

**EFFECTS OF CAPITATION ON SERVICE QUALITY IN HOSPITALS ACCREDITED
BY NHIF IN NAIROBI COUNTY, KENYA.**

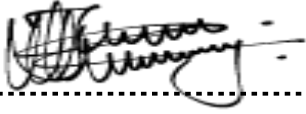
**JOHN MBAU
X53/82561/2015**

**A RESEARCH REPORT SUBMITTED TO THE SCHOOL OF ECONOMICS IN PARTIAL
FULFILLMENT FOR THE AWARD OF DEGREE IN MASTER OF SCIENCE IN
HEALTH ECONOMICS AND POLICY AT THE UNIVERSITY OF NAIROBI**

2021

DECLARATION

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




.....

John Mbau
X53/82561/2015

15th November, 2021
.....

Date

This research report has been submitted with my approval as the University Supervisor



Signature

Dr. Daniel Mwai

22nd November, 2021
Date

DEDICATION

I dedicate this report to my late parents Peter Mbau and Alice Wangui, my dear grandmother Wairimu Ngigi for the care and support she has accorded me, and to all NHIF patients.

ACKNOWLEDGEMENT

I am sincerely grateful to the Almighty God for his abundant blessings, strength and favour as I pursued this course.

I also acknowledge and express my profound appreciation to my supervisor Dr. Daniel Mwai, for his exemplary guidance, mentorship, and constant encouragement throughout the course of this research project. His valuable advice and academic input facilitated the preparation of this research paper.

Special thanks to the MSc HEP class of 2015 for the comradeship during the course work.

I express my gratitude to my friends who have supported me through thick and thin: Kahura Karanja Samuel Gichira, James Gathu, Winnie Kimiti,

Last but not least, I am grateful to my dear brothers Ngigi and Gathiru and my sisters Wanjiku and Wairimu for walking with me through my academic journey.

ABSTRACT

The project sought to establish the effect of capitation payment on health care service delivery in hospitals accredited by the NHIF in the county government of Nairobi, Kenya. Specifically, this project sought to establish the effects of capitation payment to service provider accredited by NHIF and to determine the effects of capitation payments on quality of healthcare services delivered to NHIF patients. Guided by the SERVQUAL model and using a primary data collected through a SERVQUAL questionnaire, the study established that capitation increases service quality by 35.85%. These findings are in line with Peter, *et al.* (2003) who outlined that capitation influences services quality delivery positively by fostering innovation in disease management, and by encouraging integration of various components of the health delivery system. On the second objective of establishing the effect of capitation payment to service provider, the study established that expected service quality and service provider (hospitals) which is perceived through capitation had a negative relationship with service providers. The study established that the number of provides reduced hence affecting the ratio of service providers to patients. Ratio of service providers to patients reduced perceived service quality by 9.14%. These findings are in line with Baffour (2013) who established that Thai private providers had initially responded negatively to the introduction of capitation on the basis of perceived low rate of the capitated amount. We thus recommend the use of Capitation in health care provision in Nairobi county.

TABLE OF CONTENT

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
CHAPTER ONE	1
INTRODUCTION	1
1.1. Background of the study	1
1.1.1. Capitation payment	2
1.1.2. Hospitals Accredited by NHIF in Kenya	3
1.2. Problem Statement	4
1.3. Research questions	5
1.4. Research objective	5
1.4.1 Specific objectives	5
1.5. Justification of the study	5
CHAPTER TWO	6
LITERATURE REVIEW	6
2.1 Introduction	6
2.2 Theoretical foundation	6
2.2.1 Risk theory	6
2.2.2 Capitation theory	6
2.4 Empirical review	7
CHAPTER THREE RESEARCH METHODOLOGY	8
3.1 Introduction	8
3.2 Theoretical framework	8
3.3 Econometric model	9
3.4 Definition of regressors and explained of variables	11
3.5 Data, data types and sources	12

3.6 Target Population.....	12
3.7 Sample size	12
3.8 Diagnostic tests.....	13
3.8.1 Normality.....	13
3.8.2 Multi-collinearity.....	13
CHAPTER FOUR	14
DATA ANALYSIS AND DISCUSSION OF RESULTS.....	14
4.1 Introduction.....	14
4.2 Descriptive statistics	14
4.3 Multiple response analysis.....	14
4.4 Normality test	18
4.5 Heteroscedasticity test	18
4.6 Regression Result	19
4.7 Marginal effect probit results.....	20
CHAPTER FIVE	22
SUMMARY AND CONCLUSION	22
5.1 Introduction.....	22
5.2 Summary and Conclusion.....	22
5.3 Policy Recommendation.....	23
5.4 Further areas	23
REFERENCES	24

LIST OF TABLES

Table 1: Regressors and explained variable and their expected sign of variable	11
Table 2: Descriptive statistics	14
Table 3: Multiple Response for Tangibles.....	15
Table 4: Multiple Response for Reliability.....	15
Table 5: Multiple Response for Responsiveness	16
Table 6: Multiple Response for Assurance.....	17
Table 7: Multiple Response for Empathy	17
Table 8: Normality Test Using Shapiro Wilk test	18
Table 9: Heteroscedasticity using Breusch-Pagan- Godfery test.....	19
Table 10: Probit model regression results	19
Table 11: Marginal effects of Probit model regression results.....	20

LIST OF FIGURE

Figure 3.1: Theoretical framework	8
--	---

CHAPTER ONE

INTRODUCTION

1.1. Background of the study

A budgetary limit for healthcare services is on the rise especially in developing economies and in reaction, different governments have devised sustainable cost control measures in effort to continue provisioning of health care to the residence (Physician Payment Reform and Hospital Referrals, 2014). Such cost-control actions have been entrenched in health area transformations that put on many policies such as making healthcare providers independent (Richard, 2014). Healthcare in the global phenomenon in the recent years has been marked by low performance and poor service delivery (Peter, 2013). In rising to the challenge, governments in conjunction with insurance bodies have recently adopted mechanisms that are meant to promote the value and competence of well-being, which ultimately leads to enhanced healthcare performance (Peter, 2013). Capitation payment method is increasingly viewed as an important factor in enhancing and sustaining healthcare service delivery in the majority of the hospitals (Peter, 2013).

Capitation payment is well-known to eradicate supplier-induced mandate linked with fee-for-service compensation, nonetheless, unless the capitated amount is risk-adjusted, at-least by stage of development and gender, providers may offer substandard maintenance aimed at alleged risk clusters on their incline (Physician Payment Reform and Hospital Referrals, 2014).

(Oliver-Baxter, Brown & Dawda, 2017) notes that most nations in the universe, including the Scandinavian nations, UK then Thailand put on capitation compensation but then per discrepancies. The United Kingdom does practice complete risk-adjustment method for scheming the capitation rate, Denmark regulate its capitated proportion by time of life and gender while capitation amount in Thailand is resolute by management and has no risk-regulation method. According to (Conrad, 2015), many countries in Sanderson & Gruen (2010) assert that capitation compensation might aid hold fee and aid as serious source of revenue used for benefactors as it improves quality of healthcare services. It is related to sluggish progress in health-related expenses on amenities that are gainful in service for fee. Statistically, Pearson & Richards (2013) account for cost reduction by twenty nine percent and twenty one percent on pharmaceutical and lab facilities accordingly, beneath capitation compensation in the South African hospitals.

In the sub-Saharan African context, the provision of cost-friendly good services in healthcare area has remained a growing curiosity among consumers and service renders in current ages, particularly, for small –income economies. Sibley & Glazier (2009) assert that, healthcare compensation technique ought to endeavor in avoiding excess, expand value of healthcare services and approachability, allow choosing of doctor from the sick persons, and ought to be relaxed in implementing. Reimbursing service givers through capitation could reduce costs, nonetheless worries on accessibility, value, and amount of attention which can distress wellbeing consequences are already highlighted (Kimani, Muthaka & Manda, 2012). Apparently, service givers could govern expenses through provision of care that is competent normally identified with less appointments as well as hospitalization, though what is ambiguous is if this suggests more productivity or lowered ability to reach services and value of attention (Gwaro, 2014). When reach of healthcare amenities and value are lowered, the sick persons wellbeing will be altered (OliverBaxter, Brown & Dawda, 2017).

From independence, among the aims of the Kenyan government has been to improve as well promote status of health of people living in Kenya (Kimani *et al.*, 2012). However, like in other developing countries, Kenya has been grappling with low performance during healthcare services delivery in hospitals over the years, even with the presence of the National Hospital Insurance Scheme facilitating for patient’s treatment costs (Kimani *et al.*, 2012). The NHIF has recently adopted the capitation method of payment to its hospitals; particularly the NHIF accredited and the method is currently applied in healthcare delivery (NHIF, 2016). Capitation payment is used with the sole aim of enhancing the quality of care, cost reduction and the overall hospital performance. It is then vital carrying out such a study that seeks in finding out the relationship between capitation payment and quality of healthcare services offered in hospitals accredited by NHIF in Kenya.

1.1.1. Capitation payment

With capitation agreement, health institutions or a doctor accepts a static sum for every being per month, irrespective of the total amenities the doctor gave. In philosophy, fluctuating monetary risk with service givers thus formed motivations in terms of incentives to offer better health services

compared to when using the one-time known fee-for-service compensation, hence lowering expenses (Roland & Dudley, 2015).

From the Kenyan perspective, fifty six percent of the population in Kenya is deprived as per World Bank explanation, meaning they live in less than or one dollar a day per capita (Kirui and Nyarombe, 2015). Approximately one third of those who are poor who got sick did not search for medical attention, as related to just fifteen percent of those who are rich, and 52% of those who are from less fortunate families alluded to economic hitches as the main cause why they did not access health services (Kimani, Muthaka & Manda, 2012). Approximately seven and half percent of deprived families remained handled us being out-of-pocket costs above 39.5% of not reusable everyday revenue.

Capitation payment is intended to enhance the quality of healthcare and the overall performance (Gwaro, 2014). Administrative such as non-adherence to set out best practices in the capitation procedures has been found to affect capitation (Kirui and Nyarombe, 2015). Owing the importance of capitation, it is therefore imperative to begin the consequences of capitation payment in healthcare presentation in hospitals accredited by NHIF in Kenya

1.1.2. Hospitals Accredited by NHIF in Kenya

In 1996, an Act of parliament, led to the creation of NHIF and was attached to the MoH for administrative purpose but answerable to the Kenyan Treasury for financial stuffs (Kirui & Francis, 2015). This Fund started with an aim of providing contributory to the national insurance scheme for all Kenyan people ranging from 18 years and over and directs every employer to subtract contributions from earnings and incomes (NHIF website, Accessed January 21, 2015). Membership plus contributions and are mandatory for every employee with a salary getting a net pay of Kshs. 1000 per month and above. The level of contribution is graduated according to income, ranging from Ksh 300-500 every 30days (NHIF website, Accessed January 21, 2015).

The scheme will cater for a maximum of 180 days in the hospital for every member including his/her family for every 1 year in accredited hospitals (Kirigia, Preker, Carrin, Mwikisa & DiarraNama, 2009).

Apart from the fact that it finances itself as well as self-administering, the scheme displays its gatherings and allocates paybacks to providers. This act also offers the Fund to have lends from its capitals and send to hospitals geared towards improvement of services (Gwaro, 2014). The fund board of management will pay benefits to any hospital that is accredited for expenses suffered in the hospitals from anyone who contributes; declared spouse, children or any other declared dependents (NHIF act cap 255). According to the NHIF Act, the advantages got from paying the Fund maybe inadequate to outlays experienced in reverence of medications, lab tests and investigative amenities, dental, clinical, or medical dealings or apparatus, physio upkeep and specialists' fees, nutrition as well as boarding prices (Republic of Kenya, 2014).

The significance of NHIF has severally been interrogated in the quest of access as well as affordability in health maintenance especially with the underprivileged, together with its handling. Because of this reason the Government of Kenyan has planned a scheme that is supposed to address fundamental concerns regarding equity, access, affordability and quality in the provision of health services in Kenya. This scheme is capitation payment to hospitals where a sum of money is paid to accredited hospitals in advance (NHIF, Accessed January 21, 2015).

1.2. Problem Statement

Out of pocket spending as a part of over-all spending that is at thirty six percent whereas expenditure from the public taken as a proportion of the overall health spending is twenty nine percent (MoH Report, 2008). 31% of the overall disbursement in health is got from development partners whereas the private firms only account for three percent. This kind of system heavily financed by out of pocket finance makes it become a challenge to many health seekers especially approximately 45.9% of the poor category of population. In Kenya, about 37.7% health care seekers are constrained by cost (KNHAHS, 2007. As such the NHIF introduced capitation payment as a mode of reimbursement to health centers in Kenya in 2012 and effected in 2015 (NHIF 2015).

Since it's new, there is a gap that need to be addressed. This forms the basis of this investigation Studies have been conducted focusing on capitation payment, its benefits and disadvantages in hospitals. However, most of the empirical literature about capitation compensation technique emphases on its consequence on charges of service providing. It doesn't report how incentives are

passed on to hospitals and doctors, or the likely result of capitation on marketplace structure then its succeeding consequences on quality, price, and performance. As a result, there exists a wide research gap that needs to be filled. In an attempt to fill the gap, this study envisages establishing the effects of capitation payment on healthcare services quality delivered by health providers accredited by NHIF in Nairobi County.

1.3. Research questions

- I. What's the effect of capitation payment to service provider?
- II. What's the effect of capitation payment on services delivered to patients?

1.4. Research objective

To establish effect of capitation payment on health care service delivery in hospitals accredited by the NHIF in Nairobi County, Kenya.

1.4.1 Specific objectives

- I. To establish the effects of capitation payment to service provider by NHIF
- II. To determine the effects of capitation payments on quality of healthcare services delivered to NHIF patients

1.5. Justification of the study

The findings from this study will play key roles both to the theorist (such as academician) and practioners (policy makers) dealing with healthcare providers issues in Kenya as they will understand the role of capitation payment in healthcare delivery. The findings of this study will be used to evaluate the service delivery, and also evaluate the benefits and challenges that come with this payment method. This way, they can as well suggest improvements on capitation payment to enhance better services.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this part, we present both theoretical and empirical literature review that underpin this study. It then followed by the overview of the two literature with a keen interest to bring out the gaps that this study intended to fill.

2.2 Theoretical foundation

Three theories form the foundation of this study. This theories include risk theoretic of capitation, capitation payment theory and quality of healthcare services theory.

2.2.1 Risk theory

According to risk theory of capitation, reinsurance of contracts among insurance firms are always aligned and so do the financing mechanisms for health care service provision (LinPo et al., 2013; Anderson, 1999). In the contemporary society that is characterized by a dynamic medical marketplace, health care is entitled to risk and hence transferring such risk to treatment avenues through full or partial capitated basis is an important factors. However, this approach has been linked to subjection of medical staff into a financial risk beyond the incentives they provide (Anderson, 1999). In nutshell, Capitation has the ability to align the incentives to almost all stakeholders in health care provision (such as the sick, service providers, carrier, and purchaser to keep covered members as healthy as possible at the least cost possible(Peter Agyei-Baffour, 2013).

2.2.2 Capitation theory

According to these theory, the medical staff such as physicians are enhanced by capitation payment that allows them to share their experience that result to high quality medical service to the patients (García-Lacalle& Martín, 2013). However, incentives provided by capitations are still misunderstood by many of the medical experts, who plays the moral hazard kind of game (Carter, Riverin, Levesque, Gariepy& Quesnel-Vallée, 2016). This theory further opines that capitation has the capability of affecting healthcare services delivery through either fostering innovation in healthcare management or through encouraging integration of various components of the health delivery system (Andoh-Adjei, at el., 2016)

2.4 Empirical review

While investigating the rationale of capitation in the health care provision Simmons (2009), reveals that curtailing the ever rising cost of accessing quality medication plays a major role. They recommend that capitation frameworks has the potential to permit health care funders to control the general level of basic essential welfare consumptions (Adu-Gyamfi, 2012).

In yet another study that sought to determine the capitation rates among different users by Cox (2012), the findings suggests that the rates must be sufficient enough to both service providers and those seeking health care for maximum welfare maximization. In a similar related empirical work David & Paul (2014) opines that the capitation installment frameworks should be programmed in a manner that funds is paid for every patient on their rundown, should be based on evidenced based individual demographic characteristics such as age and sexual orientation.

As put by Peter (2013) in his study of capitation payment in Thailand, capitation payment has become a vital source of most healthcare service providers with a potential to offer approximately 20%-30% of profit margin. His study further reveals that it takes time for all hospitals to embrace capitation payment, an ideal that can be replicated in developing countries like Kenya.

In other studies, the evidence has shown that capitation payment has the potential to increase service delivery through influencing individual decision making, bringing in innovation in service delivery as well as encouraging integration of health care system Vinten-Johansen, Peter, *et al.* (2003). For instance, In Kenya, Gwaro (2014) revealed that capitation payment among accredited health facilities in Nairobi county was significantly influenced by various factor. These factors include: the political inclination of the accredited hospital, the health center's current financing the programme, some level of ignorance about capitation payment by the hospital decision makers, as well as some level of reluctance and resistance from within the key stakeholders.

CHAPTER THREE RESEARCH METHODOLOGY

3.1 Introduction

In this part, we present the methods used to obtain the research objectives. We begin with the theoretical framework followed by the empirical models. Lastly, we discuss the data sources and estimation techniques.

3.2 Theoretical framework

Previous studies have adopted the consumer expected theory is analyzing the relationship between capitacion on service quality. Despite this, the theory faces some shortcomings. As noted by Zeivthaml, and Berry's (1985), consumer expectation on service performance and the actual assessment of a firm performance help driving the service quality perception. Due to this, the study adopts the SERVQUAL model by Parasuraman et al., (1988). The model is represented by the relationship amongst variables as shown in the figure below:

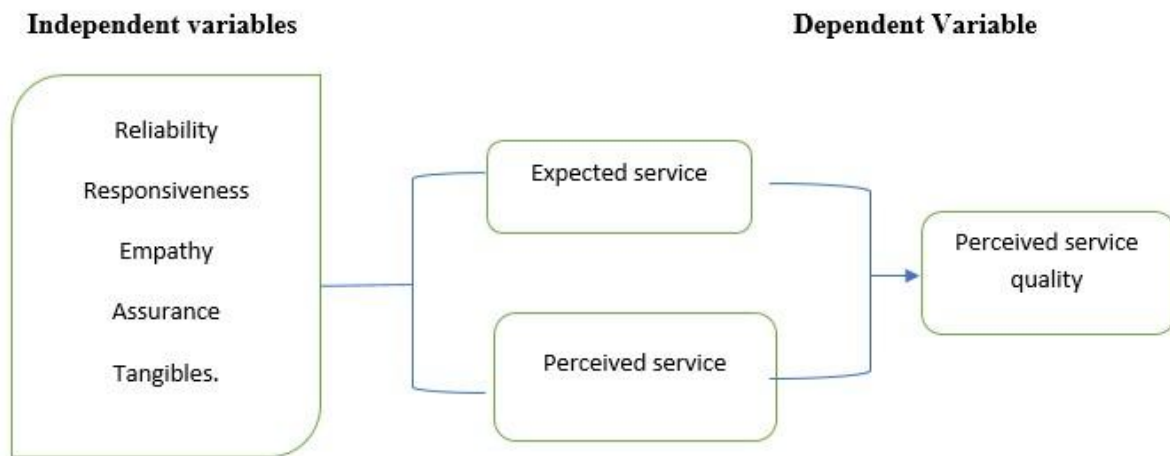


Figure 3.1: Theoretical framework

Nevertheless, some authors however depicted that there is no enough support of SERVQUAL model by any model of empirical and it lacks evidence of its work of customer perception (Carman, 1990). This is because service providers require knowledge on measuring the quality of service, the particulars of a service that is able to better define its quality, and whether firms contain perceived service quality that are of a higher level and have become more preferred by the

Y = dependent variable, X_i = vector of predictor, β are the unknown parameters of interest, ε is the error term while y_i is the probability of a patient receiving quality services.

Assuming that $u \sim N(0,1)$ then the cumulative distribution function represents the probit model.

$$Pr(y = 1) = \int_{-\infty}^{\frac{X\beta}{\sqrt{2}}} \frac{1}{\sqrt{\pi}} e^{-z^2/2} dz \dots \dots \dots 2$$

And the log likelihood function is:

$$Ln = \left(\frac{Y}{X}, \beta\right) \prod_{t=1}^N Y \log \log \{\phi(X\beta)\} + (1 - Y)\{1 - \phi(X\beta)\}^i \dots \dots \dots 3$$

From the above, marginal effects is estimated as the mean of specific marginal effect. The Multiple regression model is in the form:

$$y_i = \alpha + \beta_i X_i + \varepsilon \dots \dots \dots 4$$

The estimable model for quality of healthcare services (QoHS) among patients is as follows:

$$SERVQUAL = f(T, RE, RES, AS, EMP, PPR) \dots \dots \dots 5$$

Where: T – Tangibles, RE – Reliability, RES = responsiveness, AS = Assurance, EMP = Empathy, PPR = Ratio of providers to patients.

Equation 5 is transformed into an econometric equation hence the following:

$$SERVQUAL = B_0 + B_1T + B_2RE + B_3RES + B_4AS + B_5EMP + B_6 PPR + \varepsilon \dots \dots \dots 6$$

Where, ε is the error term, B_0 is the intercept, B_i represents the respective coefficients, while the other variables are as defined above.

3.4 Definition of regressors and explained of variables

Table 1: Regressors and explained variable and their expected sign of variable

Variable	Measurement	Our expectation of the sign
Explained variable		
Quality of healthcare services offered measured by timeliness of care.	1 if the patient receives quality healthcare services, 0 if the healthcare services are sub-standard	
Independent Variables		
Tangibles	This is the appearance of physical facilities, equipment, personnel, and communication materials	Negative/positive
Reliability:	Measures ability to perform the promised service dependably and accurately	Negative/positive
Responsiveness	Measures willingness in helping customers and providing prompt service	Negative/positive
Assurance	Measures knowledge and courtesy of employees and their ability to convey trust and confidence	Negative/positive
Empathy	Measures the caring, individualized attention the firm provides its customers	Negative/positive
Ratio of providers to patients	Measures the ration of available providers to patient's ratio	Positive sign in increased no of providers to patients
		(small ratio) (Patterson J, 2010)
Re-admissions	Measures the number of admissions and readmissions done at the facility	Negative sign if the no of readmissions is high (Clarke A, 2004)
Capitation	Is a dummy variable assuming 1 if the hospital receives capitation and 0 otherwise	positive

Source: Parasuraman et al., (1985; 1988), Author.

Sample Size

$$= 1 + \frac{\frac{1.96^2 \times 0.5(1-0.5)}{0.05^2}}{0.05^2 \times 86} \dots \dots \dots 8$$

n= 70

In total, 70 facilities within Nairobi County which are NHIF accredited were randomly selected and 5 patients interviewed in each facility. A total of 350 patients were interviewed.

3.8 Diagnostic tests

3.8.1 Normality

This test assesses the data characteristic assume a normal distribution and evaluates the probability of random variable in the data set to be normally distributed. N testing normality, the study shall use standard scores of the data collected. The study will then refer to the 68-95-99.7 or the empirical rule in assessing the percentage of values within one, two or three standard deviations from the mean in testing normality

3.8.2 Multi-collinearity

This problem occur when two or more regressors have a linear combination which may lead to a problem of unreliable regression coefficients. To test its presence we shall use variation inflation factor (VIF) to test the subject.

CHAPTER FOUR
DATA ANALYSIS AND DISCUSSION OF RESULTS

4.1 Introduction

This part presents the analysis and interpretation of the regression results which is used to obtain the study objectives. It depicts the descriptive statistic, multiple response, normality test, heteroscedasticity test, probit model results and finally, the marginal effects.

4.2 Descriptive statistics

The descriptive statistics was undertaken to ascertain the characteristics of the data used in our regression. It involved computing the mean, the standard deviation, the minimum and maximum values of each variable used in the regression (See Table 2).

Table 2: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
SERVQUAL	336	.6875	.4642037	0	1
Tangibles	336	-7.98e-10	1.833205	-2.198562	2.982654
Reliability	336	1.80e-08	1.752006	-2.356011	2.86781
Responsiveness	336	3.73e-09	1.582856	-2.068835	2.661458
Assurance	336	5.72e-09	1.738076	-2.809462	3.026512
Empathy	336	-1.46e-08	1.464005	-2.288302	2.408849
RPP	336	.5722777	.2163776	.125868	.993805
Readmission	336	13.55952	7.451897	4	41
Capitation	336	0.6576577	0.4752075	0	1

4.3 Multiple response analysis

The multiple response analysis is applicable where we have a likert scale. In our case, there were four questions under Tangibles in which the respondent was to select from (strongly agree, agree, neither agree or disagree and disagree.). From the regression result in Table 4.2, the study revealed that on average, 42.6% of the respondents agreed that the appearance of the physical facilities,

equipment, personnel as well as communication materials of the health facility played a key role in influencing their perception of the expected service quality that the health care could provide. Equally, the study reveals that about 66% of the health center in the study area receives capitation. We also observe that about 30% of the respondents disagreed while 27.2% of them were undecided (See Table 3)

Table 3: Multiple Response for Tangibles

\$Tangibles Frequencies

	Responses		Percent of Cases	
	N	Percent		
Tangibles ^a	Agree	572	42.6%	170.2%
	Neither agree nor disagree	365	27.2%	108.6%
	Disagree	407	30.3%	121.1%
Total	1344	100.0%	400.0%	

a. Group

From the analysis result in Table 4, Reliability (which measured the ability to perform the promised service dependably and accurately by the health care) had an approval rate of 41.5% while 32.2% of the respondents did not feel that it was important in influencing their perception of the service quality the health centre provided. The result further showed that 26.2% of the respondents were indifference of the effect of reliability towards the service quality.

Table 4: Multiple Response for Reliability

\$Reliability Frequencies

	Responses		Percent of Cases	
	N	Percent		
reliability ^a	Agree	698	41.5%	207.7%
	Neither agree nor disagree	441	26.2%	131.2%
	Disagree	541	32.2%	161.0%
Total	1680	100.0%	500.0%	

a. Group

Responsiveness measured how willing the health care staffs were in helping customers and providing prompt service. From our analysis, presented in Table 5, most respondent (42.6%) agreed that Responsiveness played a key role in their perception towards the service quality the health facility provided while 30.3% of them disagreed. Equally, the study revealed that about 27.2% of them were indifference about the influence of Responsiveness on how they perceived the service quality provided by a given health facility within the area of study.

Table 5: Multiple Response for Responsiveness

\$Responsiveness Frequencies

	Responses		Percent of Cases	
	N	Percent		
Resposnsiveness ^a	Agree	572	42.6%	170.2%
	Neither agree nor disagree	365	27.2%	108.6%
	Disagree	407	30.3%	121.1%
Total		1344	100.0%	400.0%

a. Group

From Table 6, the result reveals that Assurance (which was a proxy of knowledge and courtesy of employees and their ability to convey trust and confidence) had a great impact in influencing the perception of the respondent about the service quality expectation with an approval of 43.1% agreeing while 0.5% strongly agreeing. However, about 29.6% disagreed while 26.8% of them were indifference.

Table 6: Multiple Response for Assurance**\$Assurance Frequencies**

	Responses		Percent of Cases
	N	Percent	
Assurance ^a			
Strongly agree	9	0.5%	2.7%
Agree	724	43.1%	215.5%
Neither agree nor disagree	450	26.8%	133.9%
Disagree	497	29.6%	147.9%
Total	1680	100.0%	500.0%

a. Group

Further, the result in Table 7 show that Empathy (which is a measure of the caring, individualized attention the health centre provides its customers)) had a great impact in influencing the perception of the respondent about the service quality expectation with an approval of 43.1% agreeing while 0.7% strongly agreeing. However, about 29.6% disagreed while 26.6% of them were indifference.

Table 7: Multiple Response for Empathy**\$Empathy Frequencies**

	Responses		Percent of Cases
	N	Percent	
Empathy ^a			
Strongly agree	12	0.7%	3.6%
Agree	724	43.1%	215.5%
Neither agree nor disagree	447	26.6%	133.0%
Disagree	497	29.6%	147.9%
Total	1680	100.0%	500.0%

a. Group

4.4 Normality test

Table 8: Normality Test Using Shapiro Wilk test

Variable	Obs	W	V	z	Prob>z
SERVQUAL	336	0.99593	0.960	-0.097	0.53884
Tangibles	336	0.95634	10.288	5.501	0.00000
Reliability	336	0.97265	6.445	4.397	0.00001
Responsiveness	336	0.96807	7.523	4.763	0.00000
Assurance	336	0.96976	7.124	4.634	0.00000
Empathy	336	0.97848	5.071	3.832	0.00006
RPP	336	0.98323	3.952	3.243	0.00059
Readmission	336	0.86015	32.951	8.249	0.00000

From the result in Table 8, we observe that all variable in the model are non-normal except the SERVQUAL.

4.5 Heteroscedasticity test

Heteroscedasticity is common in cross sectional data. It is present when variance of the error term is not constant. Its presence renders inference testing inapplicable. We employed Breusch-Pagan-Godfery test to check for its presence. According to this test, if P value is less than 0.05, heteroscedasticity is deemed to be present since null hypothesis of homoscedasticity is rejected. If found to be there, robust standard error are used (Gujarati, 2003)

Table 9: Heteroscedasticity using Breusch-Pagan- Godfery test

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	
Ho: Constant variance	
Variables: fitted values of SERVQUAL	
chi2(1)	= 27.33
Prob > chi2	= 0.0000

From Table 9, we reject the Null hypothesis of homoscedasticity and conclude that there is presence of heteroscedasticity. To solve for this problem, we used robust standard errors.

4.6 Regression Result

Table 10: Probit model regression results

Probit regression		Number of obs = 56,616	
		Wald chi2(8) = 25197.48	
		Prob > chi2 = 0.0000	
Log pseudolikelihood = -20824.398		Pseudo R2 = 0.4298	
	Robust		
SERVQUAL	Coef.	Std. Err.	z P> z [95% Conf. Interval]
Tangibles	1.791136	.0269105	66.56 0.000 1.738393 1.84388
Reliability	-.9185648	.0218963	-41.95 0.000 -.9614807 -.8756488
Responsiveness	-1.447713	.0250824	-57.72 0.000 -1.496873 -1.398552
Capitation	1.70727	.014611	116.85 0.000 1.678633 1.735907
Assurance	.9578116	.0169832	56.40 0.000 .9245251 .991098
Empathy	-1.17676	.0158361	-74.31 0.000 -1.207798 -1.145722
RPP	-.447844	.0314546	-14.24 0.000 -.5094939 -.3861941
	.0236429	.0009773	24.19 0.000 .0217274 .0255583
READMISSION			
_cons	-.4145855	.0258341	-16.05 0.000 -.4652193 -.3639516

From the regression result in Table 10, the F statistic with a P-value of 0.000 implies that we reject the null hypothesis of joint coefficient of non-significant and conclude that at least some coefficients in the model are statistically significant. Equally, the Pseudo R2 of 0.2461 implies that about 24.61% of the variation in service quality is explained by the explanatory variables in the model. Further, we observe that all the explanatory variables used in the model are statistically significant in influencing the service quality of health care in Nairobi County. Further, we observed that Capitation, Tangibles, Assurance and Re-admission increased the expectations of service quality perception while Reliability, Responsiveness, Empath and Ration of providers to patients reduced the expectations of service quality perception. Given that the coefficients of the probit model cannot be interpreted directly, we computed their marginal effects.

4.7 Marginal effect probit results

Table 11: Marginal effects of Probit model regression results

	Delta-method					
	dy/dx	Std. Err.	z	P> z	[95% Conf. Interval]	
Tangibles	.3656053	.0051377	71.16	0.000	.3555357	.3756749
Reliability	-.1874967	.0042546	-44.07	0.000	-.1958356	-.1791578
Responsiveness	-.295506	.005097	-57.98	0.000	-.305496	-.2855159
Capitation	.3484865	.0020657	168.70	0.000	.3444378	.3525351
Assurance	.1955077	.0033232	58.83	0.000	.1889944	.2020211
Empathy	-.2401993	.0028601	-83.98	0.000	-.245805	-.2345936
RPP	-.0914135	.0063996	-14.28	0.000	-.1039566	-.0788705
READMISSION	.004826	.0001969	24.51	0.000	.0044401	.0052118

From Table 11, our variable of interest, Capitation is significant in influencing service quality of health care in Nairobi County as per our expectation. For instance, holding all other factors constant, an additional capitation led an increase of the expectations of perception of the service quality of the health centers by the customers by an average of 38.85%. Further, the regression

result reveals that, under *ceteris paribus*, a one percent improvement in the Tangibles of the health center increases the expectations of perception of the service quality of the health centers by the customers by an average of 36.33%. Equally, a unit percent improvement in the Assurance of the health center increases the expectations of perception of the service quality of the health centers by the customers by an average of 9.62% , when all other factors were held constant. We observed that when all other factors were held constant, an increase in one more readmission led to an increase in the expectation of increasing the perception of service quality of the health centre by 0.03%.

Further, the result reveals under *ceteris paribus*, a one percent improvement in the Reliability of the health center reduces the expectations of perception of the service quality of the health centers by the customers by an average of 30.86%. Equally, holding all other factors constant, a one percent improvement in the Responsiveness of the health center reduces the expectations of perception of the service quality of the health centers by the customers by an average of 9.93%. The study further reveals that an additional Empathy (led to a reduction in the expectations of perception of the service quality of the health centers by the customers by an average of 23.68% while a unit increase in the Ratio of providers to patients led to a reduction in the expectations of perception of the service quality of the health centers by the customers by an average of 7.68%.

CHAPTER FIVE

SUMMARY AND CONCLUSION

5.1 Introduction

This section presents the discussion of the study summary findings, policy recommendation and proposes further areas of research.

5.2 Summary and Conclusion

The study aimed at establishing the effect of capitation payment on health care service delivery in hospitals accredited by the NHIF in Nairobi County, Kenya. Specifically, the study sought to establish the effects of capitation payment to service provider accredited by NHIF and to determine the effects of capitation payments on quality of healthcare services delivered to NHIF patients. The study was guided by the SERVQUAL model of service quality. In explaining the impact of capitation on quality of services delivered in NHIF accredited hospitals in Nairobi County, the study established that capitation increases service quality by 34.8%. These findings are in line with Peter, *et al.* (2003) who outlined that capitation influences services quality delivery positively by fostering innovation in disease management, and by encouraging integration of various components of the health delivery system. Furthermore, Cox (2012) outlined that if capitation rate ensures each provider receives enough payments, service quality improves since each healthcare provider provide services at a competitive or affordable rate.

On the second objective of establishing the effect of capitation payment to service provider, the study established that expected service quality and service provider (hospitals) which is perceived through capitation had a negative relationship with service providers. The study established that the number of provides reduced hence affecting the ratio of service providers to patients. Ratio of service providers to patients reduced perceived service quality by 9.14%. These findings are in line with Baffour (2013) who established that Thai private providers had initially responded negatively to the introduction of capitation on the basis of perceived low rate of the capitated amount.

5.3 Policy Recommendation

Even though capitation is expected to control unreasonable increases in medical costs, it may infer a different outcome on the quality of services delivered to patients and on the service providers themselves. Based on the findings of this study, this study therefore recommends that a variety of payment methods be combined in addition to NHIF in order to complement each other. Furthermore, it is recommended that a competition mechanism should be established which factors in the service quality and the patients' health indicators in the performance management system.

5.4 Further areas

Considering that the study focused on NHIF accredited hospitals in Nairobi County, the study suggest that a similar study should be undertaken focusing on all the hospitals in Kenya.

REFERENCES

- Abt Associates Inc., Kenya National Bureau of Statistics, Ministry of Health (Kenya). Kenya Household Health Expenditure and Utilization Survey 2007. Nairobi, Kenya: Kenya National Bureau of Statistics.
- Adu-Gyamfi, A. (2012). Capitation: Is that the best option? *Ghana web* , pp. 6-7.
- Anderson, G.F.P. (1999). Methods of reducing the financial risk of physicians under capitation. *Archives of Family Medicine*. 8(2), 149-155.
- Andoh-Adjei, F., Spaan, E., Asante, F. A., Mensah, S. A., & van der Velden, K. (2016). A narrative synthesis of illustrative evidence on effects of capitation payment for primary care: lessons for Ghana and other low/middle-income countries. *Ghana Medical Journal*, 50(4), 207.
- Arnold, W., & Alexander, S. (2007). Cost, work, reimbursement, and the pediatric nephrologist in the United States Medicare/End-Stage Renal Disease Program. *Pediatric Nephrology*, 11(2), 250.
- Babbie, E. (2002). *Survey research methods* (2nd Ed.). Belmont: Wodsworth.
- Balköse, D., & Hamrang, A. (2015). *Applied Methodologies in Polymer Research and Technology*. Toronto: Apple Academic Press.
- Carter, R., Riverin, B., Levesque, J., Gariepy, G., & Quesnel-Vallée, A. (2016). The impact of primary care reform on health system performance in Canada: a systematic review. *BMC Health Services Research*, 161.
- Conrad, D. A. (2015). The Theory of Value-Based Payment Incentives and Their Application to Health Care. *Health Services Research*, 502057.
- Conrad, D. A., Vaughn, M., Grembowski, D., & Marcus-Smith, M. (2016). Implementing ValueBased Payment Reform: A Conceptual Framework and Case Examples. *Medical Care Research & Review*, 73(4), 437.
- Cox, T. (2012). *Standard Errors: Our failing health care (finance) systems and how to fix them*. Retrieved from <https://www.researchgate.net>.
- David P. & Paul III, J. B. (2014). How effective is Capitation at Reducing Health Care Costs?
- García-Lacalle, J., & Martín, E. (2013). Efficiency improvements of public hospitals under a capitation payment scheme. *Health Economics, Policy & Law*, 8(3), 335.

- Gwaro, S. I. (2014). *An assessment of factors affecting implementation of capitation programme in provision of the health care services; a case of Nairobi county accredited health facilities*.
- Habib, M., Maryam, H., & Pathik, B. B. (2014). *Research Methodology -- Contemporary Practices: Guidelines for Academic Researchers*. Newcastle upon Tyne: Cambridge Scholars Publishing.
- Kessels, R., Van Herck, P., Dancet, E., Annemans, L., & Sermeus, W. (2015). How to reform western care payment systems according to physicians, policy makers, healthcare executives and researchers: a discrete choice experiment. *BMC Health Services Research*, 15 (1), 1.
- Kimani, D., Muthaka D.I., & Manda D. K. (2012). Healthcare Financing Through Health Insurance in Kenya. The Shift to a National Social Health Insurance Scheme. Nairobi, Kenya: *Kenya Institute for Public Policy Research and Analysis*, 1-71.
- Kirigia, J. M., Preker, A., Carrin, G., Mwikisa, C., & Diarra-Nama, A. J. (2009). *An overview of health financing patterns and the way forward in the WHO African region*. *The East Afr Med J*. 2006, 83 (8): S1-S27.
- Kirui, K., & Francis, N. (2015). An Investigation of the Factors Affecting Capitation Programme in Provision of the Health Care Services; a Case of Nairobi County Accredited Health Facilities. *International Journal of Business and Management Invention*, 4 (1), 33-53.
- Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Delhi: New Age International (P) Limited Publishers.
- Lin, F., Po, R., Lin, M., Lin, W., & Chang, B. (2013). Modeling an Agent-Based Healthcare Service System: An Exploration of the Capitation Payment Scheme of Zhishan-CHG in Taiwan. *2013 Fifth International Conference On Service Science & Innovation*, 67.
- Locharoenrat, K. (2017). *Research Methodologies for Beginners*. Singapore: Pan Stanford.
- Mohammed, S., Soares, A., Bermejo, J. L., Sauerborn, R., & Dong, H. (2014). Performance evaluation of a health insurance in Nigeria using optimal resource use: health care providers perspectives. *BMC Health Services Research*, 14(1), 1.
- Mugenda, O. M., & Mugenda, A. G. (2009). *Research methods: Quantitative and qualitative approaches*. Nairobi: Acts Press.
- National Hospital Insurance Fund. NHIF Afya Yetu. Bima Yetu website.

- <http://www.nhif.or.ke/healthinsurance/>. Accessed January 21, 2015
- Jeh-Nan Pan, Tzu-Chun Kuo, Abraham Bretholt, (2010) "*Developing a new key performance index for measuring service quality*", *Industrial Management & Data Systems*, Vol. 110 Issue: 6, pp.823-840, <https://doi.org/10.1108/02635571011055072>
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A Conceptual Model of Service Quality and Its Implications for Future Research. *Journal of Marketing*, 49(4), 10.
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). Servqual: A Multiple-Item Scale For Measuring Consumer Perceptions of service quality *Journal of Retailing*, 64(1), 12-40.
- Parasuraman, A., Zeithaml, V. A., & Malhotra, A. (2005). E-S-QUAL - A multiple-item scale for assessing electronic service quality. *Journal of Service Research*, 7(3), 213-233. doi: 10.1177/1094670504271156
- Nsiah, M. O. (2014). *The effect of capitation payment on the national health insurance scheme in Ashanti region, Ghana*. Retrieved from <http://dx.doi.org/10.2139/ssrn.2479305>
- Oliver-Baxter, J., Brown, L., & Dawda, P. (2017). Should the healthcare compass in Australia point towards value-based primary healthcare? *Australian Health Review*, 41(1), 98
- Orotho, A. (2003). *Essentials of Education and Social Science Research Methods*. Nairobi: Masola Publishers.
- Pearson, W. S., & Richards, C. (2013). Capitated Payments to Primary Care Providers and the Delivery of Patient Education. *Journal of the American Board of Family Medicine*, 26 (4), 350-355.
- Peter Agyei-Baffour, R. O. (2013). Knowledge, perceptions and expectations of capitation payment system in a health insurance setting: a repeated survey of clients and health providers in Kumasi, Ghana. *BMC Public Health*.
- Physician Payment Reform and Hospital Referrals. (2014). *American Economic Review*, 104(5), 200.
- Roland, M., & Dudley, R. A. (2015). How Financial and Reputational Incentives Can Be Used to Improve Medical Care. *Health Services Research*, 502090.
- Sanderson, C., & Gruen, R. (2010). *Analytical Models for Decision Making. Understanding Public Health*. Maidenhead: Open University Press.

- Saver, B. G. (2014). Commentary on "Opportunities and Challenges for Measuring Cost, Quality, and Clinical Effectiveness in Health Care": The Fault Lies Not in Our Stars but in Our System. *Medical Care Research & Review*, 61151S.
- Sibley, L. M., & Glazier, R. H. (2009). Evaluation of the case mix and equity of age-sex adjusted primary care capitation payment models in Ontario, Canada. *BMC Health Services Research*, 91.
- Simmons, J. (2009). Primary Health care Needs New Innovations to Meet Growing Demands. *HealthLeadersMedia* .
- Sommersguter-Reichmann, M., & Stepan, A. (2017). Hospital physician payment mechanisms in Austria: do they provide gateways to institutional corruption?. *Health Economics Review*, 7(1), 1.
- Westgate, A. (2016). Measuring and improving quality. *Managed Healthcare Executive*, 26(6), 20.
- Yé, M., Diboulo, E., Kagoné, M., Sié, A., Sauerborn, R., & Loukanova, S. (2016). Health worker preferences for performance-based payment schemes in a rural health district in Burkina Faso. *Global Health Action*, 91.