THE EFFECT OF FEMALE LABOR-FORCE PARTICIPATION ON FERTILITY: EVIDENCE FROM KENYA

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DECLARATION

I declare that his research paper is my original work. It is submitted for the degree of Master of Arts in Population Studies at the University of Nairobi. To the best of my knowledge, it has not been submitted before in part or in full for examination or the award of any degree or examination in this or any other university or institution.

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DEDICATION

I dedicate this research project to my late daughter Chantal Amani.

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ABSTRACT

Researchers, policy makers and development partners have increasingly advocated female labor-force participation as a driver of fertility transition, a crucial factor in simulation models for assessing fertility reduction scenarios and a major ingredient for achieving the window of opportunity for economic growth within which developing countries like Kenya can harness the demographic dividend. The objective of this research project was to analyze the effect of female labor-force participation on the fertility outcomes of Kenyan women of reproductive age. The study utilized cross-sectional representative data from the Kenya Demographic and Health Survey of 2014. The main method of data analysis was descriptive statistics and logistic regression. The results showed that female labor-force participation had a negative effect on fertility. The main policy implications is that government should prioritize policies and investments to improve women's human capital and prioritize job creation

Keywords: Fertility transition, female labor-force participation, population age-structure, demographic dividend

CHAPTER ONE: INTRODUCTION

1.0 Background

Fertility trends reveal that Sub Saharan Africa is experiencing a fertility transition that is characterized by slow declines in fertility rates with fertility stalls and reversals in some countries (Bongaarts & Casterlin, 2013; Garland, 2016). It is apparent that the pace and magnitude of Africa's fertility transition deviates significantly from the patterns observed in other regions of the world (Bongaarts & Casterline 2013; Howse, 2015; Shapiro & Hinde 2017). This unique and unpredictable fertility transition has caused concern and sparked a renewed interest in the variations, trends and factors influencing fertility transitions in sub Saharan Africa (SSA) by researchers, policy makers and development partners because these ultimately have an impact on the population age structure, dependency burden and economic growth of the region (Eastwood & Lipton, 2011). Bloom et al. (2009), Gribble (2003) and Mason (2012), have argued that a significant portion of the economic growth witnessed in the economic Tigers in East Asia was due to the region's declining fertility rates and the large pool of well-trained and healthy labor-force comprising of young people that came of working age during the 1980s. This phenomenon described as the demographic dividend, is the window of opportunity for accelerated economic growth brought about by a reduction in a populations's fertility and mortality rates and a change in the populations' age-structure comprising of less young dependents compared to the working-age population (Bloom, 1998; Mason, 2001). Despite having gained currency in demographic literature, the demographic dividend, is not automatic (Gribble, 2012).

Many countries in Latin America also went through the same transition to lower fertility regimes and lower dependency ratios during the same time-period as the Asian Tigers but failed to achieve the same rapid growth (World Bank, 2012). Similarly, Kenya's fertility rate has been declining and for a long time the working-age group has dominated the country's population, but this has not translated into the benefits witnessed among the Asian Tigers. Gribble (2012) and Olaniyan (2012) cited three crucial ingredients whose conditions developing countries like Kenya that are undergoing the demographic transition have to fulfill if they are to reap the demographic dividend. These are; one, rapid decline in fertility rates two, a significant increase in labor productivity of the labor-force. Lastly, there has to be a significant effective participation of the countries' working age population

in the labor market (Bloom et al., 2009; Eastwood & Lipton, 2011). These findings are significant and of interest to demographers in light of the unique fertility transition witnessed in SSA because, FLFP was a crucial factor in the completion of the fertility transition in industrialized countries (Lim, 2017). Research has established that women's labor-force behavior plays a central role in determining fertility intentions, changes in fertility change and even the fertility variation within countries and between regions (Rindfuss & Brewster 1996 and Shockaert, 2005). These findings correspond with earlier predictions made by scholars of economics of fertility Becker and Lewis (1973) and Caldwell (1982), that an increase in women's participation in labor-markets as well as their increased human capital would cause declines in fertility rates (Bloom et al., 2009; Canning, 2014; Rehar, 2011). Whereas increased educational attainment has been associated with, decreased fertility rates, FLFP has shown mixed results and few studies have provided well-founded evidence of how it influences fertility outcomes in the SSA. Increasingly, researchers have included FLFP as a crucial factor in simulation models for assessing fertility reduction scenarios (Canning, 2015), and ultimately, the trajectory that fertility decline in SSA takes will have a huge impact on the continent and the rest of the world Lutz et al., (2019). It is therefore important to gain an understanding of the role FLFP plays in influencing fertility outcomes. The aim of this research project is to contribute to the growing discourse on SSA's fertility transition and prospects for a demographic dividend by analyzing the effect labor-force participation has on the fertility outcomes of women of reproductive age in Kenya.

1.1.1 Operational Definition of Key Concepts

Fertility

As one of the principal components of change in population is fertility. It directly affects the composition, structure and size of a population. Coal (1973) describes human fertility as composed of two parts, the biological and the social. The human capacity to reproduce is biological (Coal, 1973). Whether or not a woman has children and how many children she has, is determined by the social component (Weeks, 2012).

Fertility transition

The fertility transition occurs alongside the broader demographic transition. It is a process characterized by a country's population shifting from high fertility rates to low fertility regime. According to Smith et al. (2009), the fertility transition triggers shifts in women's childbearing patterns, which may include delay in childbearing to older ages, spacing of births and earlier termination of childbearing. Lloyd and Ivanov (1998) opine that one of the main characteristic of this process is the change in fertility behavior from a situation where women and couples exercise little or no control over their reproduction to one whereby women and couples are deliberate in their attempt to control their reproduction. A distinction is made that although women may have knowledge of and manage appropriate techniques of controlling their fertility, control of fertility is not synonymous with limiting fertility (Weeks, 2012). Meaning, women may desire to control their fertility, by timing and spacing but not necessarily limiting it. Of interest and relevance to this study, is that the decline in fertility in sub Saharan countries has happened in a span of time when younger women in the reproductive ages constitute a significant proportion of not just the total population of these countries, but, more importantly, the working age population (Weeks, 2012). These cohorts of women have a growing orientation towards labor markets and individual careers that shape their fertility decisions (Sroebanue et al., 2013). These transformations will have significant implications for social and economic development, gender relations and equality (Sroebanue et al., 2013).

Female Labor-Force Participation

The International Labor Organization [ILO] (2016) defines labor force participation as the proportion of the working-age population of a country available for production of goods and services within a specified time-frame. An individual in the labor force is one who is somehow engaged in a form of economic activity – either working or looking for work. The labor force is therefore the sum of employment and unemployment. The Female Labor Force Participation Rate (FLFPR) as defined by the ILO is the measure of the share of the female population of a country aged between 15-64 years actively involved in the labor market through actual work, or looking for work (ILO, 2016). In a period spanning twenty years, more than 307 million women have joined the labor market globally (IMF, 2017).

Women account for only 39.2 per cent of the global labor-force. Whereas emerging and developing economies experienced rapid economic growth, this did not reflect in FLFPR which dropped to 48.5 per cent in 2018 from 51.3 per cent in 1998 (Gallup, 2017) According to the World Bank (2015), the average gender participation gap declined by 6 percent between 1995 and 2012. In a majority of countries around the world, FLFPR are still lower than participation rates of their male counterparts (ILO, 2016). According to projections by (ILO, 2017) FLFPR are set to continue declining over the next decade and hit a low of 45.9 per cent in 2030. A study by ILO-UN (2019) found prime-age women to have an FLFPR of 52 per cent compared to their male counterparts at 95 per cent, representing a gender gap of 43 percentage points in the labor force.

1.1.2 The Kenyan Context

Population Size and Distribution

According to KNBS (2019), the estimated population of Kenya was about at 47.6 million in the 2019 census compared to 37.9 million as per the 2009 census. This represents an inter-censal population growth-rate of 2.2 per cent compared to 2.9 per cent in 2009 (KNBS, 2019). According to UNDESA (2017) projections, the country's population is set to hit the 52 million mark in 2020 and about 65 million by 2030. Young people dominate the population because of population growth rates over the years (NCPD, 2017).

Figure 1.1: Population of Kenya, 1969-2019
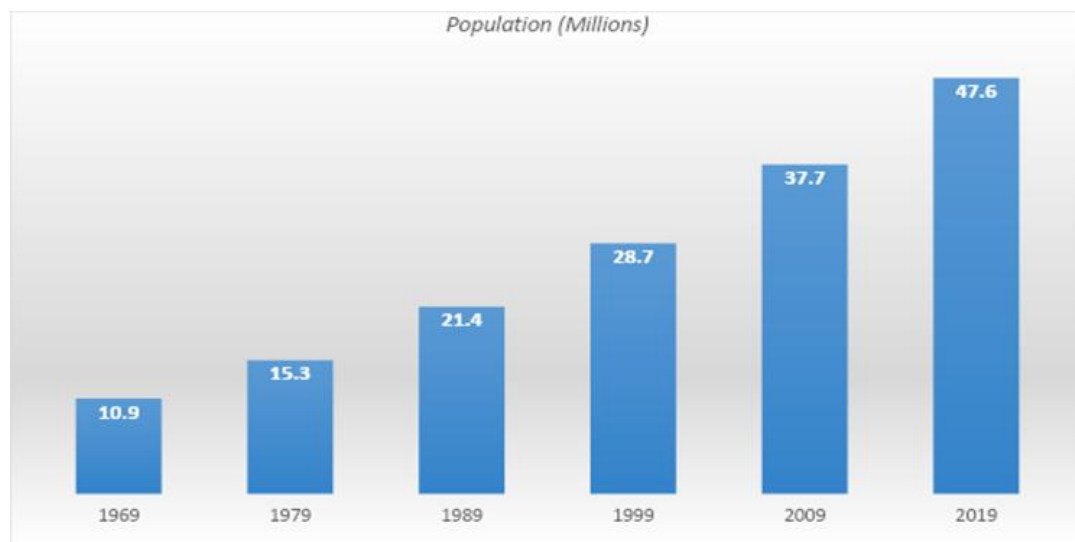
Source: Author's compilation from KNBS 2020

The dramatic transformation of the age-sex structure of a countries' population is one of the most notable repercussions of the demographic transition. Mason (2011) describes this transformation as it progresses in stages, starting with a drop in the proportion of the population aged 15 years and below and a simultaneous up-surge in the proportion of the age bracket 15 to 24 years. The result is a rise in the proportion of the working-age bracket aged between 15 and 64 years with a corresponding reduction in the dependency burden ratio (Mason, 2011). The population aged 24 years and below constitutes about 60 per cent of the Kenyan population while 21 per cent are youth aged between 15-24 years (KNBS, 2019). This structure is due to population growth rates over the years. The elderly – 60 years and above – make up about 6 per cent of Kenya's total population (KNBS, 2019). Kenya has experienced a gradual decline in the structure of the youthful population aged 15 years and below while that of the working population aged 15-64 years has been increasing. Between 1969 and 2016, the proportion of Kenya's population aged 15 years and below declined from 46.3 percentage points to 41 per cent while the proportion in the working age groups 15-64 rose from 46.3 percent to 53 percent. Lastly, NCPD (2017) projected that the population aged less than 15 years will decline further to 27.5 percent by 2050, while the working age population will increase to 61 percent.

Figure 1.2: Kenya's Population Pyramid 2019
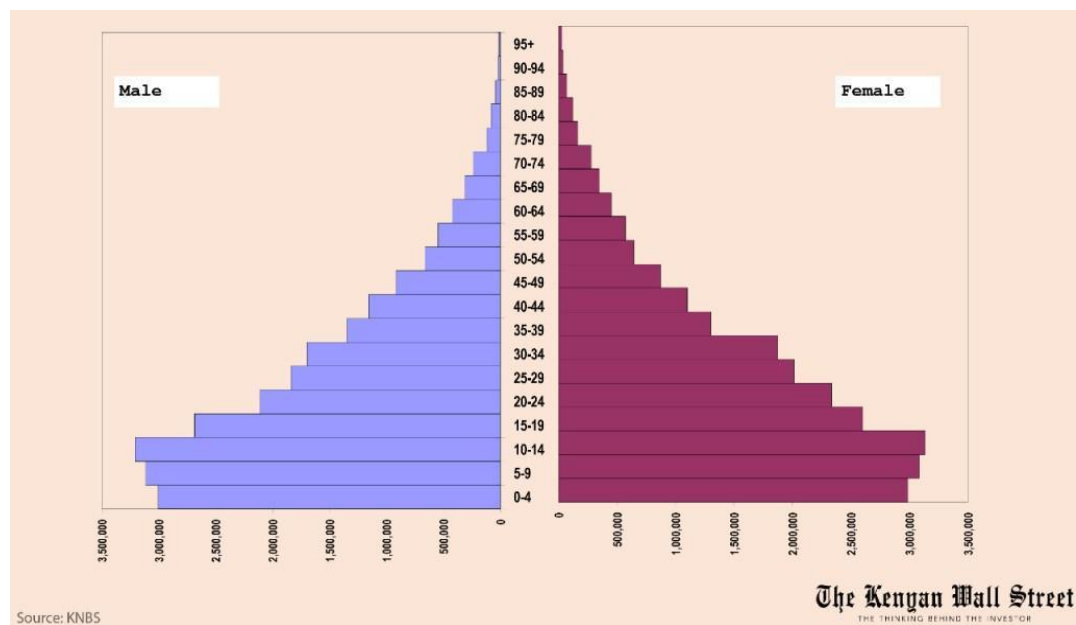
Source: The Kenyan Wall Street

According to Bloom (2009), Gribble (2012) and Mason (2012), this kind of population age-sex structure is potentially advantageous to the economic advancement of a country. They advance the argument that fertility decline, coupled with an up-surge in the proportion of the working-age band, experienced during the later stages of the demographic transition, presents countries with a window of opportunity for socio-economic growth.

Figure 1.3: Kenya Urban Population Pyramid, 2019
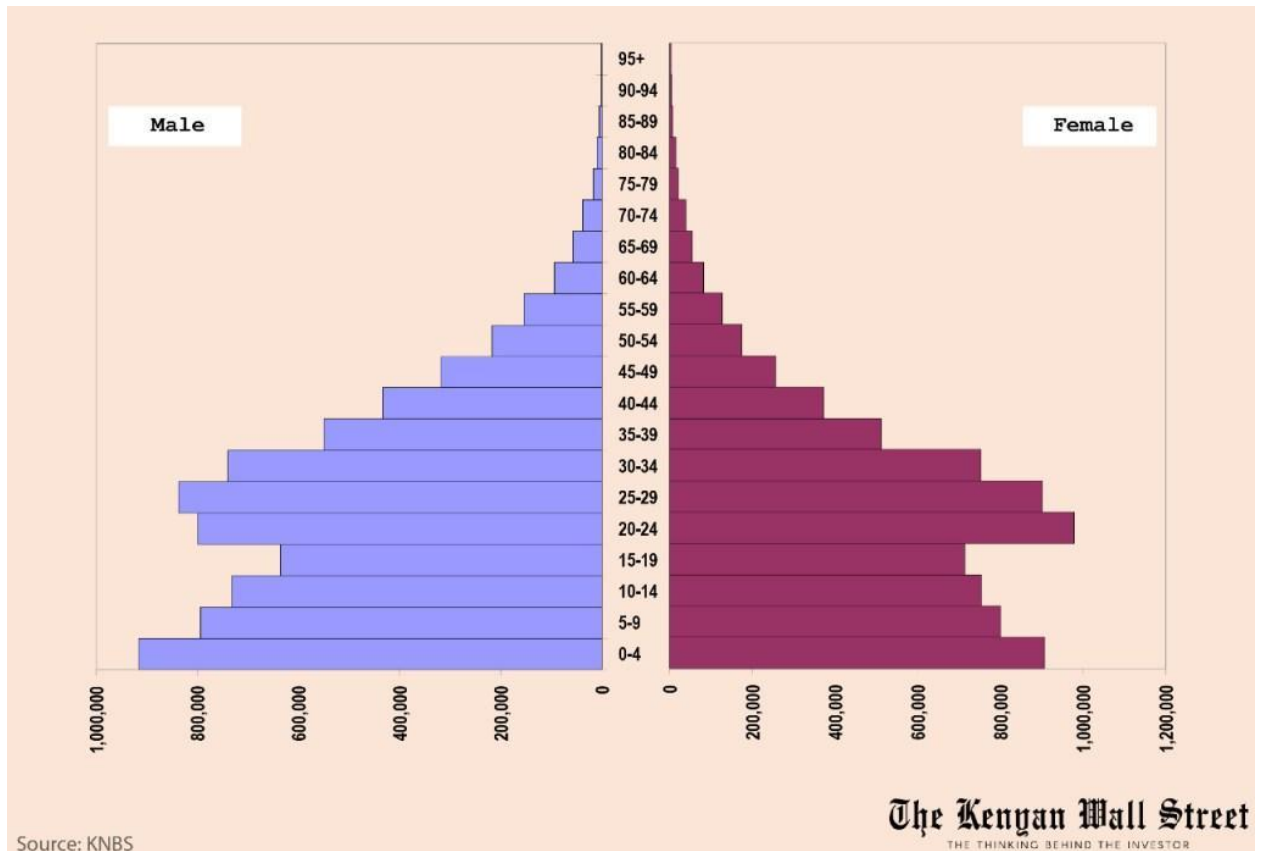
Source: The Kenyan Wall Street

Figure 1.4: Kenya Rural Population Pyramid, 2019

Source: KNBS
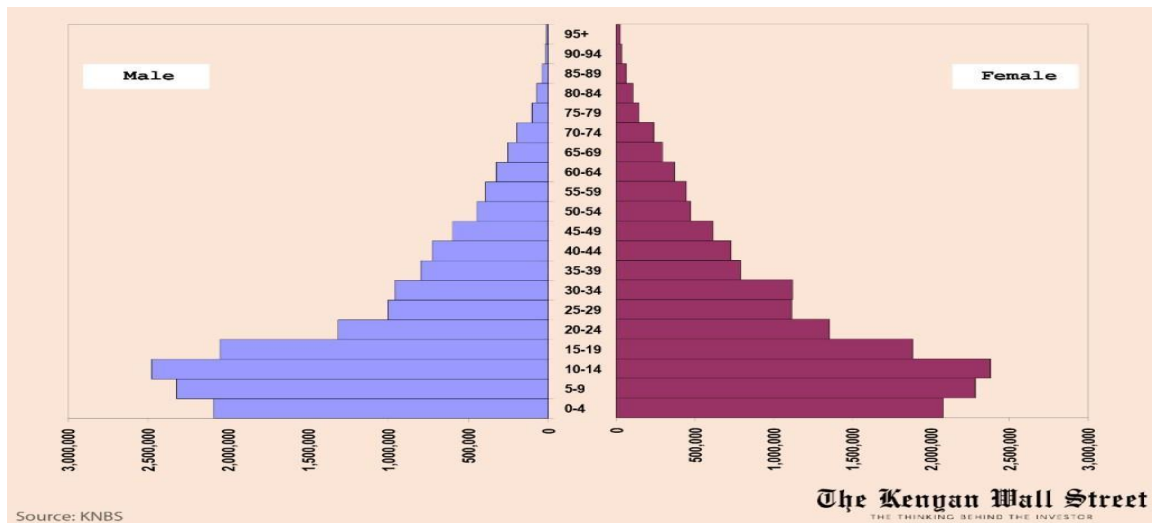
Fertility Levels and Trends:

Fertility is the most influential determinant of population change in Kenya. The total number of living children a woman would give birth to if she delivered according to the prevailing age-specific fertility rates all through the childbearing period is referred to as the Total Fertility Rate (TFR) (KNBS & ICF Macro 2015, page 65). According to the findings of the first World Fertility Survey (WFS), Kenya had a TFR of eight children per woman, one of the highest recorded in the world (WFS, 1977). Commentators attributed this high fertility rate to the good economic conditions that prevailed in the post-colonial 1970s. In the early 1980s, there was sustained local and international support for rigorous family planning programs that led to increased uptake of contraception. This sustained campaign led to declines in fertility rates from 8.1 children per woman, to 7.7 children per woman in the mid-1980s. There was a further declined in TFR to 6.7 children per woman by 1989, 5.4 children per woman in 1993, and 4.7 by the end of the 1990s. This dramatic decline in fertility was attributed to family planning uptake, coupled with improvements in child survival rates, socioeconomic developments and education attainment. In the late 1990's, Kenya experienced an unprecedented stall in fertility decline (Bongaarts, 2006) with TFR rising from 4.7 to 4.9 children per woman in 2003. This phenomenon was explained by a shift in focus from family planning to HIV/AIDS both nationally and internationally Central Bureau of Statistics (CBS) and ORC Macro (2004). More recently, a study by Lutz et. Al. (2019) revealed that the stalls and reversals in fertility decline in

SSA could be explained by disruptions in the gains made in women's education. After this stall, TFR then declined to 4.6 children per woman towards the end of the 2000s (KNBS and ICF Macro, 2010). In 2014, TFR stood at 3.9 children per woman (KNBS and ICF Macro, 2015). One of the targets of Kenya's population policy is to bring the TFR to 2.6 children per from by 2030 down from the 4.6 children per woman recorded in the 2009 census. (Republic of Kenya, 2012). An understanding of the factors influencing these variations and trends in the TFR is crucial in order to achieve the targets of the population policy.

Figure 1.5: Trends in Total Fertility Rate, 1978-2014
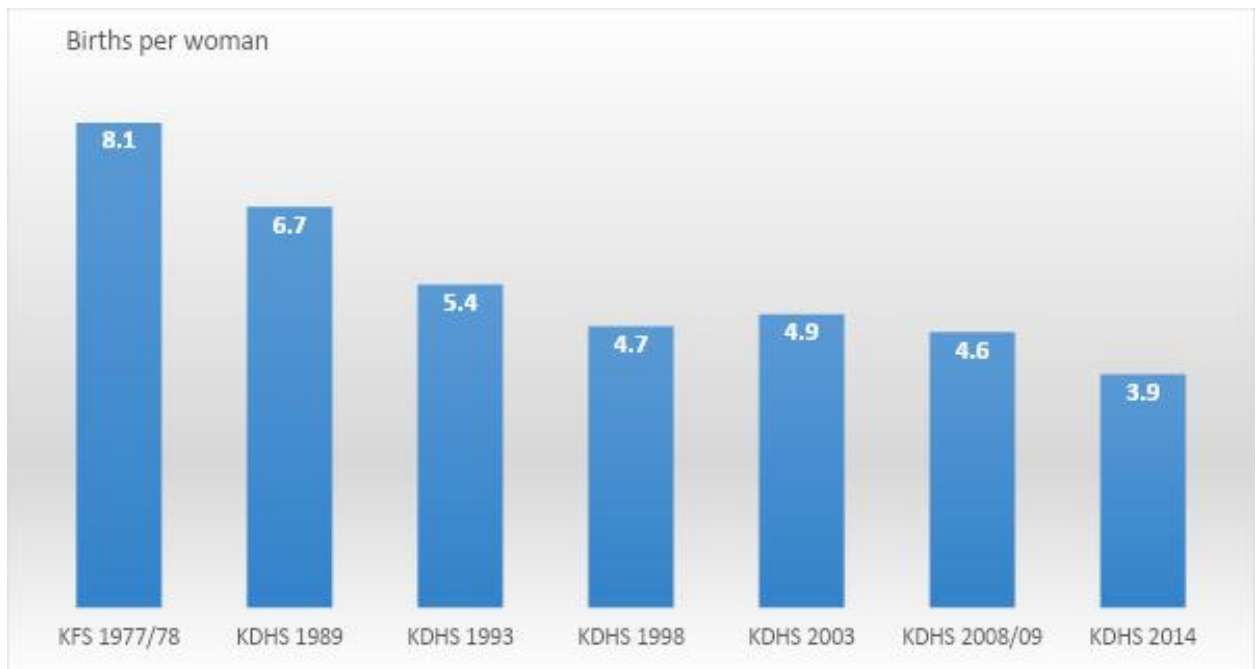
Source: KNBS & ICF Macro, 2015.

Traditionally, women have been responsible for managing domestic tasks, especially childcare. Women who work outside the home setting are more likely to have their workload increased particularly if they are not able to transfer some of their household responsibilities to parental surrogates and paid domestic care. Reher (2011) argues that the fertility decline in developing countries is likely to be preceded by a reduction in the time women devote to childbearing, as they are increasingly oriented towards careers and paid work outside the home.

Female Labor-Force Participation Levels and Trends:

An important link between population dynamics, economic and social development is the labor force (UNFPA, 2010). Despite the substantial rise in female participation rates in Kenya over the years, women are still under-represented in the work force, and their rates of participation are consistently lower than for men. KNBS (2012) Report on Labor Force Dynamics, an analysis of the trends in the 1999 and 2009 Population and Housing Census revealed that the rate of growth of the proportion of the working age bracket outstripped the general labor-force growth rate. In absolute numbers, the population aged 15 – 64 years rose from 15.0 million to 20.6 million, on the other hand, overall labor-force rose from 13.1 million to 15.8 million (KNBS, 2012). KNBS (2018) revealed that the country's overall labour force participation rate was estimated at 77.4 per cent. The analysis by sex revealed that across all age-groups, participation rates for males exceeded that of females. Overall, the age group 40 – 44 years recorded the highest participation rate at 96.2 per cent, while for females; the highest participation rate was the age group 35 – 39 years.

Table 1.1: Participation rates for females aged (15 – 64) years

Age Group (Female)	Total N	Active Population	Participation Rate (%)
15 – 19	2417.2	735.8	30.4
20 – 24	2138.1	1515.8	70.9
25 – 29	1950.6	1686.8	86.9
30 – 34	1561.8	1395.5	89.4
35 – 39	1295.2	1209.4	93.4
40 – 44	995.4	939.5	94.4
45 – 49	714.9	665.5	93.1
50 – 54	643.6	593.3	92.2
55 – 59	589.4	536.2	91.0
TOTAL	**12,727.0**	**9,625.8**	**75.6**

Source: KIHLS 2015/2017 Basic Labor Force Report

Kenya's Population Policy Framework:

The World Fertility Survey of 1977 attracted the attention of Kenyan policy makers and the public to fertility issues and culminated in the development of a comprehensive national family planning programme, which set the stage for future population policies. Kenya's population policy is anchored in various policy documents including the countries long-term economic blueprint, Vision 2030 (Republic of Kenya, 2008), the Big Four Strategic Pillars and Sessional Paper No. 3 of 2012 on National Population Policy for Sustainable Development (Republic of Kenya, 2012). One of the targets of Kenya's population policy is to bring down the TFR from 4.6 children per woman recorded in the 2009 census to 2.6 children per woman by 2030 (Republic of Kenya, 2012). At county level, the County Integrated Development Plans mirror the priorities of the Medium Term Plans (Third Medium Term Plan 2018 – 2022) at the sub national level and thereby ensure that the counties effectively mainstream and implement regional and international commitments. At regional level the African Union Agenda for Sustainable Development - *agenda 2063* - sites employment generation for youth and females and women's empowerment as some of its focus areas (AU, 2017), and further developed a demographic dividend roadmap, which Kenya domesticated to its context (NCPD, 2017). All these are intrinsically linked to the population and development framework contained in the 1994 Cairo International Conference on Population and Development (ICPD) (UNFPA, 2014) and ICPD25 (UNFPA, 2020) program of action which calls for increased employment and educational opportunities for women and girls.

1.2 Problem Statement

The relationship between fertility and FLFP has been intensely debated among researchers from different disciplines. The review of the literature reveals that numerous empirical studies have used neo classical economic theories of labor supply and income substitution to investigate the effect of fertility on female labor supply across different nations, regions and time-periods [Bongaarts et al. (2018); ILO (2019); Karbownik and Myck (2016); Lee-Rife et al. (2012); Majbouri (2019); Sarkar et al. (2008)]. Most of these studies have used econometric instrumental variable technique to account for the indigeneity of the fertility decision [Angrist and Evans (1998); Caceres-Delpiano (2012); He and Zhu (2013); Lim

(2017); Maingi (2014); Rasmussen et al., (2017); Schulze et al., (2017); Skadsen (2017)]. Paradoxically, demographic literature has directed much less effort towards conducting empirical studies to investigate the reverse relationship - that is - the effect of women's participation the labor force on their fertility outcomes. Few studies have provided well-founded evidence of the effect of their labor-force participation on their reproduction in SSA.

Extant empirical studies have posted consistent negative relationship between FLFP and fertility in countries that have completed the fertility transition and fertility is below replacement. In Organization for Economic Cooperation and Development (OECD) countries, and countries with intermediate fertility levels the effect of FLFP on fertility changed from negative to positive, with the assertion that the observed change is spurious due to country specific heterogeneity. On the other hand, in SSA countires, the results are mixed. Secondly, different studies have also applied different definitions and measures of fertility and FLFP, leading to the variation in results. For instance, Beguy (2009) used pregnancy spacing, Ronsen (2004) used order of births, Ogoren et al., (2018) used TFR, while Gakidou et, al., (2010) used desired family size to measure fertility.

Different theoretical frameworks inform empirical studies on how FLFP affects women's reproductive outcomes. Unlike the neo classical theories that focus on women's wages and the income substitution effect and the opportunity cost of having children, socio demographic literature focuses on the ability of women to achieve a balance between work and family. In Sub Saharan countries high female labor-force participation rates have been observed existing side by side with declining but consistently high fertility rates compared to other parts of the world The World Bank (2015). Chaudhary and Verick (2014) have suggested that in SSA, no conflict should exist between FLFP and fertility. They argue that limited wage employment, extended family networks, availability of cheap domestic help, social norms and gender roles serve to mitigate any conflict that would arise.

The time trends and variation within and between regions and countries points to differing causal effects of women's work on fertility determined by development level of each country and other heterogeneous factors (Busso & Fonseca, 2015). This warrants an

investigation into the effects of women's on the reproduction outcomes of Kenyan women in light of the ongoing fertility transition. In this regard, the aim of this research project is to answer the following questions;

1. How does the participation of Kenyan women in the labor-force influence their fertility outcomes?

2. To what extent do demographic, socio-economic factors and proximate determinants of fertility influence the relationship between women's labor-force engagement and fertility outcomes of Kenyan women?

1.3 Objectives of the Study

The overall objective of this research project is to investigate effect participation on the fertility outcomes of Kenyan women of reproductive age. Specifically, it seeks to:

i.   Determine the effect of labor force participation on the fertility of Kenyan women of reproductive age.

ii. Estimate the magnitude of the influence of demographic, socio-economic and proximate determinants on labor-force participation effect on reproductive outcomes of women of reproductive age in Kenya.

1.4 Justification of the Study

According to the World Bank (2015), high rates of female labor-force participation alongside declining though consistently high fertility rates have been observed in SSA countries compared to other regions globally. Further, research has linked increased levels of female labour-market participation to the completion of the fertility transition and economic growth of high-income, industrialized countries (Lim, 2017). The study therefore, comes at an opportune time because the unique fertility transition in SSA is taking place in a span of time when younger women in the reproductive ages constitute a significant proportion of not just the total population but more importantly, the working age population of most countries in SSA. These cohorts of women have a growing orientation towards labor markets and individual careers that shape their fertility behavior and decisions with implications for the fertility transition, and economic growth. Most of

the empirical studies on the relationship between FLFP and fertility have been carried out in countries that have completed the fertility transition, and are at different various stages of the demographic transition and economic development. The dynamics at play in these countries cannot be extrapolated to the Kenyan context; therefore, this research paper seeks to examine the effect of FLFP on fertility within the demographic, socio-cultural and economic realities of Kenyan women.

1.5 Significance of the Study

The trajectory that the fertility transition in Sub Saharan Africa takes will have a significant effect on the continents' population age structure and dependency burden and impact the potential for harnessing the demographic dividend (Eastwood & Lipton, 2011). It is therefore important to have an in-depth understanding of the mechanisms through which women's labor-force engagement affects the fertility outcomes of women in the continent.

1.6 Scope and Limitations of the Study

The scope of this research project is the effect of women's work on the number of children ever born to individual women aged 15 to 49 years in Kenya based on cross sectional data. This research project has limitations worth noting. One, it is limited to variables contained in the Kenya Demographic and Health Survey of 2014, and takes cognizance of the fact that these are not exhaustive. Secondly, the study was unidirectional, and did not address the simultaneous indigeneity of both the fertility and labor-force participation decisions.

1.7 Organization of the Paper

This paper is organized in five chapters. Chapter one presents the background of the study, an operational definition of key terms and concepts, the problem statement, the questions guiding the study, the objectives, justification and significance of the study. In chapter two, the theoretical literature informing the study a review of what empirical literature has established, is presented. Chapter Three gives an outline of the conceptual framework, operational model, definition and measurement of variables, data source and analysis method. In Chapter Four, the results of the analysis are presented and discussed. Finally, gives an outline of a summary of the research findings, policy recommendations and suggestions for future inquiry.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

The literature review first examines the theoretical perspectives informing this study in order to understand what they predict. An outline of what empirical evidence has already established is given and research gaps identified.

2.1 Review of the Theoretical Literature

2.1.1 The Neo classical Model

Becker (1965). Cain and Dooley (1976) and Mincer (1962), were the pioneers of studies on the role played by women in the labor market. Their work on neoclassical economic theory sparked the interest of many economists, sociologist and researchers from other disciplines. According to the neoclassical model, the decision to participation in the labor-force is a rational one, and depends on various factors that influence the costs-benefit of participating in the labor market vis-à-vis being a homemaker (for women). The sexual division of labour between married couples predicts that men with higher incomes attained through higher level of education and better paying occupations, will more likely let their wives to limit their market work to focus more on homemaking (Devereux, 2004 & Kalenkoski et al., 2009). When a woman spends more time within the household, the result is less income and when she spends more time engaging in economic activities outside of the home the result is higher income. The market wage will be the ultimate determinant of the decision that the woman makes (Blau et al., 2014). Higher wages, makes leisure, (opportunity cost for work) more expensive, and reduces demand for it through the substitution effect. Conversely, an increase in an individual's or household's income, will increase the demand for leisure and thereby reducing the supply of labor through the income effect. For a person who is already working, the relative strengths of the substation and income effects will determine their labor supply. For a person who is not already working, an increase in the wage rate will increase their motivation to work. Similarly, non-work income like spousal income serves as a disincentive to join the work force. However, there are many other considerations apart from a simple choice between paid work and leisure, which influence and determine a woman's decision to work away from

the home. For instance, a woman's reproductive role may require that she temporarily withdraw from the labor market for childbirth.

2.1.2 The Human Capital Theory

The central hypothesis of the human capital theory is that there is a higher probability of women with higher education attainment being actively engaged in the paid labor market, in comparison to those with minimal education, or no education at all (Tomaskovic-Devey et al., 2005). According to the theory, education is a process of investment in an individual. Both the community and the individuals reap a return on this investment. Jacovou and Tavares (2011) opine that females who are more inclined to be full-time workers and likely to invest more in education. Additionally, a change in the rewards or benefit of education is likely to influence human capital investment. Women with higher levels of education are more likely to substitute many children with quality of children (Becker & Lewis, 1973). Since giving birth and raising children is time intensive, a rise in incomes brings about a negative substitution effect on the demand for children (Becker, 1965). Therefore, women's earnings is negatively associated with fertility, because higher incomes imply higher opportunity costs associated with having children. Lareau (2011) argue that better-educated females are more involved the day-to-day lives of their children contributing to the culture of intensive parenting. This in turn leads to a conflict between work and family for many mothers who may eventually opt out of the labor-force.

2.1.3 Feminist Theories

Feminist and gender theories on the other hand focus on non-labor market variables. Social and cultural factors often restrict women's ability to enter the labor-force (Anker, 1977; Momsen, 2004). Feminists, reproductive health advocates and other scholars have argued that in order to achieve gender equality; women must have control of their fertility through contraception and abortion (Dixon-Mueller, 1993). Despite the fact that over the last decades, there has been a rise in employment and education opportunities for women, the industrialization and urbanization processes have paradoxically served to intensify the dilemma between women's role as workers and their domestic and child bearing role (William, 2000). Further, women face normative and structural constraints in their choice between participating in paid work and family obligations (McRae, 2003). This paradox

contradicts the theory that reduced fertility rates lead to increased labor attachment for women and certainly warrants further investigation. From a gender and feminist perspective, it is no doubt a contradiction of terms to promote women's agency while in the same breath proposing that females should limit their fertility.

2.1.4 The Demographic Transition Theory

According to Lee and Mason (2010), the transformation of the population age structure that occurs during the demographic transition leads to a rise in the proportion of the working age population and consequently relatively more women in the working age population. The mechanisms of the transition operate through other individual, household, economic and socio-cultural factors that are shaped by the other "mini transitions" that occur alongside the broader demographic transition process. Inherent in the demographic transition are shifts in family formation, childbearing and dissolution patterns from biological and reactive to deliberate and forward looking (May, 2012). This family and household transition leads to increase in mean age at marriage, decline in first marriage rates, rise in divorce rates, cohabitation becoming increasingly common and accepted, and an increase in the proportion of non-marital births.

Reher (2007) opined that the combined effect of the ability of women to control their reproduction and reduction in fertility is an increase in efficiency of reproduction. He further asserts that combined with longer life spans, efficiency in reproduction in turn frees up the time that women ordinarily spend in the up-bringing of children Reher (2007). According to the demographic transition theory, the modernization process also contributes to changes in the value society attaches to children from social and economic resource quantity, to constituting a net cost to their parents (Caldwell, 1982). This not only results in changes in ideal family size and a preference for quality over quantity of children, but, can potentially alter the role women play within the family, and their decisions concerning family and work (Caldwell, 1982). According to McRae (2003), during the transition, women are likely to face some structural constraints that may restrict their full-time participation in the labor-force. These include the cost and availability of childcare services. Similarly, the transition from agrarian production to informal employment to

urban salaried work, which tends to be less compatible with the role of childrearing, leads to an increase in education levels consequently resulting in decline in fertility rates.

2.1.5 The Maternal Role Compatibility Theory

In socio-demographic literature, researchers explain the employment-fertility relationship by the maternal role compatibility hypothesis. The premise of the theory is that there exists a conflict between women's work and their maternal role of child bearing (Collver and Langlois, 1996). This competition intensifies during the woman's childbearing period (Collier et al., 1994). The inverse relationship between women's work and fertility arises when social and economic life are structured in a way that women are constrained to combine both employment and maternal roles (United Nations, 1987). Proponents of the hypothesis argue that in most cases the probability of women staying in employment after childbirth is low due to the time demands of childrearing (Langlois, 1962). According to Youssef (1972), child bearing therefore, leads to reduction in employment for women occasioned by prolonged or temporary withdrawals from the labor-market (Becker, 1992). Another factor that influences the level of conflict between the roles of a woman as a worker and a child bearer is the organization of childcare. Stycos & Weller (1967), contend that it is easier for women to work outside the home if women have access to parental surrogates like relatives or if inexpensive domestic help are available. Mason and Palan (1981) predict that the incidence of fewer extended family households and reduced availability of cheap domestic labor will culminate in an inverse relationship between FLFP and fertility.

2.2 Review of the Empirical Literature

The pioneering work of Becker (1965), Cain and Dooley (1976) and Mincer (1962) on the neoclassical theory of female labor supply sparked the interest of many economists, sociologist and other researchers who further analyzed female labor supply using a host of explanatory variables and estimation techniques applied to different types of data across different countries and regions.

Shulze et al. (2017) in a study spanning 200 years, based on a combined dataset of 429 censuses and surveys, using same sex children as an instrumental variable, finds that the negative correlation between women's work and fertility only holds true for countries at advanced stages of development. At low levels of income, they find the effect to be small and undistinguishable.

Gakidou et al. (2010) assert that education increases the opportunity cost of bearing children and raises the probability of a woman engaging in the labor market, and a subsequent decline in fertility rates. The reason being that, higher education attainment attracts higher wages, consequently raising the opportunity cost of bearing more children and staying at home. Using data from the Ghana Living Standard Survey, Sackey (2005) applied a probit and a multinomial model to estimate the impact of childbearing on women's employment in the Ghanaian context. The results were consistent with the human capital theory (Gakidou, 2010) and revealed that education had a positive effect on women's labor force engagement and a negative effect on childbearing and had the effect of reducing desired family size.

According to ILO (2019), most of the increase in the labor participation of women throughout the last century can be attributed to an increase in working married women. Studies have clearly demonstrated a shift in the composition of working women from those in unions to those who are divorced and single mothers (Blau & Kahn, 2007). Welti and Paz (1994) argue that widows and separated women, who are breadwinners for their households, are more likely to engage in economic activities out-side of the home compared to women in marriage. In the contrast, Cosio-Zavala (1992) in a study of Mexican women and Kelly (2006) in Australia both found that there was no significant difference in the participation rates of married women and that of divorced and single women. According to Cunningham (2001), the labor participation of out-side the home by women who are either divorced or single is higher than that of women in unions because whether or not married women participate, is determined by if they have young children within the household. From these results, Cunningham (2001) suggests that it would therefore not be wrong to assume that the combined effect of both being in a union and

having young children in the household that causes the observed variations in the participation of married, single and divorced women.

According to Heim (2007), non-labor income is inversely related to women's labor-force participation. Women's marital status also determines the extent of alternative sources of income. A study by Blau et al. (2014) showed that more source of alternative and non-labor income result in lower labor-force participation among women, particularly married women. Alternative sources of income include other assets or spouse's earnings. In a study of Indian women, Klasen and Pieters (2015) found that a raise in male incomes resulted in declines in the participation of women, despite a decrease in number of children and an increase in women's education levels. It is hypothesized (Yamada, 2008) that in developing countries, when household income decreases, female labor-force increases, due to lack of unemployment support programs available in western countries. On the other hand, Evans & Kelly (2008) found that spouses' employment increased the labor participation of women in Australia, implying a small income effect. Similarly, women with high levels of education tend to marry equally prosperous men. Therefore, the overall effect of a spouse's labor force status depends on factors such as culture, women's preference for work.

The inclusion of the age variable in most models is to capture the life-cycle effect of labor supply, which can be as depicted as an M shaped curve. Typically, women enter the labor-force once they have completed basic schooling, some may withdraw due to childbearing during the early years of motherhood to focus on childrearing. Most women then tend to re-enter the labor-force when their children start attending school (Besamusca et al., 2015). Variations to this pattern have been observed recently in western countries where childcare support systems or more flexible work arrangements have made it possible for more women to work outside the home (Yahaya, 2009). Delayed entry into the labor force due to schooling has reduced the female labor-force participation rate, especially among the 15-19 age group (Cleland 2014). On the other hand, postponed entry into the work force due to increase in education attainment, increases the participation rate among older women (Dayioglu & Kirdar, 2011). Consequently, variations in the age-sex structure and distribution of a population can women's engagement in the labor market (Dayioglu & Kirdar, 2011). In countries at early stages of industrialization, most women tend to be

concentrated in the agricultural sector as paid or unpaid workers. Despite the high fertility rates, women are able to balance childbearing and economic activities as they work on farms or family enterprises (Chaudhary & Verick, 2014).

Emara 2015 analyzed the effect of women's work on fertility rate using panel regression specification with Prais-Winsten regressions procedure, on 29 developing countries between 1990 and 2011. The empirical results confirmed the work of Engelhardt and Prskawetz (2005) who found that an increase in FLFP has a negative effect on children ever born and the negativity is decreasing with time. In line with Kogel (2004), the study found that time trends affect the negative relationship between FLFP and fertility as the negative impact of the FLFP on fertility decreases with time.

Using data from the Turkey Demographic and Health Survey conducted in 2008, Ozgoren et al. (2018) adopted piecewise constant exponential event history modelling to estimate the relationship between fertility and the participation of Turkish women. The results revealed a two-way negative relationship between children ever born and working among women in Turkey. The findings contrasted with Stycos and Weller (1967) which found no change in female labor-force participation in the same country. They attributed the variation in results to the contextual evolution in the country, which seemed to have changed the relationship between fertility and work from insignificant to strongly negative. These changes, which have occurred since the second half of the 1960s, lend credence to the propositions of the maternal role compatibility hypothesis (Ozgoren et al., 2018)

Mishra and Smyth (2010) examined the relationship between the FLFPR and the total fertility rate for 28 (OECD) countries using panel unit root, panel integration, Granger causality and long-run structural estimation. In each country, they found an inverse relationship between the women's labor participation rate and total fertility rate. Their results support the maternal role compatibility hypothesis that states there is a negative relationship between fertility and labor participation because of the conflict of performing the roles of both childrearing and worker roles.

In Scandinavia, empirical studies revealed mixed findings in the relationships between women's employment and second-birth and third-birth rates. Kravdal (1992a) found there

was a very weak impact of work on the third order births in his study on the effect of FLFP on the probability of having child number three in Norway. Studies from Sweden revealed contradicting results with higher second-order birth rates among mothers who were homemakers and part-time workerers, than those engaged in full-time work. (Kravdal (2002) and Olah (2003) examined the impact of both individual and aggregate unemployment in Norway for the period 1992-1998. The study revealed a slightly higher first-order birth rate but much lower higher-order birth rates for employed mothers. Findings from a comparative study conducted by Rønsen (2004) in Finland and Norway lends credence to the hypothesis that parental leave extension may influence fertility positively

Lee-Rife et al. (2012) adopted a country-level approach to examine the correlation between decline in fertility and women's labor-market engagement over time. They used data from the UN World Population Prospects and ILO Labor Market database, to conduct a descriptive analysis, to examine the timing of trends in fertility to the timing of changes in FLFP in thirty-one countries. They found that in a majority of the countries the positive changes in labor-force participation took place concurrently with fertility decline. They further examined the gains made in female labor force participation for the 25-34 year age-group (women most likely to be balancing work and childbearing), and found more evidence that increased participation within this age-group occurred after fertility decline.

Bongaarts et al. (2018) used Demographic and Health Survey data from 58 low - and middle-income countries to analyze the relationship between fertility and female labor force participation. They found that though it varies across regions, the average number of children that ever-married women have has declined in all world regions over the last few decades, with SSA experiencing the least change. They found there to be a negative association between women's labor engagement and having children with wide variations depending on age of child, occupation of the mother and world region. This is consistent with the maternal role compatibility theory, and other studies that demonstrate the negative relationship between FLFP and fertility (ILO, 2019)

Biguy (2009) compared the impact of women's employment on the probability of having another child in Dhaka (Senegal) and Lome, (Togo) based on primary data. His findings support the maternal role compatibility hypothesis and illustrate the importance of gender specific roles to acuretaly determine the effect of employment on fertility. Apart from studies by Feyisetan (1985) in Nigeria, empirical studies testing the maternal role compatibility theory in recent African data are scant.

2.3 Summary of the Literature Review

The review of the empirical literature on the relationship between female labor force participation and fertility reveals that the studies vary in approach. Some studies compare individual women within one country, while others are comparative studies that analyze the association between women's work and their reproductive outcomes for many countries, using a combination of data sets. Some studies adopt a unidirectional approach while others are two-way. Studies use different types of data sets, be it either cross sectional, longitudinal or time-series.

On the one hand, the neo classical economic models focus on female labor-supply and income substitution effect, while the socio-demographic approach taken by the modernization and maternal role compatibility hypothesis emphasizes the ability of women to combine work with childbearing as dictated by the social and economic institutions and structures in the society.

Results from studies like Schulze et al. (2017) have demonstrated that the presumed conflict between FLFP and fertility holds true in countries at advanced stages of economic development, while for countries at lower and middle income levels, like Indonesia, (Priebe, 2010) there is a positive relationship between women's participation and fertility.

 The context of the environment in which women make their labor and fertility decisions, and combine their work and reproductive roles, have an impact on the association between FLFP and fertility. Yet, most empirical studies fail to control for the region of residence and cultural and ethnic background in their analysis, especially in SSA countries.

There is evidence that demonstrates a shift in the composition of working women from those in unions to divorced and single mothers (Blau & Kahn, 2007; Cherlin, 2010; Ryan & Siebens, 2012). Yet, most studies - in both developed and developing countries - tend to focus on married women based on the premise that most childbearing happens within the confines of marital unions. This approach is limited because literature has revealed a significant rise in non-marital childbearing in some cultural contexts in SSA. This underscores the importance of this study, which aims to investigate the effect of FLFP on fertility based on all women – married or otherwise in the Kenyan context.

From the review of the theoretical literature, it is apparent that theoretical predictions have been in existence, but the empirical literature has not established how female labor-participation affects the reproductive outcomes of women in the Kenyan context. Therefore, there is a case to further investigate the relationship between the labor force engagement and reproductive outcomes of Kenyan women, and to test the applicability of the maternal role compatibility hypothesis within the context of the fertility transition and demographic dividend paradigm.

2.4 Conceptual Framework

The theoretical underpinning of the framework used to explain the variation in the relationship between FLFP and fertility is the maternal role compatibility hypothesis (Jaffe and Azumi; 1960, Stycos and Weller 1967). The premise of the theory is that there is a negative relationship between labor participation and fertility due to a clash between women's work and their maternal role, and that the conflict intensifies during the childbearing period (Becker 1993, Rindfuss and Brewster 1996). The conceptual framework outlines the mechanism through which the demographic, socio-economic factors, proximate determinants mediate the effect of FLFP on fertility. It predicts that the demographic and socio economic factors influence fertility indirectly through the proximate determinants.

Figure 2.1: Conceptual Framework
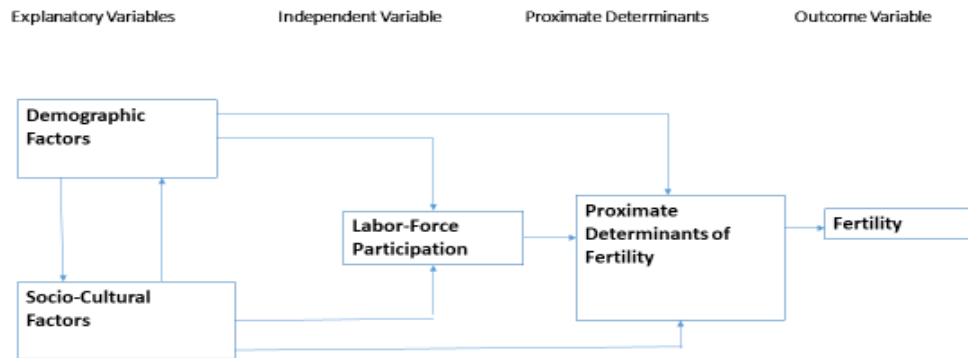
2.4.1 Operational Model

The study derives the operational model for this study from the conceptual framework stated above. In the model, demographic and socio cultural factors operate both individually and jointly to influence children ever born indirectly through the proximate determinants. The conceptual model is operationalized by defining the individual variables from each of the above categories (demographic, socio-cultural factors and proximate determinants of fertility) in order to determine:

1. Whether the defined variables independently or jointly influence women's fertility and,

2. The magnitude of the influence of each variable if it exists.

Figure 2.2: Operational Model
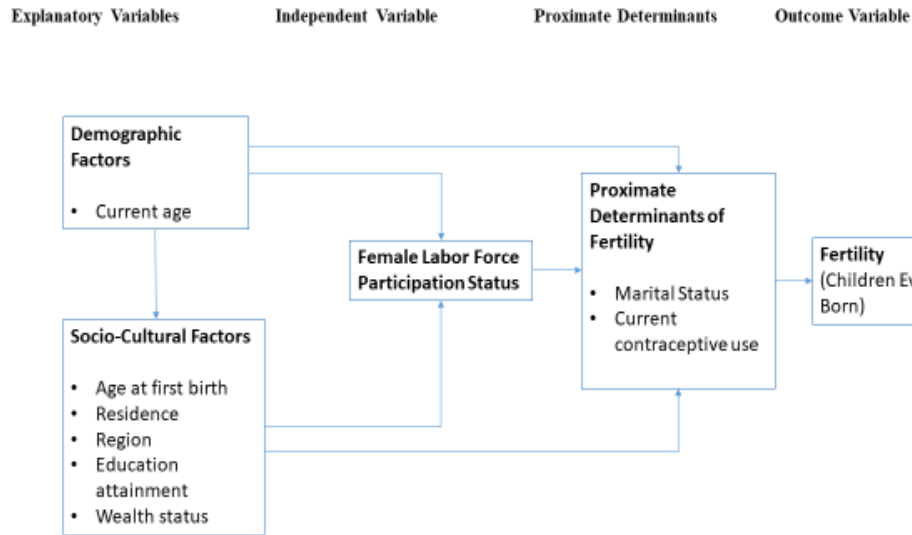
2.4.2 Operational Hypothesis

The operational hypothesis being tested is that children ever born is not associated with labor-force participation.

2.5 Definition and Measurement of Variables

2.5.1 Outcome Variable

Fertility:

The central and outcome variable of this analysis is the fertility of the woman.). most recent TFR recorded for Kenya as per the 2014 KDHS is 3.9 children per woman. In this study, the fertility variable is measured as children ever born to women. It takes the value "1" if a woman has less than three children or "0" if a woman has three or more children.

2.5.2 Key Independent Variable

Labor Force Participation Status:

Research has shown that women's participation in labor markets shapes their ability to control their reproductive choices. This variable is based on women's self-assessment of their labor market status in the 2014 KDHS. The study will capture the key independent variable, female labor force participation as a contrast between being having worked in the last twelve months before the survey and not having worked. Women working for pay,

self-employed and those in the agriculture sector are classified as active irrespective of the kind and volume of their employment.

2.5.3 Explanatory Variables

2.5.3.1 Demographic Variables

Current age of woman:

In their study of the age specific association between FLFP and fertility, Brehm and Engelhardt (2015) argue that women do not all go to school, have children and work at the same time, but propose that different age groups of women relate to different periods of schooling, having children, raising them and engaging in the labor force. In this study, age of the woman is measured using seven 5-year age groups representing the reproductive age of women in Kenya ranging from 15 to 49 years.

2.5.3.2 Proximate determinants of fertility

Proximate determinants of fertility, proposed by Davis and Blake (1965), constitute the framework by which fertitlty is measured. They are the behavioral and biological factors that directly impact fertility. Two of these - marital status and contraceptive use are included in this model.

Marital status:

This variable is included in the model to capture the differences in women's exposure to sexual intercourse/coital frequency. A majority of studies include married women only in their analysis based on the premise that most childbearing takes place within a marriage set-up. While this is true, there has also been an increase in teenage and extra-marital childbearing. The analysis will include all women of reproductive age in three categories; (1) Never married, (2) Married/living together, and (3) divorced, separated or widowed.

Current use of contraception:

Use of contraceptive represents the deliberate effort women make to avoid conception, through modern or natural methods. Effective use of birth control methods enables women to time, space and even limit their births. Research has shown that there may be differences in contraceptive behavior between women engaged in the labor force as opposed to those who are not,

2.5.3.3 Socio-Cultural Factors

Age at first birth:

The on-set of childbirth has a direct impact on fertility. According to Bratti and Cavalli (2013), a higher age at first birth or postponement of childbearing leads to a decrease in fertility, while early initiation prolongs the reproductive period subsequently increasing fertility. There is scant empirical literature and evidence on the relationship between FLFP and teen/adolescent fertility.

Woman's education attainment:

Women's level of education is highly correlated with fertility. Education raises the opportunity cost of child bearing consequently increasing the probability of participating in the labor-market (Gakidou et al., 2010). Theoretically, high education is associated with increased uptake and use of contraception.

Rural-Urban residence:

Respondent's type of place of residence at the time of the survey is an indicator of the level of urbanization, classified as either urban or rural.

Region of residence:

This analysis will adopt the eight former provincial administrative units (Coast, Eastern, Central, Rift Valley, Western, Nyanza and Nairobi) in the 2014 KDHS as a proxy indicator of socio cultural dynamics. Research has shown that women's cultural and ethnic backgrounds influence their labor-force behavior and fertility outcomes. The unique features of Kenya's sub-population make it possible to examine the influence of ethnicity. Seven dummy variables were created to represent each region, and Coast region is assigned the reference category

Wealth Status:

This study will use the Household Wealth Quintile as defined in the 2014 KDHS as a proxy for non-labor income. If the woman is from a household with a higher wealth quintile, then the reservation wage is expected to be higher. Similarly, availability of alternative non-wage income also influences a woman's fertility vis-à-vis labor participation decisions.

The wealth quintile is a categorical variable classified as; poorest, poorer, richer and richest.

2.6 Variables Used In the Study and their Measurement

The DHS-7 Standard Recode Manual Croft et al, (2018) was used to identify appropriate indicators to measure the selected variables.

Table 2.1: Variable Codes

Variable	Operational Definition	Variable Codes	Recoded from DHS Code
Fertility Children ever born	Outcome Variable	Children ever born. Takes the value Code 1=Less than 3 children - reference category Code 0 = 3 or more children	Recoded from V201
Female Labor force Participation Status	Key Independent Variable Dichotomous	Respondent employed in the last 12 months. Takes the value Code 1=Yes – reference category Code 2= No	Recoded from V731
Current use of contraception	Proximate determinant	Currently Using Contraception Method Takes the value Code 1= Using No - reference category Code 2 = Not using Yes	Recoded from V312
Current Marital status	Proximate determinant	Current marital status. Takes the value Code 1=Never married - reference category Code 2=Married Code 3=Divorced/Separated/Widowed	Recoded from V501
Age of woman	Demographic Variable	Respondent's Current Age Group Takes the value 1 = 15-19 2 = 20-29 – reference category 3 = 30-34 4 = 35-39 5 = 40-44 6 = 45-49	Recoded from V012
Age at first birth		Takes the value Code 1=Below 18 years – reference category Code 2=18+ Years	Recoded from V212 BASE (V201>0)
Education Attainment		Takes the value 1 = No education - reference category 2 = Primary 3 = Secondary 4 = Higher	Recoded from V106
Place of Residence		Type of Place of Residence Takes the value	Recoded from V025,

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		Code 1=Urban – Reference category Code 2=Rural	
Region of Residence		Takes value 1 = Coast – Reference category 2 = North Eastern 3 = Eastern 4 = Central 5 = Rift Valley 6 = Western 7 = Nyanza 8 = Nairobi	Recoded from V024,
Household Wealth Quintile		Takes the value 1 = Lowest - reference category 2 = Second 3 = Middle 4 = Fourth 5 = Highest	Recoded form V190,

CHAPTER THREE: DATA AND METHODS OF ANALYSIS

3.0 Data Source

The research project utilized data from the Kenya Demographic and Health Survey of 2014 KNBS & ICF Macro (2015), implemented by the Kenya National Bureau of Statistic. The survey used two-stage cluster sampling technique to collect comparable, reliable and national representative data on mortality, fertility, contraceptive prevalence, nutrition, maternal and child health, HIV/STIs domestic violence and female genital cutting. The survey found 32,127 women in the 15-49 years age bracket eligible for interview and interviewed 31,079 of them. The Household and Individual Woman's files, which contain complete birth-histories of all live births for women aged 15 to 49 years and information on contraceptive use and prevalence were used for analysis. Further information on household wealth status, region and type of place of residence were obtained. The study is limited to all women of reproductive age including the never married, divorced and widowed who reported their work status in the twelve months before the survey. Figure 3.3 below describes the criteria used to obtain the unit of analysis from the 2014 KDHS data set.

3.1 Method of Analysis

The research project made use of descriptive statistics and binary logit model as the core methods of data analysis to analyze the effect of labor force participation on children ever born, and to estimate the influence of demographic and socio economic factors. The logistic model is preferred because of the ease of interpretation.

A logistic regression was fitted to determine the effect of female labor-force participation on children ever born. This generates a fertility dummy, which is the outcome variable taking value "1" if woman has less than three children and "0" if a woman has less than three children and is denoted by Y. Therefore,

$$Y = \begin{cases} 1 \text{ if woman has less than 3 children} \\ \qquad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (1) \\ 0 \text{ if a woman has three or more children } e \end{cases}$$

If we assume an unobserved latent variable, which has a linear relationship with a set of independent variables say X, comprising the variable of interest fertility and other demographic and socio economic factors. The resulting model depends, therefore, on a cumulative logistic probability function of the form $Y_k^* = a + \beta_k X_k + \varepsilon$ where Y_k^* is the latent variable, a is a constant term, X_k is the set of predictors, βk is the set of parameters that the model seeks to estimate and ε is the stochastic error term whose distribution is the standard logistic.

Children ever born, Y_k is the outcome/dependent variable to be estimated and is observed. Its corresponding outcome is binary taking value "1" if woman has less than 3 children and, "0" if a women has three children or more, as defined in equation 3. Women with a higher Y_k^* are observed to have less than three children, otherwise three or more children. The observable variable Y_k is, therefore, related with Y_k^* the latent variable in the following way:

$$Y_k = \begin{cases} 1 \text{ if } Y_k^* > 0 \\ \\ 0 \text{ if } Y_k^* \leq 0 \end{cases} \quad \text{…….……………………………………………………….…………} (2)$$

Given the definition of a logit of any number and the respective cumulative logistic probability function then it follows that the probability of a woman having less than 3 children is given by:

$$p = Probability\ (Y_k = 1/X_k) = \left(\frac{e^{\beta k X k}}{1+e^{\beta k X k}}\right)^y \left(1 - \frac{e^{\beta k X k}}{1+e^{\beta k X k}}\right)^{1-y} \text{…………………………………………}(3)$$

We, therefore, use the Maximum Likelihood Estimation approach to estimate the corresponding logarithmic likelihood function of equation 3 above to estimate the probability of woman has less than 3 children and other control variables. Our empirical model will therefore be given by:

$$Yk = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon \text{…………………………………………………………..…… } (4)$$

Where;

Y_k = vector of fertility represented by children ever born

X_1 = vector of labor-force participation status

$X_{2\,=}$ vector of demographic characteristics

$X_{k\,=}$ vector of socio-economic characteristics

$X_=$ vector of proximate determinants of fertility

ε = error term

β = the regression coefficient to be estimated by the model

3.2 Sample Size

The unit of analysis in the study was women who had reported their work status for twelve months prior to the survey. Figure 3.1 below outlines the criteria used to obtain the unit of analysis from the 2014 Kenya Demographic Health Survey data set.

Figure 3.1: Unit of analysis, 2014 (KDHS) data

```
┌─────────────────────────────┐
│  Number of women interviewed │
│  in the 2014 KDHS = 31,079   │
└──────────────┬──────────────┘
               │              ┌──────────────────────────────┐
               ├─────────────►│  Women who had never given    │
               │              │  birth = 8,105                │
               ▼              └──────────────────────────────┘
┌─────────────────────────────┐
│  Number of women who had     │
│  ever given birth = 22,974   │
└──────────────┬──────────────┘
               │              ┌──────────────────────────────┐
               ├─────────────►│  Women whose work status was  │
               │              │  not indicated = 12,163       │
               ▼              └──────────────────────────────┘
┌─────────────────────────────┐
│  Number of women who         │
│  indicated their work status │
│  in the last year = 10,811   │
└─────────────────────────────┘
```
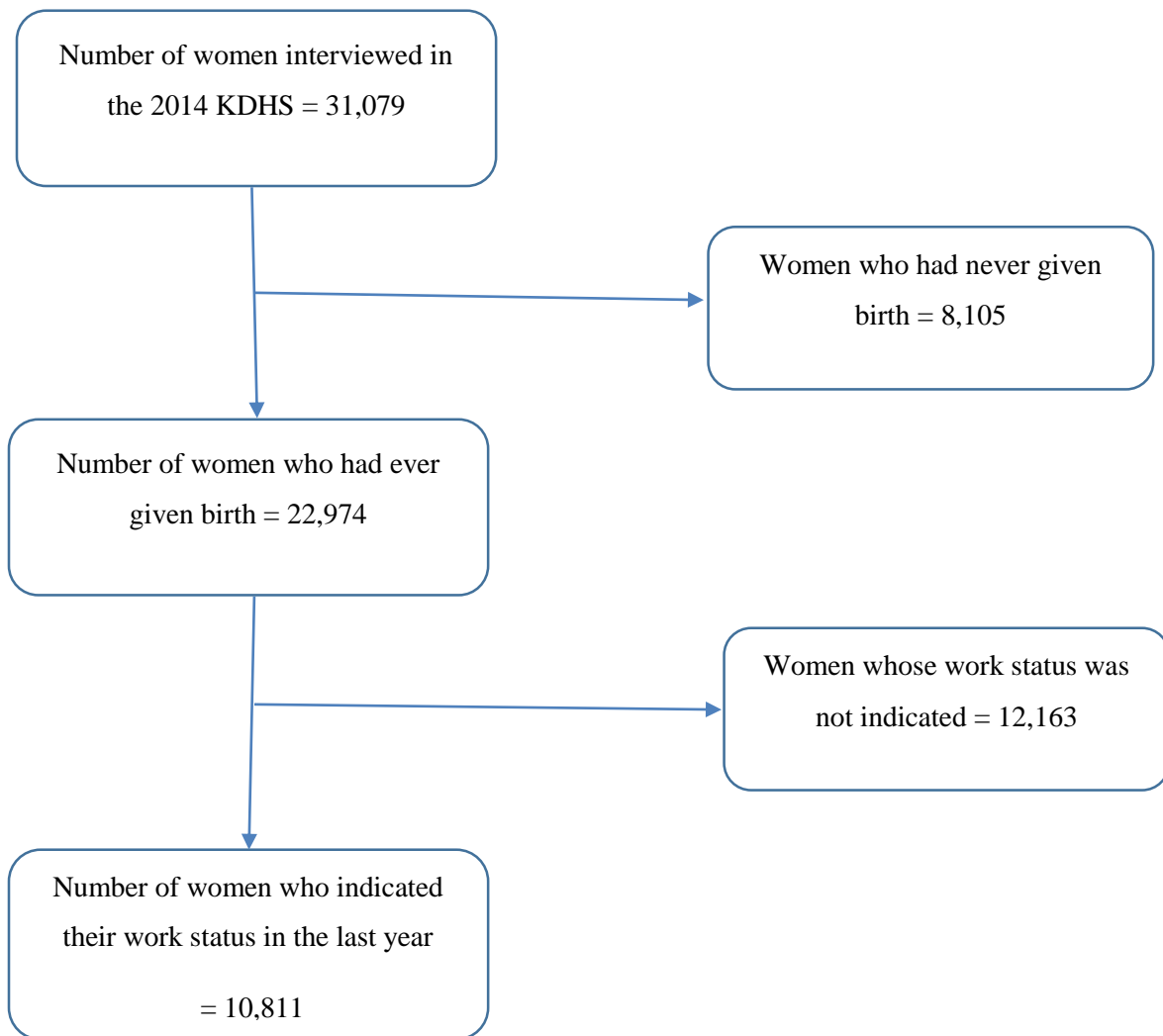
CHAPTER FOUR
THE EFFECT OF FEMALE LABOUR-FORCE PARTICIPATION ON FERTILITY

This chapter presents the results of the data analysis, the interpretation and a discussions of the findings from the study. The underlying focus of this study is to analyze the effect female labor-force participation has on the fertility outcomes of Kenyan women. In order to achieve this; the study employed a binomial logit model.

4.1 Descriptive Statistics

The chi square test was used to establish a solid foundation for the regression results. Table 4.1 below displays the percentage distribution of the study population by background characteristics and children ever born.

Table 4.1: Percent distribution of women by children ever born and various background characteristics in Kenya, KDHS 2014 (N = 10,811)

| Background character+A3:E46istics | Number of children ever born | | Total | Chi-Square Test |
	3 or more children (n = 6,034)	Less than 3 children (n = 4,717)		
Respondent worked in last 12 months				38.991 (p=0.000)
Yes	4820 [58.0%]	3490 [42.0%]	8310	
No	1274 [50.9%]	1227 [49.1%]	2501	
Currently using contraception method				2.93 (p=0.087)
No	2715 [55.5%]	2179 [44.5%]	4894	
Yes	3379 [57.1%]	2537 [42.9%]	5916	
Marital Status				834.149 (p=0.000)
Never married	109 [11.7%]	824 [88.3%]	933	
Married	5052 [61.1%]	3219 [38.9%]	8271	
Divorced/Separated/Widowed	933 [58.1%]	673 [41.9%]	1606	
Age in 5-year groups				3020.785 (p=0.000)
15-18	7 [1.8%]	385 [98.2%]	392	
20-23	287 [16.5%]	1451 [83.5%]	1738	

25-28	1114 [42.9%]	1481 [57.1%]	2595	
30-33	1359 [65.6%]	713 [34.4%]	2072	
35-38	1376 [80.0%]	345 [20.0%]	1721	
40-43	1066 [84.5%]	195 [17.5%]	1261	
45-48	884 [85.9%]	145 [14.1%]	1029	
Age of respondent at first birth				
Below 18	2184 [68.1%]	1022 [31.9%]	3206	256.004 (p=0.000)
18+	3910 [51.4%]	3695 [48.6%]	7605	
Highest educational level				
No education	740 [79.6%]	190 [20.4%]	930	
Primary	3861 [64.7%]	2106 [35.3%]	5967	961.741 (p=0.000)
Secondary	1228 [41.7%]	1717 [58.3%]	2945	
Higher	265 [27.3%]	704 [72.7%]	969	
Region				
Coast	586 [57.3%]	436 [42.7%]	1022	
North Eastern	168 [78.9%]	45 [21.1%]	213	
Eastern	865 [55.7%]	688 [44.3%]	1553	
Central	691 [48.1%]	747 [51.9%]	1438	435.165 (p=0.000)
Rift Valley	1659 [58.8%]	1162 [41.2%]	2821	
Western	750 [66.9%]	371 [33.1%]	1121	
Nyanza	966 [66.4%]	489 [33.6%]	1455	
Nairobi	409 [34.4%]	780 [65.6%]	1189	
Type of place of residence				
Urban	1788 [41.9%]	2483 [58.1%]	4271	603.953 (p=0.000)
Rural	4306 [65.8%]	2234 [34.2%]	6540	
Wealth index				
Poorest	1322 [73.3%]	482 [26.7%]	1804	
Poorer	1311 [66.5%]	659 [33.5%]	1970	798.978 (p=0.000)
Middle	1356 [64.3%]	752 [35.7%]	2108	
Richer	1162 [42.95]	1198 [50.8%]	2360	
Richest	943 [36.7%]	1625 [63.3%]	2568	

Source: Author's Estimates Using KDHS 2014 dataset

According to the results of the Chi Square test, labor-force participation was negatively associated with fertility and statistically significant at (p <0.000). Overall, the study sampled 10811 women. Out pf these, 76.8 per cent stated they had worked in the twelve months before the survey. 42.0 per cent of those who reported to have worked had less than three children, compared to 49.1 per cent of respondents who reported not to have worked. Current use of contraception was found to be negatively associate with fertility but not very significant at p=0.0087. Marital status was included in the model to measure women's exposure to sexual contact, and was highly statistically and positively associated with fertility. More than half of the respondents (76.5%) were married, 14.8 per cent were either divorced, separated or widowed and only 8.6 per cent had never been married. A higher proportion of currently married women (61.1%) had three or more children, relative to those never married and divorced/single/widowed (11.7% and 58.1% respectively). Distribution of respondents according to 5-year age groups suggests that women in the 25 to 29 years and 30 to 34 age groups (24% and 18.7% respectively) constituted a higher proportion of the respondents in the labor-force relative to women aged 35-49 years. The 15 to 19 years and 19 to 24 year age group constituted 3.6 per cent and 16 per cent of the respondents respectively. Out of these 98.2 per cent and 83.5 per cent respectively had less than three children. In the 25-29 year age group, 57.1 percent had less than three children. As would be expected, 65.5 per cent, 80.0 per cent and 84.5 per cent respectively of women in the 30 to 34, 35 to 39 and 40 to 44 year age groups reported high fertility/three or more children. The 45-49 year age group had the least number of respondents at 9.5 per cent, 14.1 per cent of whom had less than three children. In terms of age at first birth, 42.1 per cent of the respondents sampled reported that their age at first birth was below 18 years compared to 51.4 per cent whose age at first birth was 18 years and above. Percent distribution of respondents by education attainment and children ever born revealed that more than half of the women sampled (55.1%) had primary level while only 8.6 per cent had no education. Out of those with no education and primary education 20.4 per cent and 35.3 per cent respectively had less than three children. Women with secondary level education constituted 27.2 per cent of the respondents, 58.3 per cent of who had less than three children. Of the 11.1 per cent respondents with higher-level education, most (72.7 per cent) had less than three children compared to 27.3 per cent who had three or more

children. The Chi square test results confirmed that the association between education attainment and fertility was negative and statistically significant at (p < 0.0000). These results confirm previous studies that education depressed fertility. The distribution of the respondents by type of place of residence and fertility revealed that 60.4 per cent of the respondents sampled resided in rural areas, and more than half of them, (65.8%) had three or more children. In contrast, 41.9 per cent of women who resided in urban areas had three or more children. The Chi square test confirmed that type of place of residence and fertility are negatively associated and significant (p < 0.0000). These results are consistent with Shapiro & Tambashe (1999) who found that in SSA, fertility in urban areas is lower than that in rural areas. From table 4.1 above, the distribution of respondents by Wealth Quintile and fertility revealed that 23.7 per cent of the respondents belonged to the richest wealth quintile. Respondents in the poorest wealth quintile constituted 16.6 percent of the women sampled, 73.3 per cent of whom had three or more children compared to 36.7 percent in the richest wealth quintile. In the poorer and middle wealth quintiles, 66.5 percent and 64.3 percent respectively had more than three children. Lastly, 42.9 per cent of respondents in the richer wealth quintile had high fertility. The results are consistent with the national averages and the Chi square test confirms that the association between household wealth quintile and fertility was negative and highly significant $p < 0.0000$

4.2 The Effect of Female Labour Force Participation on the Fertility Outcomes of Kenyan women

Table 4.2 below displays the results of the logistic regression analysis describing the independent association between number of children ever born and labour force participation among women aged 15-49 years in Kenya. In terms of how female labor-force participation affects fertility, respondents who had not worked in the twelve months prior to the survey were 33.0 percent more likely to have less than three children compared to those who had worked during the same time-period.

Table 4.2: Association between number of children ever born and labour force participation among women aged 15-49 in Kenya, KDHS 2014 (N = 10,811)

Background characteristics	Less than 3 children	95 Percent CI		p-Value
	Odds Ratio	**Lower**	**Upper**	
Respondent worked in last 12 months				
Yes	Reference			
No	1.3300	1.2159	1.4548	0.0000

Source: Author's Estimates Using KDHS 2014 dataset

4.2.1 Demographic and socio economic factors influencing the effect of female labor-force participation on fertility

This sub section displays the results of the logistic regression analysis describing the independent association between number of children ever born, labor-force participation, demographic and socio-economic factors among women aged 15-49 years in Kenya. The second regression model was fitted by including the demographic and socio economic factors associated with fertility – respondents' five-year age group, respondents' age at first birth, education attainment, type of place of residence, region of residence and wealth quintile.

Table 4.3: Association between children ever born and demographic and socio-economic factors, among women aged 15-49 in Kenya, KDHS 2014 (N = 10,811)

Background characteristics	Less than 3 children	95 Percent CI		p-Value
	Odds Ratio	**Lower**	**Upper**	
Respondent worked in last 12 months				
Yes	Reference			
No	.7960	.6947	.9120	.0010
Age in 5-year groups				
44-49	Reference			
15-18	2481.3181	1100.8557	5592.8670	.0000
20-23	98.7958	76.0498	128.3448	.0000
25-28	12.3626	9.9102	15.4217	.0000
30-33	3.3206	2.6588	4.1471	.0000
35-38	1.4882	1.1768	1.8821	.0009
40-43	1.0340	.8011	1.3347	.7973
Age of respondent at first birth				
Below 18	Reference			
18+	4.0021	3.4961	4.5814	.0000
Highest educational level				
No education	Reference			
Primary	1.2284	.9581	1.5748	.1047
Secondary	2.2539	1.7263	2.9428	.0000
Higher	4.7679	3.5034	6.4888	.0000
Region				
Coast	Reference			
North Eastern	.4934	.3038	.8015	.0043
Eastern	1.2434	.9979	1.5491	.0522
Central	1.5086	1.2084	1.8834	.0003
Rift Valley	.6739	.5514	.8236	.0001
Western	.4676	.3643	.6001	.0000
Nyanza	.5104	.4042	.6445	.0000
Nairobi	1.0546	.8348	1.3323	.6558
Type of place of residence				
Urban	Reference			
Rural	.7193	.6290	.8226	.0000

Wealth index					
Poorest	Reference				
Poorer	1.4504	1.1809	1.7815	.0004	
Middle	1.8065	1.4728	2.2159	.0000	
Richer	2.8927	2.3510	3.5593	.0000	
Richest	3.6118	2.8755	4.5367	.0000	

The results of the second model revealed that women who had not worked in the twelve months preceding the survey were 20.4 percent less likely to have less than three children compared to those who had worked in the twelve months preceding the survey. The results further revealed that women whose age-at-first birth was eighteen years and above were 320 per cent more likely to have less than three children compared to women whose age at first birth was below eighteen years. As regards respondents' age group, the results reveal that, women in the 30-34 age group are 232.0 percent times more likely to have less than three children compared to women in the 44-49 age group. Women in the 35-39 and 40-44 age group are 48.8 per cent and 3.4 per cent respectively more likely to have less than three children compared to women in the 44-49 year age group. In terms of education attainment, the results showed that education attainment had a strong negative effect on fertility. Women with primary level education were 20 per cent more likely to have less than three children compared to women with no education, while women with secondary level education were 130 per cent times more likely to have less than three children compared to women with no education. All things held constant, having primary or secondary level education (relative to no education at all), significantly increased the odds of having less than three children. From the results, we can deduce that that the effect of education on fertility was strongest at the higher education level. Women with higher level of education were 376.7 per cent more likely to have less than three children compared to women with no education. The rural-urban differential showed that urbanization had a strong negative effect on fertility and women residing in rural areas had a 27 percent less likelihood of having less than three children compared to women residing in urban areas. These results demonstrated some similarity to those of regional differentials. Region of residence was included in the model to capture the socio-cultural dynamics including

gender and social norms. Respondents from Nairobi the countries capital, which is highly cosmopolitan, and culturally diverse, were 102 per cent more likely to have less than three children compared to those from Coast region. Likewise, respondents from Central and Eastern regions, which are more urbanized, compared to other regions, were 156 per cent and 138 per cent respectively more likely to have less than three children compared to those from Coast region. On the other hand, women from Rift Valley and Nyanza regions were 40 per cent and 50 per cent respectively less likely to have less than three children compared to those from Coast region. Lastly, respondents from North Eastern and Western regions were the least likely to have low fertility (60% and 51% respectively) compared to those from Coast region. Lastly, respondents from the richest wealth quintile were 320 per cent more likely to have less than three children compared to those in the poorest wealth quintile. Likewise, Women from the middle and richer wealth quintiles were 102 per cent and 230 per cent respectively more likely to have lower fertility compared to their counterparts in the poorest wealth quintile.

In conclusion, in the first model, women who had not worked twelve months prior the survey were 33.0 percent more likely to have less than three children. In this second model, women who had not worked were 20.4 percent less likely to have less than three children relative to those who had worked in the twelve months preceding the survey. From the results, it is evident that female labor-force participation works through demographic and socio economic factors to affect fertility outcomes of Kenyan women. The observed magnitude of the cumulative effect of the demographic and socio economic factors on the influence of female labor-force participation on fertility was large enough to change the effect from positive to negative.

4.2.2 Proximate Determinants Influencing Effect of Female Labor-Force Participation on Fertility

In this third model of proximate determinants, women who had not worked twelve months before the survey where 16.0 percent less likely to have lower compared to those who had worked during the same time frame. This is in comparison to 33.0 percent more likely and 20.4 percent less likely to have less than three children in the first and second models respectively. In terms of current use of contraception, women currently using contraception

were 38.1 percent more likely to have less than three children compared to their non-using counterparts. Current marital status was highly statistically significantly and positively associated with fertility at p<0.0000. Currently married women were 90 percent less likely to have less than three children relative to women who were never married. Similarly, separated, divorced or widowed women were 80.2 percent less likely to have less than three children compared to never married women. In terms of age at first birth, women initiated childbearing at 18 years and above were 325.4 percent less likely to have less than three children compared to those who initiated cildbearing below 18 years. As regards, respondents' five-year age group, women in the 20-24 and 25-29 year age group are 46.8 per cent and 93.2 per cent respectively more likely to have less than three children compared to women in the 44-49 age group. As regards education attainment, women with primary level education were 24.1 percent more likely to have less than three children compared to those with no education. Similarly women with secondary and higher level education were 134.8 per cent and 393.2 per cent respectively more likely to have three children compared to their counter parts with no education.

Rural-urban differentials revealed that respondents residing in rural areas were 26.2 percent less likely to have less than three children compared to women residing in urban areas. In terms of region of residence, women residing in Nairobi were percent likely to have less than three children compared to women residing in Coast region. Likewise, respondents from Central and Eastern regions had a 156 per cent and 138 per cent respectively more likelihood of having less than three children compared to those from Coast region. On the other hand, women from Rift Valley and Nyanza regions were 40 per cent and 50 per cent respectively less likely to have less than three children compared to those from Coast region. Lastly, respondents from North Eastern and Western regions were the least likely to have low fertility (60% and 51% respectively) compared to those from Coast region.

In terms of wealth quintile, women in the richest and richer wealth quintile were 346.5 percent and 230.1 per cent respectively more likely to have less than three children relative to women in the poorest wealth quintile. Similarly, women in the poorer and middle, wealth quintiles were 61.0 per cent and 1-2.1 per cent more likely to have less than three children compared to women in the poorest wealth quintile.

Table 4.4: Association between children ever born, demographic socio-economic factors and proximate determinants among women aged 15-49 in Kenya, KDHS 2014 (N = 10,811)

Background characteristics	Less than 3 children	95 Percent CI		p-Value
	Odds Ratio	Lower	Upper	
Respondent worked in last 12 months				
Yes	Reference			
No	0.8393	0.7291	0.9661	.0147
Currently using contraception method				
No	Reference			
Yes	0.6189	0.5507	0.6956	.0000
Marital Status				
Never married	Reference			
Married	0.1000	0.0763	0.1311	.0000
Divorced/Separated/Widowed	0.1976	0.1476	0.2645	.0000
Age in 5-year groups				
15-18	Reference			
20-23	0.0532	0.0240	0.1179	.0000
25-28	0.0068	0.0031	0.0151	.0000
30-33	0.0018	0.0008	0.0039	.0000
35-38	0.0007	0.0003	0.0017	.0000
40-43	0.0005	0.0002	0.0011	.0000
45-48	0.0004	0.0002	0.0010	.0000
Age of respondent at first birth				
Below 18	Reference			
18+	4.2542	3.6988	4.8930	.0000
Highest educational level				
No education	Reference			
Primary	1.2414	0.9613	1.6031	.0975
Secondary	2.3483	1.7822	3.0941	.0000
Higher	4.9327	3.5842	6.7884	.0000
Region				
Coast	Reference			
North Eastern	0.4609	0.2812	0.7555	.0021
Eastern	1.3856	1.1031	1.7405	.0051

Central	1.5643	1.2416	1.9709	.0001
Rift Valley	0.6083	0.4942	0.7487	.0000
Western	0.4901	0.3787	0.6343	.0000
Nyanza	0.5377	0.4224	0.6844	.0000
Nairobi	1.0243	0.8040	1.3050	.8458
Type of place of residence				
Urban	Reference			
Rural	0.7374	0.6417	0.8474	.0000
Wealth index				
Poorest	Reference			
Poorer	1.6105	1.3032	1.9903	.0000
Middle	2.0215	1.6354	2.4988	.0000
Richer	3.3014	2.6619	4.0944	.0000
Richest	4.4652	3.5179	5.6678	.0000

4.3 Discussion

The study analyzed what effect of female labor-force participation had on the fertility outcomes of Kenyan women. The study defined the fertility variable as a woman having either less than three children or three children or more. The benchmark was set at three children because the target of the country's population policy is set at 2.6 children per woman by 2030. The results reveal that despite the negative effect of labor-force participation on children ever born, there was a relatively high proportion (58.0%) of women with three children or more among women who had worked in the twelve months preceding the survey. These findings are consistent with those of The World Bank (2015) which established that in SSA countries, female labor-force participation rates where high and prevailed concurrently with decreasing but high fertility rates. This implies that there are factors mediating the how fertility is effected by female labor-force participation, as supported by the results of the study. The results of the logistic regression models are presented in table 4.2, 4.3 and 4.3. The second model was fitted by including demographic and socio economic factors associated with women's work and fertility. The third model was fitted by including two proximate determinants of fertility – current marital status and current use of contraception.

In the first model, in terms of the effect of female labor-force participation on fertility, it was observed that women who had not worked twelve months before the survey were 33.1 percent more likely to have less than three children compared to women who had worked. The effect of FLFP on fertility changes drastically in the second model, where women who had not worked had a 20.4 per cent less likelihood of having less than three children compared to those who had worked. Similarly, in the third model, women who had not worked were 16.3 per cent less likely to have less than three children relative to their non-working counterparts. The results reveal that female labor-force participation worked through demographic, socio economic factors and proximate determinants to affect the fertility outcomes of Kenyan women. The results imply that the observed magnitude of the influence of the demographic and socio economic factors is greater than that of the proximate determinants. Consequently, the magnitude of the cumulative effect of the demographic, socio economic and proximate determinants on the overall impact of women's participation in the labor-force on fertility was substantial. These findings can be explained by the results of the third model of proximate determinants. It was observed that current marital status was highly statistically significant and positively associated with fertility. In terms of the influence of marital status on the relationship between FLFP and fertility, the observed high fertility among married women who had worked in the last twelve months can be attributed frequent exposure to sexual intercourse and the availability of cheap domestic labor and extended family networks to mitigate any conflict arising from combining work and childrearing. The study revealed that women in the 25 to 34 year reproductive age constituted a significant proportion the working age population of the women sampled. It was expected that the orientation of these cohorts towards labor markets and individual careers would shape their fertility decisions. One plausible explanation for the low percentage of respondents in the 15 to 24 year age group could be one advanced by Cleland (2014) that the longer years spent in schooling contributed to a reduction in the participation rate of these cohorts.

The influence of age at first birth on the association between FLFP and fertility revealed that women who initiated childbearing at eighteen years and above had lower fertility that those who initiated birth below eighteen years. These observations can be explained by the fact that early initiation to childbearing exposes women a longer childbearing period,

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The findings further reveal that the proportion of women who had high fertility consistently reduced with increasing levels of education attainment demonstrating that education had a strong negative effect on fertility. Of concern, is that the results revealed a relatively low percentage of women at secondary level of education (15%) compared to primary level (55.1%). A deeper examination of these results reveals a number of observations. One, whereas primary level education instills literacy and numeracy skills, completion of secondary education is critical because it expands opportunities for further skills development that can lift women out of the agricultural sector to more formal sectors of employment. Secondly, completion of secondary level education increases delays the on-set of childbearing and the age-at-first marriage, both of which lead to lower fertility. The low percentage of respondents in the secondary level supports the assertion by Lutz et. al., (2019) that a plausible explanation for the stalls in fertility decline in SSA, could be due to the disruptions in the gains made in female education, particularly at secondary level. Research has established that completion of secondary level education is critical because in addition to literacy skills obtained at primary level, it helps to delay the on-set of childbearing and age at first marriage. It also opens up opportunities for higher education, which is crucial to enable women access better paying work in the formal labor sector.

Fertility differential by type of place of residence revealed that urbanization had a strong negative effect on fertility. Similarly, regional differentials demonstrated that a high proportion of respondents from the more urbanized regions of Nairobi, Central and Eastern had low fertility. These observations suggest that in the urban areas, women who had worked in the last twelve months prior to the survey might have experienced difficulty combining work and their maternal role. This could be occasioned by women engaging in salaried/wage work, or informal sector work away from the home that research has shown tend to be less compatible with childbearing (McRae 2013). Additionally, the observations support arguments previously advanced by demographers that the variations in fertility in rural and urban areas are indicative of initial fertility decline in populations. Paradoxically, the overall percentage of respondents who reported high fertility was relatively high despite the fact had they worked and resided in urban areas. This is an interesting result. One plausible explanation for this paradox could be that the national average for the desired number of children/demand for children was generally high. Additionally, one could argue

that the availability of paid child-care services, parental surrogates in the form extended family members and cheap domestic care as posited by Chaudhary and Verick (2014) minimized the negative effects of labor-force participation on fertility. On the other hand, the high percentage of respondents who resided in rural areas and reported high fertility could be explained by the fact that a majority of the women in rural areas are presumed to engage in agricultural activities, which are considered compatible with childbearing. Similarly, Western and North Eastern regions had a higher proportion of respondents who had high fertility relative to the other regions. These results can be explained by socio cultural norms and gender roles that place a high premium on children, or high child mortality rates that consequently promote a high demand for children. These findings are consistent with Shapiro & Tambashe (1999) who found that in SSA, fertility in urban areas is lower than that in rural areas by an average of 1.8 children per woman. Taken together, these results imply that, whereas overall, labor-force participation had a strong negative effect on children ever born, women in urban areas and more urbanized regions experienced structural and institutional challenges in combining their maternal roles and work and participating in the labor-force.

CHAPTER FIVE
CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

The overall objective of this research paper was to analyze the effect of Kenyan women's participation in the labor-market on their fertility outcomes, to estimate the magnitude of the role-played by demographic and socio economic factors and finally, to draw policy implications and recommendations from the study findings. A summary of the key findings of the study are presented in section 5.1, followed by a discussion of policy implications of the study, and a proposal of areas for further inquiry

5.1 Summary of key Findings

In conclusion, Kenyan women's participation in the labor-force had a negative effect on their fertility outcomes. The results revealed that the observed magnitude of the effect of education attainment, type of place of residence, region of residence and wealth Quintile was substantial and changed the relationship from positive to negative. On the other hand, the observed positive effect of current marital status (proximate determinants), on fertility reduced the effect of women's participation in the labor-market on fertility. The results further revealed that women in the reproductive ages 23 to 34 constituted a significant proportion the working-age population.

5.2 Recommendations

5.2.1 Policy

In order to position itself to achieve the development aspirations expressed in Kenya Vision 2030 and Sessional Paper No. 3 of 2012 on Population Policy for National Development, the country should prioritize investments that accelerate fertility decline and create the requisite conditions for reaping the demographic dividend. These include policies and interventions that increase the human capacity of women such as completion of secondary school and enhanced opportunities for tertiary/higher education that enable women to access work in the formal work sector. To enhance the critical role of FLFP in reducing fertility rates, government should prioritize creating more job opportunities for women and girls

5.2.2 Further Research

The study recommends that future inquiry be made using longitudinal data in order to observe changes in the relationship over time. Nonetheless, the result is a modest contribution to the on-going discourse on the effect of female labor-force participation on fertility in Kenya, within the broader context of the fertility transition and demographic dividend paradigm.

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APPENDIX 1: TURN IT IN REPORT

THE EFFECT OF FEMALE LABOR-FORCE PARTICIPATION ON FERTILITY: EVIDENCE FROM KENYA

by Ojiambo, Mildred Oundo

THE EFFECT OF FEMALE LABOR-FORCE PARTICIPATION ON FERTILITY: EVIDENCE FROM KENYA