

**DETERMINANTS OF DEMAND FOR HEALTH FACILITY DELIVERY IN WESTERN
KENYA**

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**A RESEARCH PROPOSAL SUBMITTED TO THE SCHOOL OF ECONOMICS,
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FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN HEALTH
ECONOMICS AND POLICY**

DECLARATION

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

Signed Date.....

Lydia Nakhone Nakhone

The research project has been submitted for examination with my approval as university supervisor

Signed..... Date.....

Dr Urbanus Mutuku Kioko

DEDICATION

More often than not we do not get what we wish for, we however get what we work for.

To my parents Mr and Mrs Nakhone

ACKNOWLEDGEMENTS

I would like to express my appreciation to my supervisor Dr Urbanus Mutuku kioko who gave immense guidance in writing this project.

I would also like to thank my Fiancée Abe for his love, financial and emotional support, I would never have done it without you.

My best friend Titty, my Classmates Patricia, Gloria, Teresita, Elizabeth, Joseph, Kevin and Socrates, I can never thank you enough for your time sacrifices to help me through this project.

Mom Lornah, for being the best Mother, my teacher and a source of encouragement, thank you.

Most importantly I pray that God may bless you all.

ABSTRACT

Health facility delivery is an important component of maternal health care aimed at ensuring safety of the mother and the baby given the risks of developing complications during child birth that may lead to death .It is therefore important to deliver at a health facility where most complications can be handled by skilled birth attendants. However, (KDHS, 2009) reported that only (35.4%) of births in rural areas take place at the health facilities while (64.6%) take place at home. In Western Kenya, only (25.3%) of births take place in health facilities while (74.7%) of births take place at home.

This study therefore sought to find out and estimate the determinants of health facility delivery in western Kenya. To meet the objectives of the study data from the KHDS, 2009 was analyzed using both econometric and descriptive methods. The results of the study showed that culture was a strong negative determinant of health facility delivery. Farming which is the region's main economic activity was also significant and negatively associated with health facility delivery. The rural urban divide was a strong negative determinant of health facility delivery. The study also identified factors that significantly increased the probability of health facility delivery to include; having secondary education or higher by a woman or her partner, making antenatal visits, children born first by the mother. While mass media exposure, mothers' age at birth and a wanted pregnancy at conception insignificantly increased the probability of health facility delivery. Factors that significantly reduced the probability of health facility delivery included being in the poor wealth quintiles and if a woman belonged to the protestant church.

The study recommends a number of policies based on the study findings that include; strengthening of policies focused on the demand side of maternal health care financing, like the OBA project that provides subsidies on health facility delivery costs, creation of awareness on maternal health among women in rural areas .This will provide information to the women and also address any misconceptions that may be brought about by culture or religion .

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LIST OF ABBREVIATIONS

ANC.....	Antenatal Care
CRA.....	Commission on Revenue Allocation
UNFPA.....	United Nations Population Fund
KDHS.....	Kenya Demographic Health survey
MMR.....	Maternal Mortality Rates
MDG's.....	Millennium Development Goals
MCH.....	Maternal and Child Health
UNICEF.....	United Nations Children's Fund
WHO.....	World Health Organization

CHAPTER ONE: INTRODUCTION

This chapter is a general introduction of the study and deals with the background, statement of the problem, the main objective and the specific study objectives of the study and significance of the study.

1.0 Background

1.1 The burden of maternal mortality

The World Health Organization (WHO) reported a global estimate of 289,000 maternal deaths. Every day, approximately 800 women die while 10-15 million women suffer from morbidity caused by preventable conditions related to pregnancy and childbirth (WHO, 2013). Developing countries accounted for (99%) of the global maternal deaths with Sub-Saharan Africa region alone accounting for (62%). The world health organization identifies the global distribution of maternal deaths by cause as hemorrhage (27%), hypertension (14%), sepsis (11%), unsafe abortion (8%), embolism (3%), direct causes (10%) and other indirect causes (28%) including AIDS and malaria (UNICEF, 2013).

Maternal mortality is a significant health problem in Kenya with an estimated 488 maternal deaths per 100,000 live births, against the millennium development target of 147 per 100000 live births by 2015. For every woman who dies during child birth, another 20-30 women suffer serious injury (KDHS, 2009). Majority of the maternal mortalities in Kenya occur during child birth, a significant number are caused by postpartum hemorrhage (KEMRI/CDC, 2013). This could easily be managed by providing quality health facility delivery that would ensure women deliver safely and avert most of the complications that arise during child birth (UNFPA, 2011).

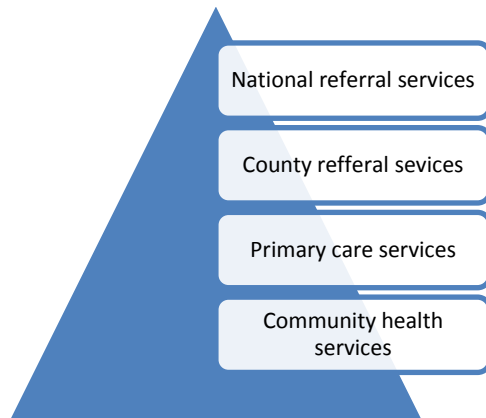
All expectant women are at risk of developing unexpected complications during child birth but almost all of these complications can be managed by skilled birth attendants at well equipped health facilities. Yet in Kenya, only about (43%) of all deliveries take place at health facilities (KDHS, 2009). Investment in maternal health care is important in driving the country's economic growth as well as reducing poverty rates (KNHCR, 2012).

1.2 Health Care System in Kenya

Kenya passed a new constitution in 2010 that led to the introduction of a devolved system of government, comprising of a national government and county governments. The national government provides leadership in terms of health policy development, management of national referral health facilities and technical assistance to counties. County governments are responsible for managing county health services and promotion of primary healthcare (Kenya health policy, 2014-2030).

In addition, the county governments are in charge of; community health services which includes primary care services, dispensaries, health centers and maternity homes. They also manage county referral services which are comprised of former district hospitals. While the national government is in charge of national referral services, comprised of facilities that provide highly specialized services (Kenya Health Policy, 2012 -2030).

Figure 2: Health care system in Kenya



Source (Kenya Health Policy, 2012 -2030)

The major challenge in Kenya's health sector is inadequate health personnel and lack of well equipped medical facilities (Assessment of KHSSP, 2012). Most health centers are understaffed with almost half of them (48.6 %) having fewer than 3 nurses/midwives. Each nurse/midwife is therefore tasked with taking care of more than three patients, against a WHO recommended number of one nurse/midwife per three patients. This makes it difficult to provide continuous emergency obstetric and newborn care services. Health services are provided by 6, 626 health

facilities across the 47 counties with the public sector accounting for (51%). About (70.4%) of health workers are employed by the government including obstetricians, medical doctors, clinical officers and nurse-midwives (Service provision assessment, 2010).

1.2.1 Maternal health services in Kenya

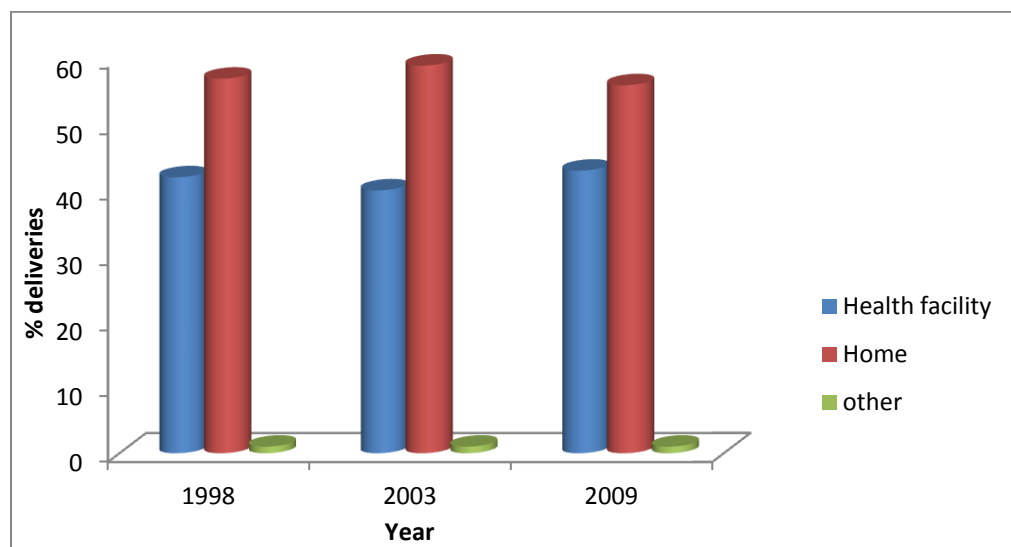
Improvements in maternal health services began in 1972 as an integrated MCH programme. The specific programmes aimed at reducing maternal mortality were introduced later in 1987 during the inauguration of the Safe Motherhood Initiative in Nairobi. Earlier, efforts were focused on training traditional birth attendants to screen pregnancies for complications but today, efforts have shifted towards increasing the number of women who access skilled care during pregnancy and delivery. In line with this objective, in June 2013, President Uhuru Kenyatta announced that all the government facilities would provide free maternal health care services. Policies implemented in line with this policy statement include the removal of user fees in dispensaries and health centers and provision of free maternal health services in all public health facilities. Delivery care provided under free maternal health include (normal deliveries and CS), referral services, complication related pregnancies and family planning (Health Policy Project, 2013).

Over the years, high home deliveries has been a major issue of concern in Kenya .Women who gave birth at home cited reasons such as long distance to the health facility (42%) it was not necessary (21%). Also cited by (18%) was that the pregnancy occurred too fast to get to a facility. The high cost of health facility delivery was stated by (17 %) of the women while the remaining (2%) of the women said they did not deliver at a facility because: there were no female providers at the facility, it was not customary, their husbands or family members did not allow it, poor quality of service was or the facility was not open.

Figure 2 shows health facility deliveries in Kenya in the years, 1998, 2003 and 2009. The number of health facility deliveries has improved over the years. An estimated (42%) of deliveries took place at a health facility in 1998, (40%) in 2003 and (43 %) in 2009.Home deliveries have slightly reduced since 2003. An estimated (57%) of deliveries took place at home in 1998, (59%) in 2003 and (56 %) in 2009 (KDHS, 2009). The number of home deliveries is still more than half of the total deliveries in Kenya. This is too high given that the WHO revealed

that (70%) of maternal deaths could be avoided in Sub Saharan Africa if only women would deliver at a health facility with skilled birth attendants.

Figure 2: Place of delivery in Kenya



Source (KDHS, 1998-2009)

From table 1, it is also noted that health facility delivery in Kenya is high among women residing in urban areas as compared to those in the rural areas. Women who made at least one ANC visit utilized health facility delivery more than women who did not make any antenatal care visit. Women with higher levels of education were better users of health facility delivery as compared to women with no education. Similarly, women in the rich and richest wealth quintiles utilized health facility delivery more as compared to their counterparts in the in the poor and poorest wealth quintile. Western Kenya has been shown to be one of the regions with the highest proportion of home deliveries at (73.3%) (KDHS, 2009).

Table 1: Place of delivery according to background characteristics in Kenya

Background characteristic	Health facility(%)	Home %
Mother's age at birth		
<20	46.6	52.6
20-34	42.7	56.2
35-49	36.2	61.4
Residence		
Urban	74.7	24.5
Rural	35.4	63.3
Province		
Nairobi	89.4	9.9
Central	73.0	25.9
Coast	44.4	54.6
Eastern	42.8	54.8
Nyanza	44.2	54.9
Rift valley	32.9	66.3
Western	25.3	73.3
North Eastern	17.3	81.3
Antenatal care		
None	10.7	87.5
1-3	38.2	60.7
4+	60.3	38.4
Mothers Education		
No Education	15.0	83.5
Primary incomplete	28.0	70.8
Primary complete	48.1	51.0
Secondary +	71.6	27.0
Wealth Quintile		
Lowest	18.0	80.9
Second	30.4	68.3
Middle	41.6	56.7
Fourth	51.4	47.2
Highest	80.9	18.4

Source (KDHS, 2009)

1.2.2 Socio-economic and demographic profile of Western Kenya

Western Kenya constitutes Vihiga, Kakamega and Busia counties with a total population of 4.3 million (Kenya population and housing census, 2009). This region has an agricultural economy, cultivating cash crops like tobacco, sugarcane and food crops. They also rear livestock while other individuals are in wage employment or run their own businesses. The region has a Poverty

level index of (61%) (Commission on revenue allocation, 2013). A high percentage of individuals in the region are Christians, while a smaller group follows traditional religious practices, few are Muslims. Individuals share common backgrounds and customs and the community is considered conservative/traditionalist, involved in practices such as polygamous practices (safe motherhood initiative, 2012). Most of the roads are either earth or gravel roads and have over the years received little or no maintenance hence making transportation expensive (Health policy project fact sheet, 2012).

Western Kenya has public, nongovernmental, faith based and private health facilities. Human resource for health was estimated at 37 nurses per 100, 000 people, 4 doctors per 100, 000 people and 5 clinical officers per 100,000 people (health policy project fact sheet 2012). Western Kenya is ranked the second highest in home deliveries at (73.3%), Only (25.3 %) of births take place at health facilities (KDHS, 2009).The major maternal health care challenges faced in the region include barriers to physical access where 34 % of the women take nearly one hour to reach the nearest health facility and the high cost of transport for those who opted to use faster means of transport. The non-financial obstacles for not seeking care included taking care of other family members and religious objections (6%), no perceived need (22%) and busy in the farm (3%) while other women (11%) reported poor treatment at the health facility by the providers.

1.3 Statement of the Problem

Health facility delivery is an important part of maternal health care that is aimed at ensuring proper medical attention during child delivery hence reducing the risks of complications that can cause morbidity and mortality to either the mother or the baby. However, only (43%) of births in Kenya take place at a health facility, while (56%) of births take place at home (KDHS, 2009). Disparities also exist between the proportions of births that take place at health facilities in the rural areas (35.4%) compared to urban areas (74.7%). The world health organization established that an estimated (70%) of maternal deaths could be avoided if only women delivered at a health facility with skilled birth attendance. Yet in western Kenya only (25.3%) of deliveries take place at a health facility as compared to (73.3%) of home deliveries. The safe motherhood initiative reported maternal and child health survival to be the major issue of concern in this region.

Previous studies by Ochako (2011) and Kitui *et al.*; (2013) attribute low health facility deliveries to demand side factors. The studies found place of residence, household wealth, education, ethnicity, use of antenatal care services and marital status as significant in influencing health facility delivery. Similar studies in Western Kenya by Yoshito *et al.*; (2011) reported findings on the key significant determinants to be, a mother's education level, a mother's health knowledge, ANC visits made by the mother, birth interval, economic status of the household, family size, household sanitation practices and proximity to the nearest health facility. These studies did not however consider the effects of culture, other socioeconomic activities and the rural urban divide on demand for health facility delivery. This study therefore aims to fill this gap by extending the analysis to include culture and economic activities in estimating demand for health facility delivery. This has not been done in the previous studies.

1.4 Objective of the study

The general objective is to identify factors that determine demand for health facility delivery in Western Kenya.

1.4.1 Specific objectives

1. To estimate the factors that determines demand for health facility delivery in Western Kenya.
2. To identify the factors influencing demand for health facility delivery in Western Kenya.
3. To draw conclusions and recommendations based on the study findings.

1.4.2 Research questions

1. What are the effects of the factors that determine demand for health facility delivery in Western Kenya?
2. What are the specific factors that influence demand for health facility delivery in Western Kenya?
3. What policy recommendations can be drawn from the findings of the study?

1.5 Significance of the study

According to the world health organization, Kenya is experiencing slow progress towards improvement of maternal health despite the various policies implemented on free maternal health care. These policies aim at improving health facility deliveries in the country yet, low facility deliveries are still being recorded across the country especially in rural areas. Western Kenya for instance, has only (25.3%) of health facility deliveries (KDHS, 2009) a proportion that is still low.

Past studies were carried out by Ochako (2011) and Stephenson (2006) to address this similar problem. The studies however, did not include a number of variables that could significantly influence health facility delivery in Western Kenya. This study is therefore aimed at contributing to the existing literature by estimating culture, the rural urban divide and other socioeconomic activities, on health facility delivery. The findings of this study will aim at influencing policies that need to be implemented to increase uptake of health facility delivery in Western Kenya.

CHAPTER 2: LITERATURE REVIEW

This chapter deals with review of related literature under the following sub-headings: theoretical literature review, empirical literature, empirical studies in other countries, empirical studies in Kenya, overview of the literature and conceptual framework of the study.

2.1 Theoretical literature review

Several theories confirm that demand for health care services by individuals is determined by socioeconomic and demographic factors. Grossman (1999) proposes that the demand for medical care and other health inputs is derived from the basic demand for health. Health is demanded by consumers as a consumption commodity because it directly satisfies their utility in that sick days are a source of disutility. Health is also demanded as an investment commodity because it determines the total amount of time available for market and nonmarket activities. An individual inherits an initial health stock that depreciates with age and can be increased by investment. Grossman further suggests that the quantity of health capital demanded rises as the wage rate, the higher a person's wage rate the greater is the value to him of an increase in healthy time, because more healthy time translates to earning more wages making people invest more in health. Education too increases the efficiency of production of health hence it reduces the quantity of inputs needed to produce a certain given amount of health capital. More educated people demand more health since they value their health more but demand less health care than the uneducated.

Andersen (1968) developed a health behavior model; he proposed that an individual will opt to use health services based on their location that can either be rural or urban. Individuals in urban areas would likely utilize health services more as compared to their rural counterparts. An individual's position within the social structure also determined their utilization of health services. Individuals better placed in the social structure in terms of higher education and good occupation would likely utilize health facilities more than those placed lower in the social structure. The beliefs an individual has on health services benefits. An individual who believes health services are useful for treatment will likely utilize those services. Other factors include enabling characteristics such as resources found within the family and the community.

Individuals of high economic status will likely utilize health services as compared to those of low economic status.

Young (1981) proposed a choice-making model based on his ethnographic studies of health services utilization in Mexico. This model incorporates four components essential to the individual's health service choice that include: perceptions of gravity, which he describes as the individual's perception and their social network's consideration of illness severity, if the illness is viewed as severe, individuals would tend to utilize health facilities otherwise they would not. Knowledge of a home treatment, if a person knows of a home remedy that is efficacious, they will be likely to utilize that treatment before utilizing a professional health care system; faith in remedy, incorporates the individual's belief of efficacy of treatment for the present illness. An individual will not utilize the treatment if they do not believe the treatment is effective; accessibility of treatment, in terms of individuals' evaluation of the cost of health services and their availability is a very important influence on health care utilization.

2.2 Empirical literature

This section reviews a number of past studies on determinants of demand for health facility delivery followed by an overview of the literature and the conceptual framework.

2.2.1 Empirical studies in other countries

Elo *et al.*; (1992) determined the role of maternal education on utilization of health facility delivery in Peru. He used the 1986 Peruvian Demographic and Health Survey data which he analysed using a logit model. The results of his study showed that mother's education was significant and had a strong positive association with health facility delivery. Similarly, the partner's education was significant and had a positive effect on health facility delivery. He explained that educated women may have more knowledge on importance of health facility delivery hence choosing to deliver their children at the health facility as compared to the uneducated women. Educated husbands too may be more open towards modern medicine and more aware of the benefits of skilled attendance and demand appropriate care for their wives as compared to uneducated men.

Muchabaiwa *et al.*; (2012) used a logistic model to estimate the determinants of health facility delivery in Zimbabwe, using data from the 2005/6 Zimbabwe Demographic Health Survey. He found out that the odds of delivery at a healthcare facility were higher among women who belonged to higher economic status that include the middle, richer and richest societies as compared to those from poorest family settings. Similarly, the odds of delivery were high among women residing in urban areas as compared to those in rural areas. Religion was also a strong determinant of health facility delivery. Women who believed in traditions and those who reported to be Protestants were less likely to use health facilities for delivery as compared to those from other religious affiliations. Women in polygamous households had reduced odds of health facility delivery as compared to those from non polygamous households. Women who cited distance as a big problem for getting to the nearest healthcare facility were less likely to give birth at health centers. Women who made at least one antenatal visit increased their odds of delivery at a health facility as compared to women who did not make any ANC visit.

Letamo *et al.*; (2003) conducted a study to investigate the effect of mother's age on demand for health facility delivery in Botswana. The information was obtained from women aged between 15-49 years, who had been pregnant in the five years prior to the survey. They analyzed data from the 1996 Botswana Family Health survey using simple cross-tabulations and logistic regression. The results showed that, age was a significant factor in determining health facility delivery. They further explained that the teenagers were less likely to deliver at a health facility compared to older women. A similar study was done by Magadi *et al.*; (2005) in 15 developing countries. They analyzed data from the Demographic and Health Survey using a logistic regression. The study examined adolescents' use of delivery care compared with use by older women. The results showed that women aged 18 years or younger were less likely to use delivery care than women aged 19-23 years of the same background characteristics.

Huda (2004) used a multinomial logistic model to examine the determinants of demand for health facility delivery among women in Khartoum. Time, distance and transportation cost had a significant negative effect on demand for health facility delivery. He further explained that the likelihood of choosing home over public delivery services increased with order of birth. The positive effects of household income were most important for those who preferred hospital over

home delivery. He also found out that an increase in demand for health facility delivery services was significantly determined by improvements in quality of health service delivery and qualifications of medical staff.

Navaneetham *et al.*; (2002) estimated the demand for maternal health care utilization in several states in India. Using Data from the National Family Health Survey (NFHS 1992-93), they analyzed using a logistic regression model. Results showed there were differences in utilization of maternal health care services among states. Positive significant effects were seen among women in states that had implemented maternal health care programs and those that provided information on importance, availability and accessibility of maternal health care services. The study also revealed that having access to information through modern media could increase women's knowledge about delivery risks and also help them to know the available maternal health care services hence making them demand more of these services.

Arston *et al.*; (2003) sought to examine effects of wanted pregnancy at conception on health facility delivery. The study used data from the Demographic and Health Survey in Peru. Children unwanted at conception were found to have significantly negative effects on health facility delivery than children wanted at birth. Birth order of the child was also determined in relation to health facility delivery. The results showed that birth order had stronger positive effects as compared to wanted pregnancy at conception. First born children were more likely to be delivered at a health facility as compared to children of higher order (second born and above) who showed negative effects on health facility delivery.

Afsana *et al.*; (2001) conducted a follow up study after three years of government health facilities being set up India for maternal deliveries. Information was obtained from women who gave birth in these health facilities. The results of the study showed that the number of deliveries at these health facilities was still low. Further, most of the women who decided to deliver at these health facilities was only due to complications encountered while giving birth at home. Even for these deliveries, they were unable to handle the complications due to inadequate equipment and low qualified staff to handle such cases. They identified the major issues that determined whether a mother would deliver at these health facilities to include the quality of

service provided at the health facility. Poor quality of health services resulted in fewer women willing to deliver at these health facilities. Bad past experiences with the health personnel also deterred women from delivering at these health facilities.

2.2.2 Empirical studies in Kenya

Ochako *et al.*; (2011) investigated utilization of maternal health services among young women in Kenya. He analyzed data from KDHS, 2003 using bivariate and multivariate logistic regression models. The significant factors that influenced use of health facility delivery identified in the study were place of residence, household wealth, education, and marital status. Urban young women were more likely to use skilled professional assistance compared to rural young women. He further explained that this may be due to advantages urban women have over their rural counterparts in terms of higher levels of maternal knowledge, better access to health services and health promotion programs, thus leaving out their rural counterparts. Educated young women were also better users of skilled professionals.

Ejik *et al.*; (2006) sought to find out the use of delivery care services in rural Kenya he established that more than half of the women delivered outside a health facility. Half of these women were assisted by untrained traditional birth attendants, laypersons while others received no assistance. They further identified the factors that were significantly associated with giving birth outside a health facility to include age, low socioeconomic status, a woman having less than 8 years of education and long distance to the health facility. Similar studies by Kitui *et al.*; (2013) sought to identify the factors influencing place of delivery for women in Kenya. They analyzed data from the Kenya demographic and health survey, 2008/2009 using multivariate analysis and found out that urban residence, household's economic status, education, utilization of antenatal care services, were significant factors that strongly determined where a woman chose to deliver.

Hodgkin *et al.*; (1996) developed a model to determine the distribution of place of delivery in rural area of Kenya. They analyzed data from the 1993 demographic health survey using descriptive and regression analysis. They found out the significant determinants of choosing home delivery over health facility delivery to include, the household's distance from the nearest

hospital, women were unlikely to utilize health facility delivery if the distance from the health facility was more than one hour walking distance. The family's socioeconomic status, women who were better placed economically tended to utilize health facility delivery more than their poor counterparts. Fewer women were also likely to utilize health facility delivery if there were any costs involved.

Fotso *et al.*; (2008) conducted a study to determine the use of maternal health services among young women in Kenya aged between 15-49 years. The data used in the study was collected through household interviews and a health facility survey. They analysed the data using a bivariate regression. The results of the analysis showed a strong positive relationship between high household wealth, antenatal care visits, higher mother's education, urban place of residence with the health facility delivery. They further explained that women who utilized antenatal care were likely to be informed of the complications at child birth and the benefits of health facility delivery during these ANC visits hence making them knowledgeable on maternal health care a factor that may greatly contribute to their increased demand for health facility delivery.

Stephenson (2006) examined the contextual influence on the use of health facilities in Kenya. He analyzed data from the KDHS, 2003 using a logit model and found out that female education was significant and positively related to seeking health facility delivery. Women who were educated were more likely to utilize health facility delivery compared to their uneducated counterparts. He further explained that the decision for a mother to attend school and later make such important life decision as health facility delivery extend beyond her choice or that of her household. He suggested that community play a major role in women's education through the value they place on women's education. A community that places high value on women's education implies more women will be educated. Education makes them knowledgeable and better decision makers in terms of maternal issues such as health facility delivery. On the other hand, communities that place low value on women's education leads to low level educated or uneducated young women who are poor decision makers in terms of maternal health care and subsequently reduces their demand for maternal health care services.

Similar studies by Yoshito *et al.*; (2011) on determinants of demand for facility delivery in rural Kenya using data collected by household surveys. They reported findings on the key determinants to be: maternal education level, maternal health knowledge, ANC visit, birth interval, socio-economic status of the household, family size, household sanitation practices and proximity of the nearest health facility. They explain that families with better sanitation practices were likely to utilize health facility delivery more than their counterparts with poor sanitation practices. They attributed this to the value these households placed on good health.

2.3 Overview of the Literature

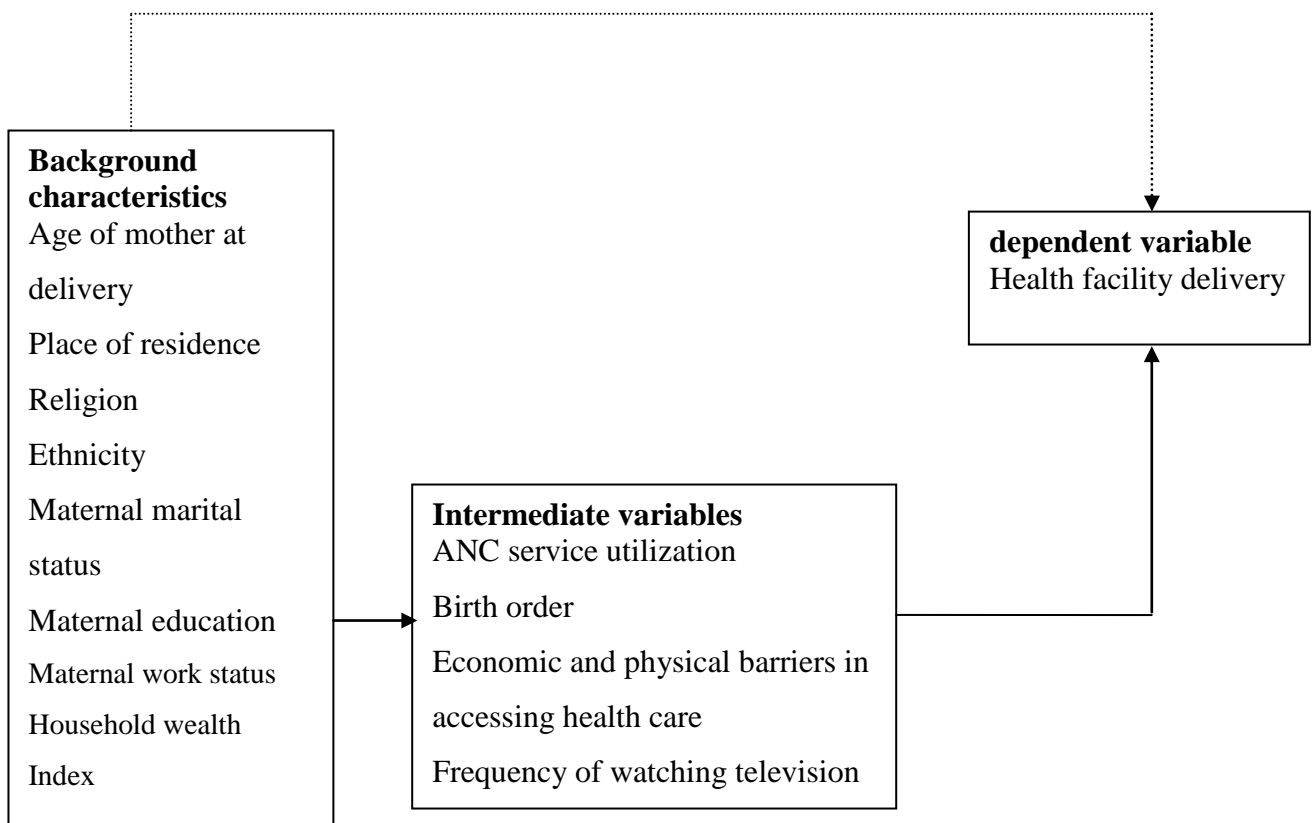
Previous studies indicate that the factors that determine health facility delivery include socio-cultural factors such as: mother's age at birth, mother's level of education and her partner's level of education. Women who believed in traditional practices and those in the protestant religious sect were less likely to utilize health facility delivery (Elo *et al.*; 1992; Yoshito *et al.*; 2011 & Fotso *et al.*; 2008). Economic accessibility was a significant determinant for health facility delivery. The family's level of income was positively related to health facility delivery. Physical accessibility factors that include place of residence would also determine a mother's decision to deliver at a health facility, urban women were observed to demand institution delivery care more than their rural counterparts other factors such as long distance to the health facility and high cost of transport were also negatively related to health facility delivery (Ochako *et al.*; 2011, Kitui *et al.*; 2013, &Fotso *et al.*; 2013).

The perceived benefit of health facility delivery also affects the mother's decision to deliver at a health facility. A mother who had bad previous experience at the health facility was observed to demand health facility less. Wanted pregnancy at conception would also necessitate the need to deliver at a health facility as compared to unwanted pregnancy; this was also similar among children born of higher birth order. Mothers who utilized antenatal care during pregnancy were likely to deliver at a health facility as compared to those who did not attend ANC. Women who listened to radio/watched TV or read newspaper were more likely to deliver at a health facility than those who did not (Afsana, 2001 & Navaneethm *et al.*; 2002).

Most studies used Multinomial logit and probit models. From the literature, very few studies in Kenya focus on rural areas none of which have been analyzed using KDHS data using appropriate econometric models, variables such as culture, wanted pregnancy and the rural divide have also not been estimated in these studies. This study therefore attempted to fill this gap.

2.4 Conceptual Framework

Figure 3: Conceptual framework



Source: WHO (2007)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Preamble

This chapter presents the analytical framework specification of the econometric model and variables definition.

3.2 Analytical Framework

Ajakaiye and Mwabu (2009) developed a maternal health care model from Grossman's demand for health model. Suppose a mother maximizes her utility function as illustrated below

$$U = U(M, H) \dots\dots\dots(1)$$

Where, M = A consumption good (i.e medication)

H = health status of a pregnant mother.

The mother's health production function is given below

$$H = F(Y, Z, M) \dots\dots\dots(2)$$

Where; Y =health related good i.e a woman exercising at the gym

Z =purchase market inputs i.e payment for health facility delivery

M =Consumption good i.e medication, Toxoid immunization and ANC visits

This utility shall be maximized by the woman subject to her budget constraint and health production function, given by;

$$I = YP_Y + ZP_Z + MP_M \dots\dots\dots(3)$$

Where; Y = health related good i.e payment for exercising at the gym

Z =purchased market inputs i.e payment to deliver at a health facility

M =Price of consumption goods i.e medication

Equations (1) (2) and (3) is used to develop the demand function for health facility delivery
 $D = f(P_m, P_Y, P_Z)$ (4)

The variables P_X, P_Y, P_Z as previously defined. This study predicts a relationship between the demand for health facility delivery and its determinants. From the economic theory the demand for goods or a services is mainly determined by it's price, the prices of other goods and services (substitutes or complements), income, tastes and preferences. Evidence from literature review also shows that the demand for health facility delivery is determined by maternal age (MA), number of children (NC), family size (FS), maternal education (ME), husband's education (HE). Perceived quality (PQ), waiting time (WT) and distance travelled (DH). The woman's demand function for health facility delivery from equation (4) can be modified to the function below:

$$X, = f(P1 P2, DH, FS, HE, MA, ME, NC, PQ, Y, WT) \dots\dots\dots(5)$$

Where X, is the health facility delivery, P1 is the price of health facility delivery P2 is the price of home delivery. Y is the household income.

3.3 Data analysis

Descriptive statistics and probit estimation of the model was done using stata. The Descriptive statistics was used in presenting information from the study in order to describe the characteristics of samples. This study used frequency, percentage, mean and standard deviation.

3.3.1 Econometric model

3.3.2 Probit Model

Health facility delivery was defined as a mother having delivered at a health facility or at home making health facility delivery a binary outcome that was analyzed by a binary probit model. The model has predictions which lie within the limiting interval (0 - 1).To interpret the probability of a mother delivering at a health facility given the explanatory variables we assumed that our observed binary variable y is generated by an unobserved variable y^* . Larger values of y^* are observed as $y = 1$ and smaller values of y are observed as $Y = 0$.

We also assumed that there exists a linear relationship between the latent variable y^* and the explanatory variables, the x 's illustrated by the structural model.

$$y_i = x_i + \varepsilon_i$$

The unobserved variable y^* is linked to the observed binary variable y_i by the equation;

$$y_i = \begin{cases} 1 & \text{if } y^* > \tau \\ 0 & \text{if } y^* \leq \tau \end{cases}$$

Where τ is the threshold beyond which a mother delivers at a health facility. y_i is the probability of delivering at a health facility given by 1 if a mother delivers at a health facility and 0 if otherwise (Long, 1997). Since this variable is unobserved the estimation of this model will be done using maximum likelihood estimation techniques (Gujurati, 2004).

The application of the binary probit model is known for issues of neglected heterogeneity, that results when the omitted variables are independent of the included variable leading to inconsistent coefficients, however because it is a non linear model we estimated the partial effects and not just the parameters . The binary probit model also has issues of continuous endogenous explanatory variables where one of the explanatory variables is related with the error term, a situation that was solved by using maximum likelihood estimation (Wooldridge, 2002).

3.4 Definition and measurement of variables

Table 2: Definition and Measurement of variables

VARIABLES	DEFINITION	EXPECTED SIGN
DEPENDENT		
Health facility delivery	Equal to 1 if delivered at a health facility Otherwise = 0	
Independent variable		
Mother's Education (ME)	Equals to 1 if mother had secondary education or higher otherwise = 0	Positive
Partners' Education (PE)	Equals to 1 if a partner had secondary education or higher otherwise = 0	positive
Household size (HS)	Equals to 1 if four individuals or more are in the household otherwise = 0	Negative
Birth order (BO)	Equals 1 if born first otherwise = 0	Positive
Mother's age at birth (MA)	Number of years the mother is at time of Birth	Negative
Antenatal care visits (ANC)	Equals 1 if made at least one ANC visit Otherwise = 0	Positive
Mass media exposure (MME)	Equals 1= if a woman listened to radio /watched TV/reads newspaper once a week otherwise = 0	Positive
Wealth quintile (WQ)	Equals 1 if Poor otherwise = 0	Negative
Religion	Equals 1 if protestant Otherwise = 0	Positive
Place of residence (PR)	Equals 1 if woman resided in urban area Otherwise = 0	Negative
Wanted pregnancy (WP)	Equals 1 if pregnancy is wanted Otherwise = 0	Indeterminate
Mother's source of income (occupation)	Equals 1 if employed Otherwise = 0	Positive
Culture	Equals 1 if woman is Luyha Otherwise = 0	Indeterminate
Socioeconomic activity	Equals 1 if practiced farming Otherwise = 0	Indeterminate

3.5 Data source

This study used data from Kenya Demographic and health survey KDHS (2009), a survey carried out by the Kenya national bureau of statistics after every five years to provide a national representation of households in Kenya. The 2009 Kenya demographic health survey collected data regionally hence enabling this study to be carried out in Western Kenya. Information collected in this survey includes the socioeconomic characteristics of households and maternal health care utilization. Our study population is comprised of women aged between 15 and 49 years who reported to have given birth in the past 5 years at the time of the survey. The total number of women interviewed in Kenya was 6079. This study shall use women interviewed in Western Kenya a total of 790 women.

CHAPTER FOUR: STUDY RESULTS

4.1 Introduction

This chapter presents analysis results of the study and discussion of the results.

4.2 Characteristics of the study population

4.2.1 Demographic profile

The research sought to find out the determinants of demand for health facility delivery in Western Kenya. Information obtained from region's demographic profile showed that there were 790 participants from Western Kenya in the KDHS (2009). The mean age of the women was 22.93 years (standard deviation 9.68). Majority of the women (80.9%) lived in the rural areas while the remaining (19.11%) lived in urban areas. This may be because most areas in Western Kenya are located in the rural areas. Respondents between the ages 20-24 were the most responsive perhaps because of their relatively large numbers as compared with the other age groups. Most women (83.29 %) were reported to be in union while the rest were either informally or never married as shown in table 3.

Table 3: Demographic profile of the sample population

	Freq	Percent	Mean	SD
Age group (years)				
15-19	45	5.70	.569	.231
20-24	232	29.37	.293	.455
25-29	201	25.44	.254	.435
30-34	156	19.75	.197	.398
35-39	93	11.77	.117	.322
40-44	54	6.84	.068	.252
45-49	9	1.14	.011	.106
Total	790	100		
Place of residence				
Urban	151	19.11	.191	.394
Rural	639	80.89	.808	.394
Total	790	100		
Marital status				
Never married	57	7.22	.072	.258
Married	658	83.29	.832	.373
Living together	10	1.27	.012	.111
Widowed	15	1.90	.018	.136
Divorced	3	0.38	.003	.061
Not living together	47	5.95	.059	.236
Total	790	100		

4.2.2 Socio-economic profile of the study population

Majority of the women and their partners had primary education (71.77%) and (58.66%) respectively. Most of the families belonged to the poorest (22.28%) and poorer (26.96%) wealth quintiles as indicated in table 4 below.

Table 4: Socio-economic profile of the study population

	Frequency	Percent	Mean	SD
Mother's education level				
No education	31	3.92	.039	.194
Primary education	567	71.77	.717	.450
Secondary education	162	20.51	.205	.404
Higher	30	3.80	.037	.191
Total	790	100		
Partner's education level				
No education	33	4.5	.045	.207
Primary education	430	58.66	.586	.492
Secondary education	234	31.92	.319	.466
Higher	36	4.91	.049	.216
Total	733	100		
Wealth quintile				
Poorest	176	22.28	.222	.416
Poorer	213	26.96	.269	.444
Middle	192	24.30	.243	.429
Richer	128	16.20	.162	.368
Richest	81	10.25	.102	.303
Total	790	100		

4.2.3 Health facility delivery and antenatal care visits

Total health facility deliveries were only (35.4%), majority of the deliveries were at home (74.7%). Most women (95.71%) had one or more ANC visit while only (4.28%) did not make any ANC visit. Total ANC visits did not add up to the number of women interviewed due to a number of missing variables as indicated in table 5.

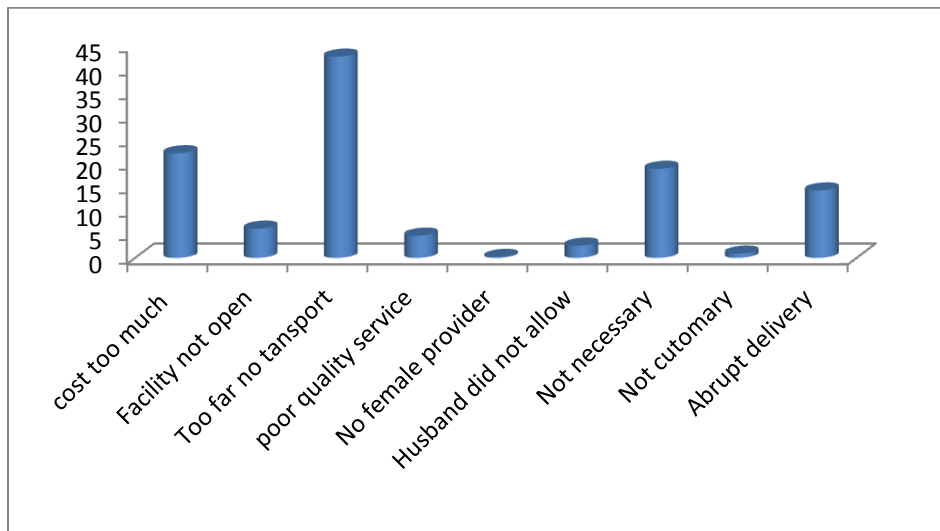
Table 5: Distribution by place of delivery

Place of Delivery	Freq	Percent	Mean	Sd
Respondent's home	447	56.58	.565	.495
Other home	92	11.65	.116	.320
Enroute to provider	8	1.01	.010	.100
Government hospital	113	14.30	.143	.350
Government health center	47	5.95	.059	.236
Government dispensary	12	1.52	.015	.122
Other public	1	0.13	.001	.035
Mission hospital/clinic	25	3.16	.031	.175
Private hospital/ clinic	34	4.30	.043	.203
Nursing/ maternity home	7	0.89	.008	.093
Other private medical	1	0.13	.001	.035
Other	3	0.38	.003	.615
Total	790	100.00		
Antenatal care visits				
No antenatal	22	4.25	.042	.202
At least one antenatal visit	492	95.72	.095	.202
Total	514	100.00		

Women who did not give birth at a health facility gave reasons such as high cost of delivery 22.2%, facility was not open 6.25%, too far to reach the health facility or lack of transport

42.7%, poor quality of service provided at the health facility 4.7%, no female provider 0.2%, husband did not allow 2.6%, It was not necessary to deliver at a health facility 18.9%, it was not customary to deliver at a health facility 0.9 % and abrupt delivery 14.3% as shown in figure 4

Figure 4: Reasons for not delivering at a health facility



Source (KDHS, 2009)

4.3 Empirical Results

The research sought to find out the determinants of demand for health facility delivery in Western Kenya and specifically to find out the effect of culture. The results from the probit model estimation showed that there was a strong significantly negative association between culture with demand for health facility delivery (-.650) ($p < 0.05$). Similar studies from the literature were done by (Muchabaiwa *et al*; 2012) who found culture to be inversely related to health facility delivery. This could be explained by the high value individuals in western Kenya place on culture hence tended to follow traditional practices more than modern medicine. The results of the study also showed that farming was significant and negatively associated with health facility delivery (-0.116) ($p < 0.1$). This might be because women were not ready to take time off from farming activities. It could also be that most of the women practiced small scale farming which did not generate sufficient income which limited their ability to pay for costs related to health facility delivery.

The study also sought to find out the effect of rural urban divide on demand for health facility delivery in Western Kenya. The results showed that Place of residence is a significant predictor of health facility delivery. Living in rural areas is negatively associated (-0.545) with health facility delivery ($p < 0.05$). This is consistent with the findings of (Ochako, 2011, Muchabaiwa *et al.*; 2012 and Fotso *et al.*; 2008) who found an inverse relationship between living in the rural area and health facility delivery. This could be explained by better and accessible health facilities in the urban areas as compared to rural areas. Given these advantages, it would therefore be easier for women staying in urban areas to access health facility delivery compared to their rural counterparts.

Mother's employment had a positive relationship with health facility delivery but not significant (0.074) ($p < 0.05$). Mothers who were employed demanded health facility delivery more than their unemployed counterparts. This may be attributed to their ability to pay for costs related to health facility delivery. The study was however not significant, that could be because the controlling variable farming might have had stronger effects on facility delivery than employment.

Higher mother's age at birth showed a positive association with health facility delivery (0.0007), ($p < 0.05$) but not significant. This finding is similar to the study by (Magadi, 2005) who found a positive relationship between women who were older and their demand for health facility delivery. This might be because older women were likely to be more experienced and knowledgeable on issues relating to maternal health care as compared to younger women. Household size was negatively associated with health facility delivery with a significant coefficient of (-0.013) ($p < 0.05$). The finding is in agreement with the results by (Yoshito *et al.*; 2011) who reported that large households had a negative relationship with delivering at a health facility. This could be explained by the economic burden that accompanies such large families hence limiting their ability to pay for costs related to health facility delivery.

Secondary education or higher for the mother and partner had a significant and positive effect on health facility delivery (0.687) and (0.508) ($p < 0.05$) respectively. This result is consistent with

the findings by (Stephenson *et al.*; 2006) that showed a positive relationship between health facility delivery and female education. (Elo,1992) also found a positive relationship between partner's education and health facility delivery. The mother's or partner's with high education demanded health facility delivery more. This could be attributed to the fact that women who are educated were more knowledgeable on importance of health facility delivery, making them more likely to demand for these services. Educated men too understood the benefits of health facility delivery and were more likely to support their wives in demanding for these services as compared to their uneducated counterparts.

Individuals in the poor wealth quintile showed a strong negative association with health facility delivery (-0.318) ($p < 0.05$). This result was consistent with the findings of (Muchabaiwa *et al.*; 2012) who established that there was a negative association between individuals in the poor wealth quintile with health facility delivery. This could be explained by their inability to pay for the costs related to delivering at a health facility. Women who belonged to the protestant group were negatively associated with health facility delivery (-0.490) ($p < 0.1$). The results were significant. This is in line with the study by (Stephenson *et al.*; 2006) who found out that women who were protestants had a significantly inverse relationship with delivering at a health facility as compared to women from other religious affiliations. This may be because a majority of protestants may believe in faith healing more than modern medicine.

Mass media exposure was insignificant and had a positive relationship with delivering at a health facility (0.127) ($p < 0.010$). This concurs with the results by (Navaneetham, 2002) who found access to information to have a positive relationship with health facility delivery. This was because through media, mothers were informed on maternal health care services. The variable was however not significant. This might be attributed to the controlling variable ANC that had a stronger relationship with health facility delivery. This might be because ANC visits provided more comprehensive information on maternal health care and is more interactive as compared to Mass media.

ANC attendance had a strong positive association with mothers delivery at health facility (0.937) ($p < 0.1$), this is in line with the findings of the study by (Yoshito *et al.*; 2011, Fotso,

2008) who found out that attending ANC increased the demand for health facility delivery. This could be explained by the information on maternal health care received by the mothers during these visits. Delivery of first born children was positively associated with health facility delivery (0.54) ($p < 0.1$). This is consistent with the results by (Huda, 2004) who reported a positive association between first born children with health facility delivery. This might be explained by the high value placed to the birth of first children as compared to subsequent births.

Women who wanted the pregnancy at conception were positively associated with health facility delivery (0.099) ($p < 0.05$), although the variable was not significant. This was consistent with the findings from the study by (Arston, 2003) who found children wanted at conception to have significantly positive effects on health facility delivery. This might be because these women were better prepared and also felt the need to deliver at a hospital if the child was wanted. The variable was however not significant probably because of the strong relationship the controlling variable ANC visits had on delivering at a health facility. Having a wanted pregnancy was not enough to make a mother want to deliver at a health facility. However, making the ANC visits by the mother provided her an opportunity to obtain information on importance of health facility delivery. The results are as shown in table 6.

Table 6: Probit Estimation of the model

Background characteristics	Coef.	Z
Mothers education (1= Secondary or higher)	0.687	4.17**
Father's education (1=Secondary or higher)	0.508	3.41**
Household size	-0.013	-2.84**
Birth order (1= firstborn)	0.548	2.67**
Mother's age	0.002	0.20
Antenatal care visits (1=ANC)	0.937	1.67*
Protestant	-0.490	-1.90*
Place of residence (1=rural)	-0.545	-2.92**
Poor (1=poor & poorest)	-0.318	-2.05**
Wanted pregnancy (1=wanted pregnancy)	0.099	0.70
Mass media exposure (1=exposed to media)	0.127	0.56
Tribe	-0.650	-4.66**
Occupation(1= employed)	0.0745	0.53
Occupation (1= practice agriculture)	-0.116	-0.75*
_cons	-0.380	-0.47

**p values <0.05; *p values<0.10

4.3.1 Marginal Effects

Results from the marginal effects estimation indicates that the probability of health facility delivery was reduced by (0.24) ($p<0.05$) among individuals who stated to be from the Luyha tribe, holding other factors constant. Similar studies from the literature were done by (Muchabaiwa *et al.*; 2012) who found culture to be inversely related to health facility delivery. This could be explained by the very high value individuals in western Kenya place on culture hence tended to follow traditional practices more than modern medicine. The results also show that the probability of health facility delivery is reduced by 0.146 ($p< 0.1$) for women who practiced agriculture as an economic activity, holding other factors constant. The reason for the

inverse relationship could be that most women were not ready to take time off from farming activities. It could also be that most of the women practiced small scale farming which did not generate sufficient income which limited their ability to pay for costs related to health facility delivery.

Women living in the rural areas had a significantly lower probability of delivering at a health facility by (-0.152) ($p < 0.05$) holding the other factors constant. This result is consistent with the literature by (Ochako, 2011) that rural women were less likely to demand health facility delivery compared to their urban counterparts he further explained that this could be due to the advantages urban women have over their rural counterparts. Urban areas provide ease of access to health services, better infrastructure and exposure to health promotion programs that only use urban focused mass media thus leaving out on their rural counterparts.

The study also found out that the probability of delivering at a health facility was increased among older women by (0.0002) ($p < 0.05$) as compared to younger women the result was however not significant .This is consistent with the finding of the study by (Magadi, 2005) who established that women who gave birth at an advanced age had a higher probability of delivering at a health facility compared to their younger counterparts. She further explained that most young women were probably were first time mothers who might not have any knowledge on maternal health care services as compared to older mothers. (Ochako, 2011) explains that the results may not be significant because women between the ages of 15 to 24 may not have any major differences in terms of health facility delivery.

A mother having secondary education or higher increased the probability of delivering at health facility by (0.192) ($p < 0.05$) holding the other factors constant. Fathers who had secondary education or higher increased the probability of their wives delivering at a health facility by (0.142) holding other factors constant ($p < 0.05$) .This finding is similar with the study done by (Stephenson *et al*; 2006 and Elo, 1992). That educated women are more likely to deliver at a health facility because schooling improves a woman's knowledge on the importance of seeking health facility delivery. It also increases their autonomy in terms of decision making maternal on health care issues. Wives whose partners were educated were more likely to utilize health facility

delivery because educated husbands may be more open towards modern medicine and aware of the benefits of health facility delivery.

The effect of wealth quintile and health facility delivery was significant and very strong. Mothers from households in the poor wealth quintile significantly reduced their probability of a health facility delivery by (-0.088) ($p < 0.05$) holding other factors constant. This is consistent with the study findings by (Muchabaiwa *et al*; 2012) who found out that the probability of delivering at a health facility was reduced among women who belonged in poor wealth quintile as compared to those from the rich wealth quintile. This is because women in the rich wealth quintile had the ability to pay for the costs related to facility delivery compared to their poor counterparts.

The probability of delivering at health facility by women in the protestant sect was significantly reduced by (-0.137) ($p < 0.1$) as compared to women in the other religious sects holding the other factors constant. This result is similar with the studies by (Stephenson 2006, (Muchabaiwa *et al*; 2012) who found out that protestant women were less likely to delivery at a health facility as compared to other religious affiliations because women in the protestant religious group believed in faith healing more than mordern medicine.

Exposure to media insignificantly increased the probability of health facility delivery by (0.035) ($P < 0.05$) holding the other factors constant. This result is consistent with the study in the literature by (Navaneetham, 2002) who found access to information to increase the probability of a woman delivering at a health facility. Media exposure provides information on importance, availability and accessibility of maternal health care services. The result was however not significant because of the controlling variable ANC that had a stronger relationship to health facility delivery. This might be because ANC visits provided more comprehensive information on maternal health care and is more interactive as compared to Mass media.

Attending the ANC significantly increases the probability of a mother delivering at a health health facility by (0.261), holding other factors constant ($p < 0.05$) . This is similar with the study by (Yoshito *et al*.; 2011, Fotso *et al*.; 2008) who found out that attending ANC increased the probability of health facility delivery. This is because during ANC visits a mother is provided

with maternal health care information. Delivery of first born children significantly increases the probability of a woman delivering at a health facility by (0.153) ($p < 0.05$) holding the other factors constant. This is consistent with the results of the study by (Huda, 2004) who found out that the probability of choosing home over public facilities was higher among first born children that may be because women hold high value to their first pregnancies.

Women who wanted the pregnancy at the time of the conception insignificantly increased their probability of health facility delivery by (0.027) ($p < 0.05$) holding the other factors constant. This is consistent with the findings from the study by (Arston, 2003) who found out that children wanted at conception were likely to be delivered at a health facility as compared to children who were unwanted. He attributes this to the fact that mothers felt the need to deliver at the hospital with a wanted child as compared to an unwanted child. It may also be that the mother was more prepared for a wanted child as compared to an unwanted child at conception.

Women in employment increased their probability of health facility delivery by (0.745) ($p < 0.05$) holding the other factors constant. This is similar with the study by (Fotso *et al.*; 2008). Who found out that employed women were more likely to use health facility delivery as compared to their unemployed counterparts. This could be that employed women received wages that enabled their ability to pay for costs related to health facility delivery. The results are shown in table 7.

Table 7: Marginal Effects Estimation of the model

Background characteristics	Coefficient	Z	P> z
Mother's education (1=Secondary education or higher)	0.192	4.41**	0.000
Partner's education (1=Secondary education or higher)	0.141	3.53**	0.000
Household size	-0.003	-2.91**	0.004
Birth order (1= firstborn)	0.153	2.73**	0.006
Mother's age	0.0002	0.20	0.838
Antenatal care visits (1=ANC visit)	0.261	1.68*	0.093
Protestant (1=protestant)	-0.137	-1.92*	0.055
Place of residence (1= rural)	-0.152	-3.00**	0.003
Poor (1= poor, 1==poorest)	-0.088	-2.07**	0.038
Pregnancy wanted (1= wanted pregnancy)	0.027	0.70	0.483
Tribe	-0.249	-4.87**	0.000
Mass media exposure (1=exposed to media)	0.035	0.56	0.574
Mother's occupation (1= Agriculture)	-0.146	0.75	0.045
Mothers' occupation(1= employed)	0.020	0.53	0.598

**p values <0.05; *p values<0.10

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

This chapter presents conclusions drawn from the study, the recommendations made and area for further research.

5.1 Summary

This study showed that Majority of the women (80.9%) lived in rural areas of Western Kenya, only (71.77%) had primary education. Similarly, most of their partners had only primary education (58.66%). Most of the families belonged to the poor (46.24%) wealth quintile. Majority of the deliveries were at home (74.7%). (95.71%) of the women made at least one or more ANC visit while (4.28%) did not make any ANC visit (22.2%) of women cited distance or lack of transport (42.7%), as the reason why they did not deliver at a health facility.

5.2 Conclusions

This study confirms that culture in Western Kenya is indeed a strong negative determinant of health facility delivery. Farming which is the region's main economic activity was also significant and negatively associated with health facility delivery. The rural urban divide was a strong negative determinant for health facility delivery .The study also identified factors that significantly increased the probability of health facility delivery to include having secondary education or higher by a woman or her partner, making antenatal visits, children born first by the mother. While mass media exposure, mothers' age at birth and a wanted pregnancy at conception insignificantly increased the probability of health facility delivery. Factors that significantly reduced the probability of health facility delivery included being in the poor wealth quintiles and if a woman belonged to the protestant church.

5.3 Recommendations

Policy recommendations from the findings of this study include; strengthening of policies focused on the demand side of maternal health care financing like the OBA project that provides subsidies. The ministry of agriculture should introduce farming activities that promote value chain addition for more economic gains that would help in the reduction of the poverty levels in Western Kenya. Mechanized methods of farming should also be provided at lower or no costs to enable mothers attend to other activities.

The ministry of education should strengthen policies aimed at promoting girl child education in Western Kenya. Education provides knowledge on health ultimately influencing a woman's decision making on health issues in later years.

The Ministry of Health at the county level should utilize the services of the community health workers to emphasize on pregnancy complications during delivery to women. This could be easily achieved through available and frequently attended forums like church meetings, barazas and self help groups. Further any cultural misconceptions that may hinder health facility delivery should also be addressed during such meetings. More hospitals should also be constructed in each county to promote access to health facilities.

5.4 Area for further Research

Determinants of demand for health facility delivery are key factors in the reduction of maternal mortalities in Kenya, given the low demand of health facility delivery in the rural areas as compared to the urban areas (KDHS, 2009). More studies should therefore be conducted with a focus on rural areas and using appropriate econometric models. Variables that were not captured in the KDHS 1989-2009 like quality of service delivery should also be included in future studies to facilitate the development and implementation of more conclusive policies

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