust and sustainable public healthcare system essential in the delivery of Universal Health Coverage.

More specifically, it has been widely noted that out-of-pocket healthcare financing has a negative and statistically discernible outcome on financial sustainability of National Referral Hospitals, highly suggestive of the regressive nature of out-of-pocket healthcare expenditure that often pushes most households into financial distress impairing their future capabilities to meet their hospital financial obligations, which subsequently has a severe causal sequence on the general financial wellbeing of those hospitals through unpaid medical bills that piles up yearly. The soaring out-of-pocket healthcare expenditures are due to skewed and sub-optimal healthcare financing mix adopted by hospitals and Ministry of Health. In consonance with UNECA (2018) report, out of pocket healthcare financing is an indispensable indicator of healthcare financing of healthcare financing mechanisms that should be moderated through robust healthcare financing policies. The excessive out of pocket expenditure results to catastrophic health spending that is still inadmissibly high among ultra-poor households in Kenya.

The results from the study using GLS regression hypothesis test considerably indicated that government healthcare financing has a positive and statistically significant outcome on financial sustainability of National Referral Hospitals. This elucidates that the

government is a key player in the mobilization and pooling of financial resources allocated to healthcare infrastructural development that is within the framework of global commitments on sustainable health and economic development. This stems from the fact that every government has an obligation to not only foster indiscriminate access to healthcare but also to cushion its citizens from soaring medical costs. As such it is a major stakeholder in the health sector, and must constantly develop healthcare financing policies geared at promoting financial sustainability of National Referral Hospitals. Similar assertions have been extensively mirrored in a few of the empirical studies reviewed, which indisputably came to a verdict that the role played by the government in healthcare financing is indispensable, however, the studies did not query the relationship between government healthcare financing and financial sustainability as has been the case with the current study.

In relation to the objective on donor healthcare financing, results from the GLS regression hypothesis test revealed that donor healthcare financing had a strong negative and significant outcome on financial sustainability. This demonstrates that though donor healthcare financing is an important component of healthcare financing that influence financial sustainability of National Referral Hospitals, it means its effect is substantial relative to other healthcare financing options, which can be largely attributed to diminishing donor funding and overreliance of this form of financing that increase financial vulnerability of these hospitals.

In respect to the objective on NHIF healthcare financing, results from the GLS regression hypothesis test concluded that NHIF healthcare financing exhibits a strong, positive and significant impact on financial sustainability of National Referral Hospitals. This implies that NHIF is a fundamental component of the healthcare financing mix that has the capacity to impact on the future financial stability of these hospitals, as it is likely to reduce the burden imposed on households with no insurance coverage. However, more effort is required in the promotion of NHIF insurance coverage in Kenya which is still below the global threshold at 27.2%.

With regard to the moderating effect of financial leverage on the nexus between healthcare financing and financial sustainability, results pointed out that financial leverage moderated the statistical relationship between healthcare financing and financial sustainability of National Referral Hospitals. In line with this finding, the study concluded

that the management of National Referral Hospitals should consider instituting debt management guidelines and controls, as debt is the most costly source of financing.

In conclusion, these results provide new perspectives on how healthcare financing impacts not only financial sustainability of National Referral Hospitals but also the entire public healthcare system. The results demonstrated that there are healthcare financing gaps that can potentially impact on the financial stability of these hospitals.

5.4 Policy Implications

This study provides an actionable toolkit for policymakers in the public healthcare sector seeking strategies to alleviate disequilibrium in healthcare financing that subsequently impact on financial sustainability of National Referral Hospitals. The policy prescriptions are anchored on the five objectives under study. In the first objective, statistical evidence showed that out-of-pocket healthcare financing bears a negative and statistically significant relationship with financial sustainability of National Referral Hospitals. This suggests that out of pocket financing is a regressive form of healthcare financing that impairs households' current and future abilities to meet their healthcare financial obligations, negatively impacting on financial sustainability of National Referral Hospitals. The impoverishing effect of out of pocket healthcare financing on financial sustainability is alarming and calls for multi-stakeholder collaboration in alleviating it.

Based on this, the research recommends that the government in partnership with the Ministry of Health ought to set ceiling caps on out-of-pocket expenditure to align it with the global minimum threshold of about 10% of total healthcare financing. This will ensure that households are protected from the adversarial effects of unprecedentedly high out-of-pocket expenditure, which has seen a number of patients detained in hospitals for accrued unpaid bills. In equal measure, the MOH should constantly be assessing the equity in healthcare financing to ascertain whether there is an optimal healthcare financing mix that does not exert financial pressures on households and their livelihoods. The inequity in healthcare utilization is primarily contributed to high OOP that limits the abilities of those that are financially vulnerable. The policymakers in the health sector must collectively seek ways to amend healthcare financing laws and policies in ways that reduce the financial burden on households. This can be through exploring alternative ways of financing health in sustainable ways.

In the second objective that endeavoured in establishing the statistical relationship between government healthcare financing and financial sustainability of National Referral Hospitals, the statistical evidence revealed that government healthcare financing exhibits a moderately positive and significant statistical relationship with financial sustainability of National Referral Hospitals. This emphasized the indispensable role of state in the healthcare financing of National Referral Hospitals. In the backdrop of this, the amount of funds allocated to health should be increased to mirror Abuja pronouncement threshold of appropriating at least 15% of federal budget to public healthcare to prevent a financial crisis in National Referral Hospitals.

The financial vulnerability prevalent in the public healthcare system was exposed by coronavirus pandemic in 2020, which elicited global concerns about financial sustainability of public healthcare systems and organizations like National Referral Hospitals. The empirical review in this investigation has substantially shown that there is a looming public healthcare financial bubble, as the current healthcare financing mechanisms are sub-optimal therefore predisposing most households to unprecedented healthcare burden. The government in collaboration with MOH should explore other innovative healthcare financing mechanisms such as institution and use of dedicated taxes for health, where some revenue from tobacco and alcohol companies can be dedicated to specific health programs. They can also explore social impact bonds as an avenue to finance the public healthcare systems in National Referral Hospitals and other County Referral Hospitals.

The use of social impact bonds in financing public healthcare systems have been found to have potential in the promotion and diversification of healthcare financing mechanism reducing overreliance on one form of healthcare financing that has been found to influence financial sustainability of National Referral Hospitals in Kenya. The social impact bond is a financial security like typical bonds that are often used to fund healthcare projects that creates better or optimal social outcomes. The social impact bonds have been used in United Kingdom and China to fund specific health programs and have substantially optimized the entire healthcare financing mix. Therefore, the national government through collaborative efforts with the MOH and Central Bank of Kenya should develop social impact bonds (SIB) products to be used to finance prevention of non-communicable illnesses like diabetes, obesity and hypertension, which impose an unprecedented burden on National Referral Hospitals' and the entire public healthcare

system. In Kenya non-communicable diseases, constitute 50% of inpatient healthcare expenditure and about 40% of mortality annually, a situation calling for a robust and diversified healthcare financing policy and reform to attract more funding outside the traditional healthcare financing options.

The coronavirus pandemic in 2020 unmasked the serious vulnerability of the global healthcare system, emphasizing the importance of increased inter-governmental collaboration in bolstering public healthcare systems that are intertwined with economies of the world that are mutually related. The government should be on the frontline in signing health treaties and adapting innovative healthcare financing options, such as developing healthcare bonds in partnership with global financial institutions like International Monetary Fund. It should collaborate with global community on sustainable healthcare financing issues under the framework of World Health Organization.

In the third objective on donor healthcare financing, the study revealed that it had the most significant negative statistical relationship; as such, it has abilities to result in a healthcare financing disequilibrium threatening the ultimate financial survival of National Referral Hospitals. Therefore, this study recommends the government through the MOH to establish a healthcare financing framework that reduces overreliance on external healthcare funding sources. In the same way, the management of National Referral Hospitals should develop healthcare financing policies that reduce overreliance on uncertain and unreliable healthcare financing options. They should develop a robust healthcare financing framework that promotes the smooth transitioning of various healthcare programs such as HIV/AIDS and immunization, which were previously funded through donor healthcare financing. The National Referral Hospital policies and framework on healthcare financing should be responsive to the dynamics in donor healthcare financing that may threaten its financial sustainability.

In the fourth objective that endeavoured to find out the statistical relationship between NHIF healthcare financing and financial sustainability, the inference indicates that NHIF healthcare financing had a strong positive and significant statistical relationship with financial sustainability of NRH. This suggests that NHIF healthcare financing if well harnessed and optimized can substantially impact the general financial well-being of these hospitals. Therefore, the study proposes that the national government through the MOH and in collaboration with other stakeholders in the health sector should develop an

optimal NHIF framework geared at bolstering not only equity in health but also expanding NHIF coverage among the vulnerable segments of the population that are often vulnerable to adversarial impacts of Catastrophic Healthcare Expenditure (CHE) from escalating out-of-pocket expenditures.

The study proposes that the national government in alliance with all the stakeholders in the public healthcare sector should develop and institute optimal reforms and policies to re-align NHIF with realities on the ground. Failure to do this will worsen the financial vulnerability of NRH and the entire public healthcare system, resulting in an unprecedented healthcare financing bubble and burst. NHIF is a cornerstone upon which UHC is founded and its ultimate sustainability is of great essence. The delays in NHIF reimbursements force most hospitals to rely on debt to finance their daily operations making them wallow in unprecedented debt. Most of these cash-strapped hospitals resort to unorthodox practices, such as overvaluation of NHIF claims that threaten the future sustainability of this kitty in funding public healthcare in Kenya. Therefore, there is a need for well-grounded and diverse reforms with social needs at heart.

In the fifth objective that investigated the moderation effect of financial leverage on the nexus between healthcare financing and financial sustainability of NRH, the inferences revealed that incessant debts facing public healthcare organizations do not have an effect on financial sustainability but moderate it, as such it can predispose them to financial difficulties in short-run and long-run especially when it is not prudently managed. For instance, the late reimbursement of NHIF has forced most hospitals to explore debt financing for its daily operations increasing their financial vulnerabilities as the cost of debt is high in comparison with other healthcare financing options.

Therefore, this study proposes that the management of National Referral Hospitals, NHIF and the MOH should corroborate and establish broader healthcare debt management measures and NHIF reimbursement policy that will ultimately influence sustainability of NRH and the entire public healthcare. The ever-rising healthcare costs in Kenya elicit concerns about the need to adopt an optimal healthcare financing reform and framework. There should be increased efforts in building a resilient healthcare financing system and establishment of a sound and sensitive National Health Insurance Policy for reducing healthcare costs and universal protection of all vulnerable stakeholders in the healthcare sector, to enhance the nation's preparedness to disruption of public healthcare system and

economies, as was the case in 2020 when the coronavirus pandemic disrupted global healthcare systems and economies.

5.5 Contribution to Knowledge

This study on healthcare financing and financial sustainability of National Referral Hospitals in Kenya contributes significantly to the extant body of knowledge in the discipline of health financial economics that has received limited attention from finance and economics scholars. The topic of how public healthcare is to be financed remains to be a controversial issue that has evoked heated debate among different stakeholders in the health sector from the international community, government, non-governmental institutions and the general public. This is particularly attributed to the financial distress faced by most households in their quest to seek quality healthcare from National Referral Hospitals that provide secondary and tertiary healthcare, which is expensive and out of reach of many households making the achievement of SDG on health and Universal Health Coverage (UHC) an illusion. The limited ability of the households to pay for their healthcare expenditure elucidates that their future ability to seek and pay for secondary and tertiary healthcare services offered by National Referral Hospitals is compromised, subsequently altering their healthcare financing mix and financial sustainability.

This study is fundamental in deepening our understanding of the contribution of individual healthcare financing options on financial sustainability of National Referral Hospitals that is not only linked to improved healthcare outcomes for the public but also to the creation of a robust and optimal healthcare financing policy. The current investigation also demonstrates the pre-existing financial vulnerability in National Referral Hospitals that is a threat to the public healthcare system if it is not sufficiently addressed by all the stakeholders in public healthcare. The incessant decline in net margins, financial reserves and cash flows is alarming and elicits heated debates on the financial sustainability of National Referral Hospitals that are at the frontline in combating chronic diseases like cancer, and other lifestyle diseases that are on an upward trend. It is indeed a worrying trend mapped out by this study, which also explains why the global and regional public healthcare system was in a sheer collapse when the coronavirus epidemic wreaked havoc worldwide in 2020.

The study brings up to speed the numerous fundamental indicators of healthcare financing that potentially impact the financial sustainability and the magnitude of each on the

overall financial sustainability of National Referral Hospitals. This makes it a timely study that can benefit policymakers in the health sector on how to build resilient public healthcare systems with robust and optimal healthcare financing mechanisms. It also provokes a vigorous debate on the need to explore and roll out innovative healthcare financing mechanisms such as healthcare bonds, green financing, dedicated taxes (taxes from various harmful lifestyle habits such as alcohol or tobacco use should be dedicated to funding various health programs) that are likely to create an optimal healthcare financing mix that is a prerequisite for financial sustainability of public healthcare organizations at state and regional level.

The coronavirus eruption and disruption of global and regional public healthcare systems in 2020 emphasized the need for a diversified healthcare financing toolkit to fund public healthcare organizations, such as National Referral Hospitals effectively and most optimally, as widely noted in this research. It is an eye-opener on the significance of harnessing the current healthcare financing options as well as exploring the potential of developing alternative and innovative healthcare financing options with the ability to promote the overall financial sustainability of National Referral Hospitals in Kenya. This is particularly essential in bridging the gaps and strengthening the weaknesses in the current healthcare financing model.

The limited inquiries on healthcare financing and financial sustainability of NRH make this research relevant in laying a foundation on the subject matter that shall subsequently form a basis for future research. It explores areas in health financial economics and public healthcare finance that have received inadequate coverage by scholars who mostly focused on financial and non-financial institutions in other sectors apart from the health sector creating substantial empirical voids currently addressed by this study.

5.6 Limitations of the Study

The research process was curtailed by a few limitations. To begin with, the researcher encountered difficulties gathering data owing to the sensitivity of healthcare data; and due to sporadic publication of financial data on the websites of various National Referral Hospitals, to overcome this constraint the investigator had to cast nets far and wide in other government agencies posting published annual financial reports of those hospitals, like Office of Auditor General and Parliament of Kenya's website, a move that ensured that all relevant and missing reports in hospital' websites were obtained. Therewithal the

investigator sought various ethical approvals and permissions to obtain the requisite financial data from the Ministry of Health, National Referral Hospitals, NACOSTI, and Kenyatta University. The researcher also exercised a high degree of professionalism in handling the financial data sought from the five National Referral Hospitals in accordance with laid-out research ethics and considerations.

Moreover, since the available annual financial data of the four National Referral Hospitals namely Kenyatta University National Referral Hospital, Mathari National Referral Hospital, National Spinal Injury and Moi National Referral Hospital; was from 2019 when they were sparingly elevated to National Referral Hospitals from their previous status as either County Referral Hospital or level four and five. In view of that the study's scope was limited for the duration 2019-2021, which though limited yielded conclusive findings on the type and magnitude of the statistical relationship between healthcare financing and financial sustainability of National Referral Hospitals in Kenya, laying a foundation for future inquiries; as quarterly data was considered.

Although there are abundant healthcare financing options utilized by public healthcare organizations such as National Referral Hospitals, this study was only limited to four essential healthcare financing mechanisms that constitute more than 97% of the total healthcare financing that has the ability to impact on financial sustainability of National Referral Hospitals.

5.7 Suggestion for Further Studies

The specific purpose of this investigation was to widen the current knowledge domain on the interconnection between healthcare financing and financial sustainability of National Referral Hospitals, which had substantial empirical voids on the contexts, concepts and methodologies. Nonetheless, this study only limited itself to traditional forms of healthcare financing of National Referral Hospitals, further research can be explored on innovative healthcare financing mechanisms that have the potential to bolster financial sustainability of National Referral Hospitals.

In equal measure further study on the nexus between healthcare financing and financial sustainability can be expanded to cover County Referral Hospitals, or expand the scope of the current study; as well as employ different empirical models, theoretical frameworks and study methodologies. The empirical study has established that further study can be

done on the role of healthcare financing on financial sustainability of public health system in Kenya by expanding the scope to include the National Referral Hospitals and County Referral Hospitals, to provide a perceptive understanding of the impact of healthcare financing in the overall public healthcare system. Further study can be done on ways to foster successful transitioning from donor healthcare financing to a more sustainable healthcare financing mechanism. As it has been expansively noted in the empirical analysis that donor healthcare financing in most third-world countries are now in the transition phase from it to a more robust and homegrown healthcare financing model.

REFERENCES

Abdumalik, J., Olayiwola, S., Docrat, S., Lund, C., Chisholm, D., & Gureje, O. (2019). Sustainable financing mechanisms for strengthening mental health systems. *International Journal of Mental Health Systems, 13*(1), 1-15. doi: 10.1186/s13033-019-0293-8.

Abubakar, A. (2015). Relationship between financial leverage and financial performance of deposit-taking banks in Nigeria. *International Journal of Economics, Commerce and Management, 3*(10), 759-778.

Abubakar, A. (2016). Financial leverage and financial performance: evidence from the healthcare sector of the Nigerian Stock Exchange. *ADSU Journal of Economics and Integrated Disciplines, 1*(2), 45-64.

Abuosi, A. A. (2019). Exploring options for financial sustainability of Ghana's National Health Insurance Scheme. *African Journal of Management Research, 26*, 120-133.

Adelino, M., Lewellen, K., & McCartney, W. B. (2022). Hospital financial health and clinical choices: evidence from the financial crisis. *Management Sciences, 68*(3), 2998-2119. doi: 10.1287/mnsc.2020.3944.

African Development Bank (ADB). (2021). *African Economic Outlook 2021: From debt resolution to growth: The road ahead for Africa.* Abidjan: African Development Bank.

African Development Bank. (2020). *African economic outlook.* Abidjan: African Development Bank.

African Union. (2001). Abuja declarations on HIV/AIDS, Tuberculosis and Other Related Infectious Diseases. In F. R. Nigeria (Ed.), *African Summit on HIV/AIDS, Tuberculosis and Other Related Infectious Diseases* (pp. 1-7). Abuja, Nigeria: African Union (AU).

Ahmed, S., Ahmed, M. W., Hasan, M. Z., Mehdi, G. M., Islam, Z., Rehnberg, C., et al. (2022). Assessing the incidence of catastrophic health expenditure and impoverishment from out-of-pocket payments and their determinants in Bangladesh evidence from nationwide. *International Health, 14*(1), 84-96. doi: 10. 1093/inthealth/ihab015.

Ahsan, T., Man, W., & Qureshi, M. (2016). Mean reverting financial leverage: theory and evidence from Pakistan. *Applied Economics, 48*(5), 379-388. doi: 10.1080/00036846.2015.1080802.

Alfonso, Y., Leider, J., Resnick, B., McCullough, J., & Bishai, D. (2021). US public health neglected: flat or declining spending left states ill-equipped to respond to COVID-19: study examines public health spending. *Health Affairs, 40*(4), 664-671. doi: 10. 1377/hlthaff.2020.01084.

Ali, U., Ormal, L., & Ahmad, F. (2018). Impact of free cash flow on profitability of the firms in automobile sector of Germany. *Journal of Economics and Management, 1*(1), 56-67.

Alkire, B. C., Peters, A. W., Shrime, M. G., & Meara, J. G. (2018). The economic consequences of mortality amenable to high-quality health care in low and middle-income countries. *Health Affairs, 37*(6), 988-996.

Alshubiri, F. N. (2020). Analysis of financial sustainability indicators of higher education institutions on foreign direct investment: empirical evidence in OECD countries. *International Journal of Sustainability in Higher Education, 22*(1), 1-3. doi: 10.1108/IJSHE-10-2019-0306.

Al-Slehat, Z., Zaher, C., & Fattah, A. (2020). Impact of financial leverage, size and assets structure on firm value: evidence from industrial sector. *International Business Research, 13*(1), 109-120. doi: 10.5539/ibr.v13n1p109.

Anderson, M., Pitchforth, E., Edwards, N., Alderwick, H., McGuire, A., & Mossialos, E. (2022). *United Kingdom: a health system review.* Geneva, Switzerland: World Health Organization.

Appiah, K. O., Gyimah, P., & Abdul-Razak, Y. (2020). Financial leverage and corporate: does the duration of the debt ratio matters. *International Journal of Business and Emerging Markets, 12*(1), 31-45.

Asante, A., Wasike, W. S., & Ataguba, J. E. (2020, November 04). Health financing in Sub-saharan Africa: From analytical frameworks to empirical evaluation. *Applied Health Economics Health Policy, 18*, 743-746. doi: 10.1007/s40258-020-00618-0.

Ashcroft, M. (2022). *Innovation implementation in public healthcare in Victoria: a resource-based view.* RMIT University.

Ataguba, J. E. (2021). The impact of financing health on income inequality in an unequal society: the case of South Africa. *Applied Health Economics and Health Policy, 19*(5), 721-733. doi: 10. 1007/s40258-021-00643-7.

Ataguba, J. E., & McIntyre, D. (2017). The incidence of health financing in South Africa: findings from a recent data set. *Health Economics Policy and Law*, 1-24. doi: 10.1017/S1744133117000196.

Babones, S. J. (2014). *Methods for quantitative macro-comparative research* (1 ed.). Thousand Oaks, California: SAGE Publications.

Barasa, E., Rogo, K., Mwaura, N., & Chuma, J. (2018). Kenya National Hospital Insurance Funds reforms. *Health Systems and Reforms, 4*(4), 346-361.

Barnes, M., Oner, N., Ray, M., & Zengul, F. D. (2018). Exploring the association between quality and financial performance in the US hospitals: a systematic review. *Journal of Healthcare Finance, 44*(2), 1-3.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99-120. doi: 10.1177/014920639101700108.

Basaza, R., Alier, P. K., Kirabira, P., Ogubi, D., & Lako, R. (2017). Willingness to pay for National Health Insurance Fund among public servants in Juba city, South Sudan. *International Journal for Equity in Health, 16*(1), 1-10.

Bedir, S. (2016). Healthcare expenditure and economic growth in developing countries. *Advances in Economics and Business, 4*(2), 76-85. doi: 10.13189/aeb.2016.040202.

Beland, D., Marchildon, G. P., Medrano, A., & Rocco, P. (2021). COVID-19, federalism and health care financing in Canada, the United States and Mexico. *Journal of Comparative Policy Analysis, 23*(2), 143-156. doi: 10.1080/13876988.2020.184 8353.

Bem, A. B., Predkiewicz, P., Jez, P. U., & Siedlecki, R. (2015). Profitability versus debt in hospital industry. *Proceedings of the 12th International Scientific Conference* (pp. 20-27). European Financial Systems 2015 Proceedings.

Binyaruka, P., Balabanova, D., McKee, M., Hutchinson, E., Anderoni, A., Ramesh, M., et al. (2021). Supply-side factors influencing informal payment for healthcare services in Tanzania. *Health Policy and Planning, 36*(7), 1036-1044. doi: 10.1093/heapol/czab034.

Bisogno, M., Beatriz, C., & Isabel, S. (2017). Financial sustainability in local governments: definition, measurements and determinants. *Financial Sustainability in Public Administration*, 57-83. doi: 10.1007/978-3-319-57962-7_3.

Bloom, D. E., Khoury, A., Kufenko, V., & Prettner, K. (2021). Spurring economic growth through human development: research and guidance to policymakers. *Population and Development Review, 47*(2), 377-409. doi: 10.1111/padr.12389.

Bremer, P. (2014). Foregone care and financial burden due to out-of-pocket payments within the German healthcare system. *Health Economics Review, 4*(36), 1-9. doi: 10.1186/s13561-014-0035-0.

Brundtland, G. H. (2022). Public financing for primary healthcare is the key to universal health coverage and strengthening health security. *The Lancet Global Health, 10*(5), 1-4. doi. 10.1016/S2214-109X(22)00166-8.

Bwana, K. M. (2018). Evaluating financial strength of council-designated hospitals in Tanzania using financial strength index. *African Journal of Applied Research, 4*(2), 1-4.

Cali, J., Markinen, M., & Derriennic, Y. (2018, April 16). Emerging lessons from the development of national health financing strategies in eight developing countries. *Health Systems and Reforms, 4*(2), 136-145. doi: 10.1080/23288604.2018.1438058.

Chang, C., Batmunkh, M., Wong, W., & Jargalsaikhan, M. (2019). Relationship between capital structure and profitability: evidence from four Asian tigers. *Journal of Management Information and Decision Sciences*, 1-3. doi: 10.2139/ssrn.3411977.

Chantzaras, A. E., & Yfantopoulous, J. N. (2018). Financial protection of households against health shocks in Greece during economic crisis. *Social Science and Medicine*, 338-351. doi: 10.1016/j.socimed.2018.06.024.

Charlseworth, A., Anderson, M., Donaldson, C., Johnson, P., Knapp, M., McGuire, A., et al. (2021). What is the right level of spending needed for health and care in the UK? *The Lancet, 397*(10288), 22-28. doi: 10. 1016.S0140-6736(21)00230-0.

Chege, K. A., Mwenja, D., Kiambati, K., & Mbugua, L. (2019). Budget execution and service delivery of public county health facilities. *Journal of Industrial Policy and Technology Management, 2*(2), 81-91.

Cheluget, J., & Wamuyu, C. N. (2020). Sustainability of donor-funded projects in public hospitals in Kenya: a case of HIV/AIDS projects at county referral hospitals. *International Journal of Research and Innovation in Social Sciences, 4*(8), 140-150.

Citoni, G., Matteis, D., & Giannoni, M. (2022). Vertical equity in healthcare financing: a progressivity analysis for the Italian regions. *Healthcare, 10*(3), 449-451. doi: 10.3390/healthcare10030449.

Colenda, C., Applegate, W., Reifler, B., & Blazer, D. (2020). COVID-19: financial stress test for academic medical centres. *Academic Medicine*, doi: 10.1097/ACM.0000000000000003418.

Constitution of Kenya. (2010). *The Constitution of Kenya, 2010.* Nairobi: Government of Kenya.

Creswell, J. W., & Creswell, D. J. (2018). *Research design: qualitative, quantitative and mixed methods approach* (5 ed.). Thousand Oaks, California: SAGE Publications Inc.

Cullinan, J., Connolly, S., & Whyte, R. (2021). The sustainability of Ireland's healthcare system. *The Sustainability of Health Care Systems in Europe, 295*, 61-79. doi: 10.1108/S0573-855520210000295009.

Dalci, I., & Ozyapici, H. (2018). Working capital management policy in healthcare: the effect of leverage. *Health Policy, 122*(11), 1266-1272. doi: 10.1016/j.healthpol.2018.09.012.

Davari, M., Haycox, A., & Walley, T. (2012). Healthcare financing in Iran; is privatisation a good solution? *Iranian Journal of Public Health, 41*(7), 14-23.

Department of Health and Social Care. (2019). *Financial assistance under section 40 of the National Health Service Act 2006.* Leeds, United Kingdom: Government of United Kingdom.

Dubas-Jakobczyk, K., & Koziel, A. (2020). Towards financial sustainability of the hospital sector in Poland: a post hoc evaluation of policy approaches. *MDPI, 12*(12), 1-19. doi: 10.3390/su12124801.

Ejiogu, A., Okechukwu, O., & Ejiogu, C. (2020). Nigerian budgetary response to the COVID-19Mpandemic and its shrinking fiscal space: financial sustainability, employment, social inequality and business implications. *Journal of Public Budgeting, Accounting and Financial Management, 32*(5), 919-928. doi: 10.1108/JPBAFM-07-2020-0101.

Ejughemre, U. J. (2014). Accelerated reforms in healthcare financing: the need to scale up private sector participation in Nigeria. *International Journal of Health Policy and Management, 2*(1), 13. doi: 10.15171/ijhpm.2014.04.

Enumah, S. J., & Chang, D. C. (2021). Predictors of financial distress among private US hospitals. *Journal of Surgical Research, 267*, 251-259. doi: 10. 1016/j.jss.2021.05.025.

Eze, P. C. (2018). A critique of an aspect of Grossman's model of demand for health. *International Journal of Applied Economics Finance and Accounting, 2*(2), 47-53.

Eze, P., Lawani, L. O., Agu, U. J., & Acharya, Y. (2022). Catastrophic health expenditure in sub-Saharan Africa: systematic review and meta-analysis. *Bulletin of the World Health Organization, 100*(5), 337. doi: 10.2471/BLT.21.287673.

Fleming, P. J., Spolum, M. M., Lopez, W. D., & Galea, S. (2021). The public health funding paradox: how funding the problem and solution impedes public health progress. *Public Health Reports, 136*(1), 10-13. doi: 10.1177/0033354920969172.

Fowles, J. (2014, September 08). Funding and focus: Resource dependence in public higher education. *Research in Higher Education, 55*(3), 272-287. doi:10.1007/s11162-013-9311-x.

Frączkiewicz-Wronka, A., Ingram, T., Szymaniec-Mlicka, K., & Tworek, P. (2021). Risk management and financial sustainability in the Polish Public Hospitals: the moderating effect of the stakeholders' engagement in the decision making. *MDPI, 9*(87), 1-23. doi: 10.3390/risks9050087.

Freeman, E., Dmytriey, S., & Phillips, R. (2021). Stakeholder theory and the resource-based view of the firm. *Journal of Mangement, 7*, 1757-1770. doi: 10.1177/0149206321993576.

Fünfkirchen, P. M., Lindelow, M., & Yoo, K. (2018). What are governments spending on health in East and Southern Africa. *Health Systems and Reform, 4*(4), 284-299. doi: 10.1080/23288604.2018.1510287.

Gaffney, A., Himmelsetein, D. U., & Woolhandler, S. (2020). COVID-19 and US health financing: perils and possibilities. *International Journal of Health Services, 50*(4), 396-407. doi: 10.1177/0020731420931431.

Gautier, L., & Ridde, V. (2017). Health financing policies in Sub-saharan Africa: government ownership or donors' influence? A scoping review of policymaking processes. *Global Health Research and Policy, 2*(1), 1-17. doi: 10. 1186/s41256-017-0043-x.

Getzen, T. E., & Kobernick, M. S. (2022). *Health economics and financing.* Hoboken, New Jersey: John Wiley and Sons.

Gimenez, V., Keith, J., & Prior, D. (2019). Do healthcare financing systems influence hospital efficiency? A metafrontier approach for the case of Mexico. *Health care management sciences, 22*(3), 549-559. doi: 10. 1007/s10729-019-9467-9.

Gleibner, W., & Gunther, T. (2022). Financial sustainability: measurement and empirical evidence. *Journal of Business Economics, 92*, 467-516. doi: 10.1007/s11573-022-01081-0.

Greene, W. (2018). *Econometric analysis* (1 ed.). Pearson Publishers.

Habicht, T., Reinap, M., Kasekamp, K., Habicht, J., Ginneken, E., & Webb, E. (2019). The 2017 reform to improve the financial sustainability of national health insurance in Estonia: Analysis and first lessons on the revenue base. *Health Policy, 123*(8), 695-699. doi: 10.1016/j.healthpol.2019.05.019.

Haghdoost, A., Dehnavieh, R., Mehrolhssan, M. H., Abolhallaje, M., Fazaeli, A. A., & Ramezaniah, M. (2022). Future financing scenarios for Iran's healthcare system. *Archives of Iranian Medicine, 25*(2), 85-90. doi: 10. 34172/aim.2022.14.

Hartwig, J., & Sturm, J. E. (2018). testing the Grossman model of medical spending determinants with macroeconomic panel data. *The European Journal of Health Economics, 19*(8), 1067-1086.

Hasmi, S. D., Gulzar, S., Ghafoor, Z., & Naz, I. (2020). Sensitivity of firm size measures to practices of corporate finance: evidence from BRICS. *Future Business Journal, 6*(1), 1-19. doi: 10.1186/s43093-020-00015-y.

Hatcher, L. (2013). *Advanced statistics in research: reading, understanding and writing up data analysis* (1 ed.). Saginaw, Michigan: Shadow Finch Media LLC.

Hill, R. C., Griffiths, W. E., & Lim, G. C. (2018). *Principles of econometrics* (5 ed.). Hoboken, New Jersey: Wiley.

Hillman, J. A., Withers, M. C., & Collins, B. J. (2009, December 11). Resource dependence theory: A review. *Journal of Management, 35*(6), 1401-1427. doi:10.1177/0149206309343469.

Hougaard, J. L., Osterdal, L. P., & Yu, Y. (2011). The Chinese healthcare system. *Applied Health Economics and Health Policy, 9*(1), 1-13. doi: 10.2165/11531800-00000000000-00000.

Huang, S. S. (2016). Financial leverage and hospital technology adoption. *Journal of Health Care Finance, 42*(4), 1-22.

Huang, S. S., Yang, J., & Carroll, N. (2018). Taxes bankruptcy costs, and capital structure in for-profit and not-for-profit hospitals. *Health Services Management Research, 31*(1), 21-32. doi: 10.1177/0951484817726780.

Ifeagwu, S. V., Yang, J. C., Rosalind, P.-R., & Brayne, C. (2021, March 01). Health financing for universal health coverage in Sub-Saharan Africa: a systematic review. *Global Health Research and Policy, 6*(8), doi:10.1186/s41256-021-00190-7.

International Monetary Fund (IMF). (2020). *Debt sustainability analysis.* Washington DC: International Monetary Fund.

Jakovlejevic, m., Liu, Y., Cerda, A., Simonyan, M., Correia, T., Mariita, R., et al. (2021). The global south political economy of health financing and spending landscape history and presence. *Journal of Medical Economics, 24*(1), 25-33. doi: 10. 1080/13696998.2021.2007691.

Jaunky, C., & Jeeto, J. (2022). An empirical analysis of income elasticity of out-of-pocket healthcare expenditure in Mauritius. *Healthcare, 10*(101), 1-19. doi: 10.3390/healthcare10010101.

Kadioglu, E., & Yilmaz, E. A. (2017). Is the free cash flow hypothesis valid in Turkey? *Borsa Istanbul Review, 17*(2), 111-116. doi: 10.1016/j.bir.2016.12.001.

Kairu, A., Orangi, S., Mbuthia , B., Ondera, J., Ravinshakar, N., & Barasa, E. (2021). Examining health facility financing in Kenya in the context of devolution. *BMC Health Services Research, 21*(1), 1-10. doi: 10.1186/s12913-021-07123-7.

Kaminska, M. E., Druga, E., Stupele, L., & Malinar, A. (2021). Changing the healthcare financing paradigm: domestic actors and international organizations in the agenda-setting for diffusion of social health insurance in post-communist Central and Eastern Europe. *Social Policy and Administration, 55*(6), 1066-1081. doi: 10.1111/spol.12724.

Karaman, S., Urek, D., Demir, B., Ugurluoglu, O., & Isik, O. (2020). The impacts of healthcare spending on health outcomes: New evidence from OECD countries. *Erciyes Medical Journal, 42*(2), 218-222. doi: 10.14744/etd.2020.80393.

Kenya National Bureau of Statistics. (2020). *Economic Survey 2020*. Nairobi: Government of Kenya.

Keramidou, I., & Triantafyllopoulos, L. (2018). The impact of the financial crisis and austerity policies on the service quality of public hospitals in Greece. *Health Policy, 122*(4), 352-357. doi: 10.1016/j.healthpol.2017.12.008.

Khan, I., Khan, I., Sayal, A., & Khan, M. (2021). Does financial inclusion induce poverty, income inequality and financial stability: empirical evidence from 54 African countries. *Journal of Economic Studies, 49*(2), 303-314. doi: 10. 1108/JES07-2020-0317.

Khieng, S., & Dahles, H. (2015, August 05). Resource dependence and effects of funding diversification. *International Journal of Voluntary and Non-Profit organizations, 26*, 1412-1437. doi:1007/s11266-014-9485-7.

Khullar, D., Bond, A. M., & Schpero, W. L. (2020). COVID-19 and the financial health of US hospitals. *Jama, 323*(21), 2127-2128. doi: 10.1001/jama.2020.6269.

Kilci, E. (2021). A study on financial sustainability of healthcare indicators for Turkey under health transformation program. *The International Journal of Health Planning, 36*(4), 1287-1307. doi: 10.1002/hpm.3182.

Kiross, G. T., Chojenta, C., Barker, D., & Loxton, D. (2020). The effects of health expenditure on infant mortality in sub-Saharan Africa: evidence from panel data analysis. *Health Economics Review, 10*(1), 1-9. doi: 10.1186/s13561-020-00262-3.

Kotios, A., & Roukanas, S. (2021). The political economy of the Greek health sector and the implications of the economic crisis. *European Politics and Society*, 1-16. doi: 10. 1080/23745118.2021.1895557.

Kotsiou, Q. S., Kotsios, P., Srivastava, D. S., Kotsios, V., Gourgoulianis, K. I., & Exadaktylos, A. K. (2018). Impact of the refugee crisis on the Greek healthcare system: a long road to Ithaca. *International Journal of Environmental Research, 15*(8), 1790. doi:10.3390/ijerph15081790.

Kruse, F. M., & Jeurissen, P. T. (2020). For-profit hospitals out of business? Financial sustainability during COVID-19 epidemic emergency response. *International Journal of Health Policy and Management, 9*(10), 423-424. doi: 10.34172.ijhpm.2020.67.

Kuroswki, C., Evans, D., Tandon, A., Eozenou, P., Schmidt, M., Irwin, A., et al. (2021). *From double shock to double recovery: implications for health financing in the time of COVID-19*. Washington DC: World Bank.

Kwarteng, A. N., Agyepong, I. A., Enyimayew, N., & Gilson, L. (2021). A narrative synthesis review of out-of-pocket payments for health services under insurance regimes: a policy implementation gap hindering universal health coverage.

International Journal of Health Policy Management, 10(7), 443-461. doi: 10.34172/ijhpm.2021.38.

Kwon, S., & Kim, E. (2021, July 26). Sustainable health financing for COVID-19 preparedness and response in Asia and the Pacific. *Asian Economic Policy Review, 17*(1), 140-156. doi: 10.1111/aepr.12360.

Lim, J. (2017). Sustainable health care financing: the Singapore experience. *Global Policy, 8*(2), 103-109. doi: 10.1111/1758-5899.12247.

Logarajan, R. D., Nor, N. M., Sirag, A., Said, R., & Ibrahim, S. (2022). The impact of public, private and out-of-pocket health expenditures on under-five mortality in Malaysia. *Healthcare, 10*(3), 589. doi: 10.3390/healthcare10030589.

Macha, J., Harris, B., Garshong, B., Ataguba, J. E., Akazili, J., Kuwawenaruwa, A., et al. (2012). Factors influencing the burden of healthcare finance and the distribution of healthcare benefits in Ghana, Tanzania and South Africa. *Health Policy and Planning, 27*(1), 146-154.

Malatesta, D., & Smith, C. (2014, January 21). Lesson from resource dependence theory for contemporary public and nonprofit management. *Public Administrative Review, 74*(1), 14-25. doi:10.1111/puar.12181.

Malik, M., & Syed, A. (2012). Socio-economic determinants of household out-of-pocket payments on healthcare in Pakistan. *Journal for Equity in Health, 11*(51), 1-7. doi: 10.1186/1475-9276-11-51.

Marten, M. G. (2022). The sustainability doctrine in donor-driven maternal health programs in Tanzania. *Anthropologies of Global Maternal and Reproductive Health*, 73-91. doi: 10. 1007/978-3-030-84514-8_5.

Massuda, A. (2020). Primary health care financing changes in the Brazilian health system: advance or setback. *Ciência and Saúde Coletiva*, 1181-1188. doi: 10.1590/141381232020254.01022020.

Mays, G. P., & Smith, S. A. (2011). Evidence links an increase in public health spending to declines in preventable deaths. *Health Affairs, 30*(8), 1585-1593. doi: 10.1377/hlthaff.2011.0196.

Mbau, R., Kabia, E., Honda, A., Hanson, K., & Barasa , E. (2020). Examining purchasing reforms towards universal health coverage by the National Hospital Insurance Fund in Kenya. *International Journal for Equity in Health, 19*(1), 1-18. doi: 10.1186/s12939-019-1116-x.

McCarthy, J. D., & Mayer, N. Z. (1977). Resource mobilization and social movements: A partial theory. *American Journal of Sociology, 82*(6), 1212-1241.

McGahan, A. M. (2021). Integrating insights from the resource-based view of the firm into the new stakeholder. *Journal of Management, 47*(7), 1734-1756. doi: 10.1177/0149206320987282.

McKee, M., Dunnell, K., Anderson, M., Brayne, C., Charlseworth, A., Webber, C., et al. (2021). The changing health needs of the UK population. *The Lancet, 397*(10288), 22-28. doi: 10.1016/S0140-6736(21)00229-4.

Mhlanga, D., & Garidzirai, R. (2020). The influence of racial differences in the demand of healthcare in South Africa: A case of public healthcare. *International Journal of Environmental Research and Public Health, 17*(14), 1-10. doi: 10.3390/ijerph17145043.

Mills, M., & Kanavos, P. (2020). Do pharmaceutical budgets deliver financial sustainability in healthcare? Evidence from Europe. *Health Policy, 124*(3), 239-251. doi: 10.1016/j.healthpol.2019.12.002.

Ministry of Health and Family Welfare. (2017). *National Health Accounts Estimates for India 2014/15.* New Delhi, India: Government of India.

Mishra, S., & Mohanty, S. K. (2019). Out-of-pocket expenditure and distress financing on institutional delivery in India. *International Journal for Equity in Health, 18*(99), 1-15. doi: 10.1186/s12939-019-1001-7.

Mitchell, G. E. (2014, September 5). Strategic responses to resource dependence among transnational NGOs registered in US. *Voluntas, 25*, 67-91. doi:10.1007/s11266-012-9329-2.

Modgliani , F., & Miller , M. H. (1958). The cost of capital, corporation finance and the finance and the theory of investment. *American Economic Journal, 48*(3), 261-297.

MOH. (2015). *2014/2015 National and County Health Budget Analysis Report.* Nairobi: Ministry of Health. Government of Kenya.

MOH. (2016). *National and County health budget analysis FY 2015/2016.* Nairobi: Government of Kenya.

MOH. (2017). *National and County health budget analysis FY 2016/2017.* Nairobi: Ministry of Health of Kenya.

MOH. (2020). *Kenya Harmonized Health Facility Assessment (KHFA) 2018/2019.* MOH, Division of Health Sector Monitoring and Evaluation. Nairobi: Ministry of Health, Government of Kenya.

Mumenya, J. W. (2018). *Effect of National Hospital Insurance Fund outpatient scheme on financial sustainability of public hospitals in Kenya; a case of sub-county hospitals in Nakuru county.* Nairobi, Kenya: Jomo Kenyatta of Agriculture and Technology.

Munge, K., & Briggs, A. H. (2014). The progressivity of healthcare financing in Kenya. *Health Policy and Planning, 29*(7), 912-920. doi: 10.1093/heapol/czt073.

Munge, K., & Briggs, H. (2014). The progressivity of health-care financing in Kenya. *Health Policy and Planning, 29*(9), 912-920.

Musgrave, R. A. (1959). *The theory of public finance: A case study in public economy* (7 ed.). New York: McGraw Hill.

Mwangi, C. N. (2019). *Sustainability of universal health coverage: A case of Kenya Medical Supplies.* Nairobi, Kenya: United States International University Africa.

Myers, S. C. (1984). The capital structure puzzle. *Journal of Finance, 39*, 575-592.

Mynit, C., Pavlova, M., Thein, K., & Groot, W. (2019). A systematic review of the health-financing mechanisms in the association of Southeast Asian Nations countries and people's republic of China. *PloS One, 6*, 1-4. doi: 10.1371/journal.pone.0217278.

National Center for Health Statistics. (2020). *National Health Expenditure.* Washington DC: Department of Health and Human Services.

Ndung'u, T. T. (2018). *Factors influencing sustainability of donor-funded health projects in Kenya: A case of accelerated response and care project in Meru County, Kenya.* Nairobi, Kenya: University of Nairobi.

Nguyen, A., & Nguyen, T. (2018). Free cash flow and corporate profitability in emerging economies: empirical evidence from Vietnam. *Economics Bulletin, 38*(1), 211-220.

Nguyen, H. T., Nguyen, A. Q., Nguyen, P. T., Duong, A. T., & Nguyen, T. (2020). External funding reduction of health programs: Exploring options for financial sustainability. *International Journal for Healthcare, 14*(4), 1527-1535. doi: 10.1080/20479700.2020.1797333.

Niakas, D. (2013). Greek economic crisis and healthcare reforms: correcting the wrong prescription. *International Journal of Health Service, 43*(4), 597-602. doi: 10.2190/HS.43.4.a.

Nyandekwe, M., Nzayirambaho, M., & Kakoma, J. B. (2020). Universal health insurance in Rwanda: major challenges and solutions for financial sustainability case study of Rwanda community-based health insurance part I. *The Pan African Medical Journal, 37*(55), 1-4. doi: 10.11604/pamj.2020.37.55.20376.

Odeyemi, I. A., & Nixon, J. (2013). Assessing equity in healthcare through national health insurance schemes of Nigeria and Ghana: a review-based comparative analysis. *International Journal for Equity in Health, 12*(1), 1-18.

OECD. (2020). *Health at a Glance 2019: OECD Indicators.* Paris: Organisation for Economic Cooperation and Development (OECD) Publishing. doi:10.1787/4dd50c09-en.

OECD. (2020). *OECD Health Statistics.* Paris, France: Organisation for Economic Cooperation and Development.

Onwujekwe, O., Ezumah, N., Mbachu, C., Obi, F., Ichoku, H., Uzochukwu, B., et al. (2019). Exploring the effectiveness of different health financing mechanisms in Nigeria: what needs to change and how it can happen. *BMC, 19*(1), 1-13. doi:10.1186/s12913-019-4512-4.

Orlando, A. W., & Field, R. I. (2021). Measuring the COVID-19 financial threat to hospital markets. *Study, 58*(1), 1-5. doi: 10.1177/00469580211059985.

Osadchuk, M. A., Osadchuk, A. M., Korzhenkov, N. P., & Trushin , M. V. (2019). Economy and healthcare: their role in providing medical care and maintaining public health. *Journal of Advanced Research in Law and Economics, 10*(3), 41. doi: 10. 14505/jarie.

Ozyapici, H., & Dalci, I. (2018). Working capital management policy in healthcare: the effect of leverage. *Health Policy, 122*(11), 1266-1272. doi: 10. 1016/j.healthpol.2018.09.012.

Padila, L. M., Staplefoote, L., & Morganti, K. G. (2012). *Financial sustainability for nonprofit organizations.* Santa Monica, CA: RAND Corporation.

Parmar, D., & Banerjee, A. (2019). How do supply-and-demand-side interventions influence equity in healthcare utilisation? Evidence from maternal healthcare in Senegal. *Social Science and Medicine, 241*, 1-9. doi: 10.1016/j.socsimed.2019.11 2582.

Patenaude, B. N. (2021). The relationship between development assistance for health and public health finance in 134 countries between 2000 and 2015. *Health Policy and Planning, 36*(4), 369-383. doi: 10.1093/heapol/czab004.

Pederneiras, Y. M., Pereira, M. A., & Figueira, J. R. (2021). Are the Portuguese public hospitals sustainable? A triple bottom line hybrid data envelopment analysis approach. *International Transactions in Operational Research*, 1-23. doi: 10. 1111/itor.12966.

Pfeffer, J., & Salancik, G. (1978). *The external control of organizations: A resource dependence perspective.* New York: Harper and Row.

Pratici, L., Fanelli, S., & Zangrandi, A. (2022). Not only funding: how healthcare organizations can contribute to National Health Service Sustainability. *International Journal of Public Administration*, 1-11. doi: 10.1080/01900692.202 2.2050924.

Ramamonjiarivelo, Z., Maldonado, R. W., Hearald, L., Menachemi, N., Espane, J. P., & O'Connor, S. (2015). Public hospitals in financial distress. *Healthcare Management Review, 40*(4), 337-347.

Ramli, N. A., & Rasedee, A. F. (2020). Financial leverage and financial performance in the tertiary sector: partial least square multi-group analysis. *International Journal of Advanced Sciences and Technology, 29*(10), 1422-1435.

Raza, H., Gillani, S., Ramakrishnan, S., & Imran, M. (2020). Nonsystematic review of financial sustainability and financial distress. *International Journal of Psychosocial Rehabilitation, 24*(6), 885-900.

Reeves, A., Gourtsoyannis, Y., Basu, S., McCoy, D., McKee, M., & Stuckler, D. (2015). Financing universal health coverage: effects of alternative tax structures on public health systems; cross-national modelling in 89 low-income countries. *The Lancet, 386*(9990), 274-280. doi: 10.1016/S0140-6736(15)60574-8.

Rhaghupathi, V., & Raghupathi, W. (2020). Healthcare expenditure and economic performance: Insights from the United States Data. *Front Public Health, 8*(156), 1-15. doi: 10.3389/fpubh.2020.00156.

Roberts, E. T., Glynn, A., Cornelio, N., Donohue, J. M., Gellad, W. F., McWilliams, J. M., et al. (2021). Medicaid coverage cliff increases expenses and decreases care for near-poor medicare beneficiaries access to supplemental. *Health Affairs, 40*(4), 552-561.

Rodríguez, R., Svensson, G., & Ferro, C. (2021). Assessing the future direction of sustainable development in public hospitals: time horizon path and action. *Health Policy, 125*(4), 526-534. doi: 10. 1016/j.healthpol.2020.10.012.

Rokicki, T., Perkowska, A., & Ratajczak, M. (2020). Differentiation in healthcare financing in EU. *Sustainability, 13*(1), 251-253. doi: 10.3390/su13010251.

Rostampour, M., & Nosratnejad, S. (2020). A systematic review of equity in healthcare financing in low-and-middle-income countries. *Value in Health Regional Issues, 21,* 133-140. doi: 10.1016/j.vhri.2019.10.001.

Rottkamp, D. M. (2020). Helping nonprofit entities achieve sustainability through improved financial health. *The CPA Journal, 90*(4), 28-31.

Sáez, M. P., Alvarez-garcia, S., & Rodríguez , D. C. (2017). Government expenditure and economic growth in the European Union countries. *Bulletin of Geography: Socio-Economic Series, 36*, 127-133. doi: 10.1515/bog-2017-0020.

Samo, A. H., & Murad, H. (2019). Impact of liquidity and financial leverage on firm's profitability: an empirical analysis. *Research Journal of Textile and Apparel, 23*(4), 291-305. doi: 10.1108/RJTA-09-2018-0055.

Saunders, M., Lewis, P., & Thornhill, A. (2012). *Research methods for business students* (6 ed.). London, United Kingdom: Pearson Education Limited.

Schieber, G., Cashin, C., Saleh, K., & Lavado, R. (2012). *Health Financing in Ghana.* Washington DC: World Bank. doi:10.1596/978-0-8213-9566-0.

Senarathne, C. W., & Perera, T. S. (2022). Explaining the impact of financial leverage on firm performance in the healthcare sector in Sri Lanka by fixed cost coverage ratio. *Management Organizations Systematic Research, 86*(1), 78-91.

Sergi, B. S., Popkova, E. G., Borzenko, K. V., & Przhedetskaya, N. V. (2019). Public-private partnership as a mechanism of financing sustainable development. *Financing Sustainable Development*, 313-339. doi: 10.1007/978-3-030-16522-2_13.

Sharma, R. (2018). Health and economic growth: evidence from dynamic panel data of 143 years. *PloS One, 13*(10), 1-5. doi: 10.1371/journal.pone.0204940.

Simou, E., & Koutsogeorgou, E. (2014). Effects of the economic crisis on health and healthcare from 2009 to 2013: a systematic review. *Health Policy, 115*(2), 111-119. doi: 10.1016/j.healthpol.2014.02.002.

Sriram, S., & Khan, M. M. (2020). Effect of health insurance program for the poor on out-of-pocket inpatient care cost in India: evidence from a nationally representative cross-sectional survey. *BMC Health Services Research, 20*(839), 839-840. doi: 10.1186/s12913-020-05692-7.

SSennyonjo, A., Kiracho, E. E., Musila, T., & Ssengooba, F. (2021). Fitting health financing reforms to context: examining the evolution of results-based financing models and the slow national scale up in Uganda (2003-2015). *Global Health Action, 14*(1), 1-12. doi: 10. 1080/16549716.2021.1919393.

Stylianidis, S., & Souliotis, K. (2019). The impact of the long-lasting socio-economic crisis in Greece. *BJPsych International, 16*(1), 16-18. doi: 10.119/bji.2017.31.

Susilawati, S., Falefi, R., & Purwoko, A. (2020). Impact of COVID-19's pandemic on the economy of Indonesia. *Budapest International Research and Critics Institute, 3*(2), 1147-115.

Tashakkori, A. M., Johnson, R. B., & Teddlie, C. B. (2020). *Foundations of mixed methods research: integrating quantitative and qualitative approaches in the social and behavioural sciences* (2 ed.). Thousand Oaks, California: SAGE Publications Inc.

Tenas, J. C., & Arimany-Serrat, N. (2018). Influential variables on the profitability of hospital companies. *Intangible Capital, 14*(1), 171-185. doi: 10.3926/ic.1109.

Thomson, S., Garcia-Ramirez, J. A., Akkazieva, B., Habicht, T., Cylus, J., & Evetovits, T. (2022). How resilient is health financing policy in Europe to economic shocks? Evidence from the first year of the COVID-19 pandemic and the 2008 global financial crisis. *Health Policy, 126*(1), 7-15. doi: 10.1016/j.healthpol.2021.11.002.

Toader, E. (2014). The effects of rising healthcare costs on the US economy. *American Journal of Medical Research*(1), 44-50.

Tshering, P. (2021). Health financing. *Bhutan Health Journal, 7*(2), 1-2. doi: 10.47811/bhj.121.

Turner, J., Broom, K., Elliott, M., & Lee, J. (2015). A comparison of capital structure: the use of debt in investor-owned and not-for-profit hospitals. *Journal of Healthcare Finance, 41*(4), 1-17.

Turner, P. (2020). Critical values for the Durbin-Watson test in large samples. *Applied Economics Letters, 27*(18), 1495-1499. doi: 10.1080/13504851.2019.1691711.

Turner, S., & Wright, J. S. (2022). The corporatization of healthcare organizations internationally: a scoping review of processes, impacts and mediators. *Public Administration, 100*(2), 308-323. doi: 10.1111/padm.12724.

Ullah, M. I., Aslam, M., Altaf, S., & Ahmed, M. (2019). Some new diagnostics of multicollinearity in linear regression model. *Sains Malaysian, 48*(9), 2050-2060 doi: 10.17576/jsm-2019-4809-26.

Umeh, C. A. (2018). Challenges towards achieving universal health coverage in Ghana, Kenya, Nigeria and Tanzania. *The International Journal of Health Planning and Management, 33*(4), 794-805. doi: 10.1002/hpm.2610.

UNDP. (2015). *The 2030 agenda for sustainable development.* New York, United States: United Nations Development Programme.

UNDP. (2019). *UNDP Issue Brief: Universal Health Coverage for Sustainable Development.* New York: United Nation Development Program.

UNECA. (2018). *Healthcare and economic growth in Africa: Africa's health and financing: Pathway to economic growth and prosperity.* Addis Ababa: United Nations Economic Commission for Africa.

United Nations Economic Commission for Africa (UNECA). (2019). *Healthcare and economic growth in Africa.* Addis Ababa: United Nations Economic Commission for Africa.

Universal Health Coverage International. (2018). *Universal health coverage advocacy guide: A guide to promote health systems strengthening to achieve universal health coverage.* Nairobi: Universal Health Coverage International.

USAID. (2015). *Devolution of Kenya's health system: The Role of Health Policy Plus.* Washington DC: United States Agency for International Development.

Uzochukwu, B., Ughasoro, M., Etiaba, E., Okwuosa, C., Envuladu, E., & Onwujekwe, O. (2015). Health care financing in Nigeria: implications for achieving universal health coverage. *Nigerian Journal of Clinical Practice, 18*(4), 437-444. doi: 10.4103/1119-3077.154196.

Wagner, A. (1883). *Three extracts on public finance.* London: Macmillan.

Wagner, R. E., & Weber, W. E. (1977, March). Wagner's law, fiscal institutions and the growth of government. *National Tax Journal, 30*(1), 59-68. doi:10.1086/NTJ41862113.

Waitzberg, R., Quentin, W., Webb, E., & Glied, S. (2021). The structure and financing of healthcare systems affected how providers coped with COVID-19. *The Milbank Quarterly, 99*(2), 542-564. doi: 10.1111/1468-0009.12530.

Wellay, T., Gebreslassie, M., Mesele, M., Gebretinsae, H., Ayele, B., Tewelde, A., et al. (2018). Demand for healthcare service and associated factors among patients in the community of Tsegedie district, Northern Ethiopia. *BMC Health Service Research, 18*(697), 1-9. doi: 10.1186/s12913-018-3490-2.

Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal, 5*(2), 171-180. doi: 10.1002/smj.4250050207.

Wetering, R. V., Versendaal, J., & Walraven, P. (2018). Examining the relationship between a hospital's IT infrastructure capability and digital capabilities. *AMCIS*, 1-10.

Whishman, M. A., & McClelland, G. H. (2005). Designing, testing, interpreting interactions and moderator effects in family research. *Journal of Family Psychology, 19*(1), 111-120. doi: 10.1037/0893-3200.

WHO. (2010). *The Abuja Declaration: Ten years on.* Geneva: World Health Organization.

WHO. (2019). *Health financing. What is health financing for universal health coverage?* Geneva: World Health Organization.

WHO. (2020). *Global spending on health: Weathering the storm.* Geneva: World Health Organisation.

WHO. (2022). *Direct facility financing: concept and the role of UHC.* Geneva, Switzerland: World Health Organisation.

Wilcox, R. R. (2019). Multicollinearity and ridge regression: results on type I errors, power and heteroscedasticity. *Journal of Applied Statistics*, 946-957. doi: 10.1080/02664763.2018.1526891.

World Bank. (2021). *Current Health Expenditure.* Washington DC: World Bank.

World Bank. (2021). *From double shock to double recovery: Implications and options for health financing in the time of COVID-19.* Washington DC: World Bank.

World Bank. (2021). *Government Health Expenditure in Africa.* Washington DC: World Bank.

Wrench, J. S., Thomas-maddox, C., & Richmond, V. (2018). *Quantitative research methods for communication* (4 ed.). Oxford, United Kingdom: Oxford University Press.

Wu, C., Chang, T., Wang, C., Wu, T., Lin, M., & Huang, S. (2021). Measuring the impact of health on economic growth using pooling data in regions of Asia: evidence from a quantile-on-quantile analysis. *Frontiers in Public Health, 1*(1), 1-7. doi: 10.3389/fpubh.2021.689610.

Zaidi, S. A., Shahbaz, M., Hou, F., & Abbas, Q. (2021). Sustainability challenges in public health sector procurement: an application of interpretative structural modelling. *Socio-Economic Planning Services, 77*, 1-5. doi: 10. 1016/jseps.2021. 101028.

Zhou, L., Ampon-Wireko, S., Dauda, L., Xu, X., Antwi, M. O., & Larnyo, E. (2021). Empirical analysis of factors influencing healthcare efficiency among emerging countries. *Healthcare, 9*(1), 1-16. doi:10.3390/healthcare9010031.

Zweifel, P. (2022). Health economics. *Economic Affairs, 42*(1), 50-69. doi: 10.1111/ecaf.12507.

APPENDICES..

Appendix 1: Research Approval from Graduate School

KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 020-8704150

Internal Memo

FROM: Executive Dean, Graduate School **DATE:** 8th December, 2022

TO: **Mr. David Biruri** **REF:** D58/CTY/PT/27260/2018
C/o Department of Accounting & Finance

SUBJECT: APPROVAL OF RESEARCH PROPOSAL

This is to inform you that Graduate School Board, at its meeting on **24th November, 2022**, approved your Research Proposal for the M.Sc. Degree entitled, **"Healthcare Financing and Financial Sustainability of National Referral Hospitals in Kenya."**

You may now proceed with your Data collection, subject to clearance with the Director General, National Commission for Science, Technology & Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking and Progress Report Forms per semester. The forms are available at the University's Website under Graduate School webpage downloads.

Also, please ensure that you publish article(s) from your thesis before submitting it to Graduate School for examination as per the Commission for University Education and Kenyatta University guidelines.

Thank you.

DR. EDWIN OBUNGU
FOR: EXECUTIVE DEAN, GRADUATE SCHOOL

CC. Chairman, Department of Accounting & Finance
Supervisors:

1. Dr. Caroline Kimutai
   C/o Department of Accounting & Finance
   Kenyatta University

2. Dr. Nathan Mwenda Mutwiri
   C/o Department of Accounting & Finance
   Kenyatta University

Appendix 2: Research License from NACOSTI

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Ref No: **285116**

Date of Issue: **17/January/2023**

RESEARCH LICENSE

This is to Certify that Mr. David Biruri of Kenyatta University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Kiambu, Muranga, Nairobi, Uasin-Gishu on the topic: Healthcare Financing and Financial Sustainability of National Referral Hospitals in Kenya for the period ending: 17/January/2024.

License No: **NACOSTI/P/23/23198**

285116

Applicant Identification Number

Director General
NATIONAL COMMISSION
FOR
SCIENCE, TECHNOLOGY &
INNOVATION

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Appendix 3: Secondary Data Abstraction Tool

Year	Private health expenditure	Out-of-pocket expenditure	Government health expenditure	Donor health expenditure	NHIF expenditure	Operating revenue	Operating expense
2019							
2020							
2021							

Source: MOH/Treasury (2020)

Appendix 4: Sampling Frame

1. Moi National Referral Hospital
2. Kenyatta National Referral Hospital
3. Mathari National Referral Hospital
4. Kenyatta University National Referral Hospital
5. National Spinal Injury National Referral Hospital

Source: MOH (2020)