DETERMINANTS OF FEMALE LABOUR FORCE PARTICIPATION IN RURAL KENYA

BY

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DECLARATION

This Research Paper is my original work and has not been presented for award of degree in any other University.

30/06/06

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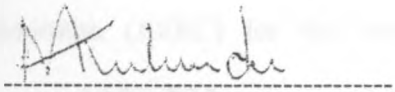
This Research Paper has been submitted for examination with our approval as University Supervisors



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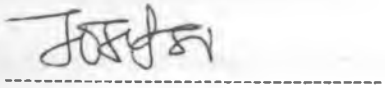

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Dedication

Dedicated to: my father Joseph, my mother Mary, my wife Judith and my daughter Nyambatta.

Abstract

This study analyses the factors that determine female labour force participation in the rural areas in Kenya with a view to identifying appropriate policy formulations that can help raise their labour force participation rate. The study uses the 1998/99 Integrated Labour Force Survey data which collected information on labour force participation status as well as information relating to the various socio-economic characteristics of the individual rural females. The analysis is a probit estimation of the labour force participation status which is dependent on the various socio-economic characteristics. The study findings show that formal education increases participation and that marital status is not an important factor in determining female labour force participation in rural areas. Other noted factors that positively influence female labour force participation are household headship status, household income, number of school going children and number of pre-school going children in a household. Household size was found to discourage participation. The findings suggest that the government should increase its investment towards women's education so as to increase their labour force participation.

1.0 CHAPTER ONE

1.1 INTRODUCTION

The standard labour force framework as provided by the 13th International Conference on Labour Statistics (ICLS, 1982) categorizes the population into two mutually exclusive classes: the economically active and the economically inactive. The economically active population (the labour force) consists of those members of the population who were working plus those who were not working but were looking for work during the reference period. The inactive population covers those members of the population who were not available for work during the reference period. This study adopts this international categorization for which labour force covers persons aged between the ages 15 to 64 years and uses a reference period of one week. Labour Force Participation Rate is defined as the proportion of the economically active population to the working age (15 to 64 years) population during the reference period (one week).

Decades have passed since it became recognized that effective and sustained participation of females in the labour force alongside their male counterparts has a tremendous potential of accelerating economic development and growth. It is for this reason that the International Labour Organization (ILO) revised its standards that prohibited women's night work in industry. The prohibition which was originally hailed as a major advance for the protection of female workers was later seen as an obstacle of equality and necessitated a call for the protection of all instead (Politakis,2001).

In Kenya females have been venturing into some hitherto exclusively considered male reserved occupations. Examples of these have been seen in the increased number of females

in the transport industry both as drivers and conductors of public service vehicles, as well as in the number of females taking up jobs as night and day "Watchmen and Security Guards". In the same breadth there has been a sustained campaign for affirmative action in Kenya by women to ensure increased female participation in all cadres of economic activity.

World statistics however showed that only a third of the economically active population were females in the 1970s through to the year 2000 (ILO, 1974). Projections indicated that while the proportion of female labour force participation in the developed countries showed a steady improvement from 343 females per 1000 economically active persons in the 1970s to 376 females per 1000 economically active persons in 2000, there was a steady decline in female labour force participation from 311 females per 1000 economically active persons in the 1970s to 298 females per 1000 economically active population in 2000 in Africa (ILO, 1974).

The world statistics are consistent with Kenya's own statistics which showed that the average wage employment distribution by sex for the five years from 1999 to 2003 consisted of about 30% females while males accounted for 70 % of the total wage employment (Government of Kenya, 2003). Presently the highest participation rates of 80% and above are found in sub-Saharan Africa where because of lack of social protection, men and women cannot afford to forego work. Lowest rates of 50% and below are found in the Middle East and North Africa where the low participation rates of females bring down the overall rate.

The structure of employment in Kenya is such that the majority of the population depend on rural small scale farming and pastoralist activities. The rest of the employment then can be regarded as comprising of modern establishments and the informal sector. The modern establishments are

divided into two, wage employees and self-employed/unpaid family workers. Wage employment grew from 1,688,700 persons in 1999 to 1,727,600 persons in 2003 an increase of 2.3%. During the same period employment in the informal sector grew from 3,738,800 persons in 1999 to 5,545,200 in 2003 representing an increase of 48.3%. The modern sector again is divided into private and public sectors, with the private sector having 1,068,600 persons while the public sector had 659,100 persons employed in 2003 a difference of about 23%. Females constituted 29.5% of the total wage employment in 2003 (Government of Kenya, 2004).

The breakdown of the labour force by sex and age group gives a profile of the distribution of the economically active population within a country. In the short run, the proportion of the population that is of school going age determines the rate of growth of the potential labour force but in the long run this is determined by factors such as mortality rates, fertility rates, and socio- economic factors governing decisions to participate in the labour force. The Kenyan labour force has increased rapidly due to rapid increases in population. The labour force was about four million in 1969, increasing to about 9 million in 1989 and to about 16 million in 1999 representing an increase of about 300% in just 30 years (Government of Kenya, 2002).

Table 1: Participation and Unemployment Rates for Rural and Urban Areas (percentage)

REGION	Sex	Year	Participation Rates	Unemployment rates
URBAN	Male	1977/78	83.9	-
		1986	82.2	11.6
		1998/99	92.6	12.5
	Female	1977/78	38.8	-
		1986	55.8	24.1
		1998/9	88.7	38.1
RURAL	Male	1977/8	83.4	-
		1988/9	87.2	0.4
		1998/9	74.8	8.3
	Female	1977/8	86.9	-
		1988/9	91	0.1
		1998/9	51.9	10.4

Source: Labour Force Survey Reports (1988, 1991, 2003) and Manda (2004), Table 2

Table 1 shows how participation and unemployment rates vary between males and females and between rural and urban areas of Kenya from 1977 to 1999. From the figures in table 1 we notice that whereas male urban participation showed only a marginal decline between 1977/78 to 1986 and a modest 10% increase for the period 1986 to 1998/99, the urban female participation registered large increases starting from a low of 38.8% in 1977/78 to 55.8% in 1986 and to 88.7% in 1998/99. Despite these large increases, the urban female participation still remained lower than the urban male participation rates.

Also, while participation rates for males in urban areas and males in rural areas were almost the same during the 1970s and 80s, there were large differentials in participation rates between rural females and urban females during the same periods. Rural female participation was some 48.1 percentage points higher than urban female participation in 1977/78. The late 1990s saw a complete reversal of this high participation rate with a low rural female participation rate of 51.9 % which was some 36.8 percentage points lower than the urban female labour force participation rate. This is probably a reflection of the fact that the impact of economic difficulties has been felt more in the urban areas than in the rural areas in the late 1990s. The increasing participation rates for females in the urban areas probably means that more women are forced to join the labour force to supplement the incomes of their husbands.

The figures in the table indicate that there were unemployment increases during the economic reform periods of the 1980s and 1990s in both urban and rural areas and for both males and females. Although male urban unemployment increased only marginally from 11.6% in 1986 to 12.5% in the 1998/99 period, there was a substantial increase in urban female unemployment from 24.1% to 38.1% during the same period. According to the 1988/89 Rural

Labour Force Survey report, rural unemployment was low at 0.4% for males and 0.1% for females for the period, but both shot up to 8.3% and 10.4% respectively in the 1998/99 period.

Table 2: Labour Force Participation Rates by Sex and Age, 1988/89 and 1998/99 (percentage)

Age Group	1988/89		1998/99	
	Male	Female	Male	Female
15-19	83.1	91.5	28.1	30.5
20-24	89.5	94.8	66.6	69.8
25-29	96.1	95.8	91.5	87.7
30-34	98.6	97.1	96.6	91.6
35-39	98	97.9	97.4	92.3
40-44	98.4	96.4	97.5	92.9
45-49	97.2	97.3	95.6	90.7
50-54	95.5	97.1	94	86.9
55-59	97.7	98.1	87.8	82.5
60-64	97.5	93.8	85	77.4
Total	**87.2**	**91**	**74.7**	**72.6**

Source: Labour Force Surveys Reports (1991and 2003)

Table 2 shows participation rates by sex and age for the 1988/89 Rural Labour Force Survey and the 1998/99 Integrated Labour Force Survey. These statistics reveal that female participation rates were higher than male participation rates in the younger age groups (15-24) for both years. This is perhaps a reflection of the fact that more females get married earlier than their male counterparts of the same age group and therefore join the labour force immediately they lose parental support. The 1998/99 labour force data shows that only 8.6% of the males in the age group (15-24) were married compared to 26.2% of their female counterparts in the same age group. From table 2 female participation rates increases with age up to age 40 for both years. After which it declines slightly between the (40-44) age group before it rises again and peaks at (55-59) age group for the1988/89 period. The 1998/99 figures however show that female participation peaks at the (40-44) age group before declining.

Table 3: Labour Force Participation Rate by Sex and Education 1988/89 and 1998/99 (percentages)

Education Level	1988/89		1998/99	
	Males	Females	Males	Females
None	89.8	93.0	86.0	82.7
Primary	85.9	89.5	85.0	83.1
Secondary	88.4	92.8	94.6	90.1
College	97.5	95.6		
University	89.1	31.7	95.2	100.0
Post Graduate			98.2	100.0
Total	87.2	91.0	88.8	84.8

Source: Labour Force Survey Reports (1991and 2003)

Table 3 shows Labour Force Participation Rates by Sex and Education for the Rural Labour Force Survey 1988/89 and the 1998/99 Integrated Labour Force Surveys. A general trend of female participation rates increasing with the level of education can be discerned here though not very strongly. It is seen clearly that the relationship between education and labour force participation is such that those with higher educational levels participate more in the labour force for both males and females for the two years.

The relationship between education and labour force participation is not as strong for females in the rural areas as compared to females residing in the urban areas. This is because in rural areas agricultural work predominates. In urban areas, females with higher levels of education have high probabilities of being in the labour force. In rural areas, the need to decide whether to participate in the labour force or care for children is not as critical as in urban areas. In urban areas, unskilled females do not work because they cannot earn enough to cover child care payments. However, in rural areas, since the work is mainly on the farm, children who are not in school accompany the mother on the farm or to fetch water and thus negate the need for an employee to care for the child.

1.2 PROBLEM STATEMENT

Whereas there is no controversy that equitable role of both women and men are important in accelerating both economic development and growth, statistics show that females have constituted only one third of those in paid employment in Kenya for the past several years. What has also been notable is not just the fact that female labour force has been low compared to that of males, but that the labour force participation of females in the urban areas has been increasing while the labour force participation of females in the rural areas has been declining over the decades.

For females residing in the urban areas the participation rate was low at 38.8% in the 1970s, improved to 55.8% in the 1980s and was 88.7% in the late 1990s. The participation figures show that female participation rates in the rural areas were higher in the 1970s at 86.7% and improved to 91% in the 1980s but experienced a sharp decline up to 51.9% in the late 1990s decade(see table 1). Since the bulk of the economically active female population live in the rural areas, it becomes imperative that such a sharp decline call for an investigation and an analysis of the factors that determine the rural female labour force participation.

Several Studies have been conducted and show that female labour force participation depend on several factors such as age, education level, marital status, number of children, household income amongst other factors. However, since a number of these socio-economic factors change over time, it becomes important to re-analyze these variables in the context of the latest data and to try and explain how some of these variables may have been responsible for the sharp decline recorded in the 1990s. Further a number of the studies that have been conducted in the recent past (Manda, 1997; Ongile, 1989and Maglad, 1998) have been on

female labour force participation in urban areas. This particular study will deviate from these studies by using data which relate to the rural female so as to bring out any uniqueness between the rural and urban areas in terms of female participation.

Many of the past studies have used the hours of work and wage earned as variables to estimate female participation rates. But this particular study does not use any of these two variables. This is mainly because the data used in this study being from the rural areas would not give accurate estimates of hours of work and the wages earned since most rural females are not in wage employment. This study will complement findings from the others that have been done in the past and will therefore throw some light into any changes which might have taken place to warrant drastic decline in rural female labour force participation rate.

1.3 OBJECTIVES OF THE STUDY

(i) To identify the factors that influence female labour force participation in rural areas in Kenya.

(ii) To analyze the factors that influence female labour force participation in rural areas in Kenya.

(iii) To outline policy implications in the light of the findings in (i) and (ii) above.

2.0 CHAPTER TWO

2.1 LITERATURE REVIEW

Several studies have been conducted in both developed and developing countries on the determinants of female labour force participation. The studies have identified a number of factors affecting female labour force participation which include:-Age, Marital Status, Education, Number of pre-school going children in a household, Number of school going children in a household and Fertility as measured by the total number of children born to a female. Other factors determining female labour force participation are Household Headship, Household Assets, Income of the household, GDP per capita, Migration and increases in the predicted wages of the household head among other factors.

Education is expected to be positively related to female labour force participation. This is because a higher level of education can increase the assets a woman can offer to a potential employer thereby raising her probability of being employed. At the same time since education increases her productivity, this raises her opportunity cost of not working and provides her with an incentive to work and to recoup the human capital investment embodied in her. Maglad (1998) carried out a study that analyzed the factors that determine female labour force participation decisions in western and central Sudan's urban areas. The sample he used in the study was small consisting of about 700 married women of whom only 128 participated in the labour market with 90% of them being employees in professional and clerical positions. The probit model estimates he obtained showed that there was a positive and significant influence of education on a woman's decision to participate in the labour force. Manda (1997) found the same result when all the six

education dummies he used had the expected positive signs indicating that females with formal education are more likely to participate in the labour force than those with no formal education. The coefficients of the six education dummies indicated that the higher the level of education attained the more likely a female will participate in the labour force. Similar results were also found by Mariara (2003) and Ongile (1989). Saget (1999) also found a positive relationship between tertiary education and female labour force participation but a negative relationship between elementary and vocational education and female labour force participation. Robinson (2005) in a study of the Middle East and North African countries used education as measured by the illiteracy rate of adult females as an explanatory variable. The ordinary linear regression results however contradicted this hypothesis and returned a statistically significant positive correlation between adult female illiteracy and female labour force participation. His results could be criticized because most economic relationships do not exhibit linear relationships.

Married women are expected to participate less in the labour market due to family obligations such as taking care of children. Most married women, unlike their single counterparts can afford longer periods of job search without losing their means of livelihood because of financial sustenance from their spouses. Mariara (2003) in a study examined the distribution of labour by gender across the job market in Kenya in order to determine if there was discrimination against women in labour market participation and wages. Using a multinomial logit model, the results indicated that married women in Kenya are less likely to work than their unmarried counter parts. Also married men are more likely to work than their unmarried counter parts which could be explained by the fact that Kenyan men actually marry once they have a job and can provide for a family. Similar results of the probability of married women participating less in the labour force compared

to their unmarried counter parts was also found by Ongile (1989). Using data for Kenyan urban areas for three periods almost ten years apart i.e. 1977/78, 1986 and 1995, Manda (1997) found the same negative relationship to exist between female labour force participation and marriage. The 1995 coefficient though also negative was insignificant indicating an increased need for married women to participate in the labour force.

In several female labour supply studies in developed countries, the presence of children in the household usually has a significant negative impact on female labour supply probably due to high child care costs in those countries. This mainly applies to women seeking formal wage employment in which work places are separated from home and work attendance is at fixed periods of the day. Informal sector labour markets in developing countries give women a more flexible working environment by enabling them to engage in economic activities while simultaneously caring for their children (Hill, 1988). Also hired private child care is cheap in most developing countries and the presence of extended family members in the household help in alleviating the problem of child care for most women.

A number of studies got results according to priori expectation that the presence of pre-school going children in a household discourages female labour force participation (Manda (1997), Maglad (1998) and Saget (1999)). However, using a 1986 urban data for Kenya, Ongile (1989) found that the presence of pre-school going children (below 5yrs of age) was not significant in determining female labour force participation in urban Kenya. The number of pre-school going children was found to have a positive and significant relation to a female's labour force participation by Mariara (2003). This result which is contrary to priori expectations she argued confirms the argument that theoretically, small children have

contradicting effects on a woman's participation as they need care and at the same time increase the demand for goods.

The presence of school going children in a household was found to be positively related to female labour force participation by Manda (1997), Maglad (1998), and Saget (1999). These findings are according to priori expectations, either because their presence in a household represents a higher financial constraint on the household income or because of the greater time available to mothers of older children. Mariara (2003) however found that older children discouraged participation in the labour market for both men and women while Ongile (1989) did not find the relationship between school going children and female labour force participation to be significant although it was positive.

The total number of children born to a woman is usually used a as proxy to fertility estimation. Fertility is generally expected to have a negative correlation with female labour force participation. More and better paying job opportunities will increase the relative cost of having children. This is particularly true especially in developed countries where most women are in wage employment and work away from home. Robinson (2005) got the result as expected a negative correlation between fertility and female labour force participation for Middle East and North African countries' women. The total number of children born to a woman was found not to affect the labour force participation of females in urban Kenya by Ongile (1989). Lim (2001) observed that most women in sub-Saharan African countries are hired in peripheral, insecure and less valued jobs characterized by low pay, irregular incomes and lack of social protection. Such jobs could not be expected to provide a satisfying alternative to child bearing.

Lim (2001) also points out that home based work is an important and expanding source of employment for women as they are better able to combine work with family responsibility. Additionally occupational segregation was found to be more detrimental to women and where women were excluded from career jobs and were not able to satisfy their status aspirations, they might have sought to enhance their self-esteem in motherhood. In sub-Saharan African countries, socio-cultural norms support high fertility and women are oriented towards motherhood with the expectation that they marry early and give birth to many children. A woman's status then is measured largely by her capacity to reproduce and maintain children (ILO, 2001e). This trend in female labour force participation has been one of rising unemployment and concentration in agricultural sector and informal economy where women are engaged mainly in survival type activities although they continue to want large families.

Age is expected to be positively related to female labour force participation up to some point and then declines. This is because as young girls grow up they are still dependent on their parents and their participation rate is low, but as they grow up they become more and more independent and they participate more in the labour force. As their age advances in marriage and as the number of children increase, they exert greater effort in the labour force to meet such increasing demand. At some age they begin to drop out of the labour force as they retire. We therefore expect the coefficient of the age variable to be positively related to female labour force participation and the coefficient of age squared to be negatively related to female labour force participation.

Several studies have been conducted that relate female labour force participation to age. Manda (1997) used age and age squared as explanatory variables using Kenyan data for

three periods 1977/78, 1986 and 1995. The results showed that the age and age squared had the expected positive and negative signs respectively and were significant. The result therefore showed that females' participation probabilities form an inverted U-shaped relationship with respect to age. This therefore seemed to suggest that women in Kenyan urban areas do not withdraw from labour force during their child bearing and rearing period of their life cycle.

Lim (2001) in studying the relationship between fertility and women's labour force participation in developing countries with intermediate levels of fertility supports Manda's finding when he observed that women remain in the labour force throughout their child bearing and rearing ages. This he observed was unlike in the past when particularly in developed countries, women would enter the labour force in their twenties, leave after a few years to bear and raise children and re-entered the labour force towards the end of their child bearing years. Lim (2001) observed that labour force participation rates for women are high in their twenties, rise through their thirties and forties and only decline after age 50.

Similar results in which female labour force participation increased with age up to some point and then decline were found by Mariara (2003) and Ongile (1989). Saget (1999) however found contradicting results for women in Hungary. In his study, the coefficient of the wife's age was found to have a negative relationship with female labour force participation while age-squared was found to have a positive relationship with female labour force participation.

Greater non-labour income is likely to lower the probability of female labour force participation. Therefore the effect of non-labour income is expected to be negatively related to female labour force participation. Saget (1999) found household non-labour income to be negatively related to female labour force participation. Manda (1997) used income of other household members as a proxy to non-labour income and found that non-labour income had no significant effect on female labour force participation.

Most women migrate especially to urban areas to join their husbands. Such women are motivated to participate in the labour market only if there is need to supplement family income. The variable is expected to be positively related to female labour force participation. Manda (1997) found the coefficient for migration motive to be positive and significant suggesting that participation probabilities for women migrating to urban areas with an aim of seeking employment was higher than for women who had other motives for migrating. Urbanization is considered to reflect many job opportunities and in the long run is associated with increased female labour force participation in non agricultural sector. Robinson (2005) contradicted this expectation and urban percentage population was found to have a strong negative relationship to female labour force participation.

Household assets, income of the household head, other household earnings, and household income per capita all have a priori expectation of being negatively related to female labour force participation. Maglad (1998) supported the negative relationship although it was not significant. Ongile (1989) found the household income to be statistically insignificant in explaining the female labour force participation in urban Kenya. Saget (1999) however found a positive relationship between other household income other than the wife's labour income and female labour force participation.

Saget (1999) found that increases in predicted wages resulted in increases in the probability of the wife's labour supply for women facing a market wage just above the sample mean wage. Maglad (1998) found that a woman's participation in the labour market significantly reduces as the household head's predicted wages rise. Maglad (1998) found a positive and significant influence of post-schooling experience on the woman's decision to participate in the labour force. A negative quadratic experience term indicated that the probability of being in the labour force was higher the longer the woman spent in the market activity but declined after reaching a certain age.

Manda (1997) found that the household head variable had the expected positive sign and was significant reflecting the fact that women who are household heads participate more in the labour force than their counterparts who are not household heads to enable them support their dependants.

Odhiambo and Manda (2003) in a study of urban poverty and labour force participation examined the link between urban poverty and labour force participation in Kenya. The study utilized information from the Welfare Monitoring Survey (WMS) 1994 and 1997 compiled by the Central Bureau of Statistics as well as data from the 1998/99 Integrated Labour Force Survey to asses the linkage. Logit estimates of the impact of labour force participation on poverty indicated that the risk of poverty critically hinges on labour force status of the family head. Households whose heads are unemployed are more likely to be poor as indicated by the positive and statistically significant coefficient. The results also showed that household heads who are unskilled are more likely to be poor than households

whose heads are skilled. Workers in the informal sector have a higher probability of being poor compared to their counterparts in the formal sector.

Across the process of economic development adult women's labour force participation is U-shaped. When incomes are extremely low and when certain types of agriculture dominate women are in the labour force to a great extent. They are sometimes paid labourers, but more often unpaid family workers on family farms and in household business. As incomes increase with development, women's participation falls as technology results in a decrease in demand for women's labour in agriculture. Increased income fuels schooling and expands the supply of educated females to the white collar jobs, thereby completing the U-Shape Claudia (1994). Labour force is considered a factor of production that contributes to output growth so that a strong output growth reflects and leads to employment growth and lower unemployment. Thus one would expect a positive correlation between GDP and female labour force participation. Robinson (2005) found that GDP was indeterminate and not statistically significant for female labour force in Middle East and North African countries.

Traditional beliefs in Middle East and North African countries, primarily a result of large Muslim population encourages conservative role for women to work in the home raising children and carrying out domestic duties. A high negative correlation would therefore be expected between a regional dummy variable representing a Muslim dominated region and female labour force participation. Robinson (2005) got a positive correlation between the non-MENA dummy and female labour force participation and concluded that there is a negative correlation between Islam religion and female labour force participation. Manda

(1997) and Ongile (1989) found the same results for the Muslim dominated regions of Kenya.

2.2 LITERATURE OVERVIEW

Previous studies on female labour force participation as discussed above identify many factors as determinants of female labour force participation. Female labour force participation was found to increase with age up to some point and then declined. This inverted U-shaped relationship of participation with respect to age mainly reflects non-withdrawal of females from the labour force during the child bearing and rearing period of their life cycle. Married women were found to participate less in the labour force compared to their unmarried counterparts because they have more income security than single women.

The presence of pre-school going children in a household reduces female labour force participation while the presence of school going children in a household increases female labour force participation. Pre-school going children reduce the time available for the mother to participate in the labour force since much of the woman's time is diverted to taking care of the young ones. The school going children a part from increasing the time available to their mothers to work since they are no longer being taken care of, also means increased financial obligations for their schooling and upkeep, thereby forcing their mothers to work more.

Education increases the probability of a woman participating in the labour force and the higher the level of education attained by a woman the greater her chances of participating in the labour force. Women tend to participate more in the labour force in the informal sector

and home based work where time requirement for work is flexible and where they can combine market work with home and child care obligations.

Husband's income, household assets, other non-labour income to the household and prospects of increased earnings to the household all affect a woman's labour force participation such that the more they increase the less a woman participates in the labour force. The practice of Islam as a religion discourages female labour force participation in the Middle East and North African countries, retrogressive cultures in sub- Saharan African countries ensures that women participate more in the labour force for survival purposes. Women who are household heads participate more in the labour force than those who are not household heads to enable them support their dependants. Post-schooling experience was also found to increase female labour force participation.

The present study uses a database which focuses only on the rural population and has a relatively larger sample than most of the previous studies. In terms of methodology, whereas the previous studies used wages and hours of work as variables in their determination of labour force participation, this study does not make use of the two variables. This is mainly to avoid inaccuracies that would arise from the capture of the two variables in the rural areas. In the rural areas many women do not participate in the labour market and it would be difficult to impute wages for non market workers. To avoid the problem of inaccuracies arising from the reporting of hours of work and wage, this study estimates labour force participation on the basis of whether a female participates in the labour force or not, based only on the individual rural females' socio- economic characteristics.

3.0 CHAPTER THREE

3.1 INTRODUCTION

The method of analysis involves regressing the labour force participation status, which is a dependent dummy variable depicting whether a female participated in the labour force or not, with the various individual female socio- economic characteristics that influence the decision to participate as the independent variables. The extent to which a particular factor influences the decision to participate is determined by the coefficient of the respective factors from the regression results.

3.2 THE MODEL SPECIFICATION

The model used in this study is one in which the dependent variable is dichotomous. This means the dependent variable is a binary response variable of participation or non-participation. It takes the value of 1 if a female participates in the labour force and a value of 0 if the female does not participate in the labour force. The decision to participate in the labour force or not depends on the individual females' socio-economic characteristics. The extent to which each of these characteristics influence the decision to participate determines the probability of participation. Such a binary response can be expressed as:

$Y_i = \alpha + \beta_i X_i + \varepsilon_i$ ..... (1)

$i = 1, 2, 3, ...$

Where Y_i is the random variable with the behaviour, $Y_i = 1$ if a female participates in the labour force, otherwise $Y_i = 0$ if a female does not participate in the labour force.

X_i is a vector of socio-economic characteristics of the individual female which form the explanatory variables. With α and β_i as parameters to be estimated and ε_i is a vector of random terms with mean equal to zero.

Y_i can be estimated using OLS (Linear Probability Model), the Logit Model or Probit Model. The OLS would give unbiased estimator since the mean of the error term would be zero, but the estimate would be inefficient since it can be shown that the variance of the error term is not constant and hence heteroscedastic. A further limitation of OLS is that it can produce non-sensical predictions in which it can produce probability values outside the range of normal probabilities [0-1] or negative values and probabilities greater than 1. Also the Linear Probability Model assumes a linear functional form in which changes of Y_i with respect to X_i are assumed to be constant. Empirical suggestion though is that many economic variables do not have that kind of linear dependency. Because of these limitations, the logit and probit models remain superior to the linear probability model.

Most often, the choice is between assuming that errors follow either a normal distribution or a logistic distribution. When we decide to use the normal distribution, the resulting model will be Probit model, and when we decide to use the logistic distribution, the resulting model is the Logit model. The two models give the same results.

This study uses the probit model in which the observed dependent variable Y_i takes on one of the values 0 and 1 using the following criterion:

First assume that Y_i is the observed value which takes on the value 1 or 0. Then define a latent variable, y_i^* such that:

$$y_i^* = \alpha + \beta X_i + \varepsilon_i \text{ ----------(2)}$$

y_i^* is a theoretical variable and is assumed to be normally distributed i.e.

$\varepsilon_i - N(0, \sigma^2)$.

Therefore,

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

y_i^* is normally distributed but Y_i is not

$$\text{Prob}(Y_i = 1) = \text{Prob}(y_i^* > 0)$$

$$= \text{Prob}(X_i + \varepsilon_i > 0)$$

$$= \text{prob}(\varepsilon_i > -\beta X_i)$$

$$= \text{Prob}\left(\frac{\varepsilon_i}{\sigma} > -\frac{\beta X_i}{\sigma}\right)$$

$$= \Phi\left(\frac{\beta X_i}{\sigma}\right)$$

Where σ^2 is the variance, ε and ε/σ is distributed as standard normal.

$$\text{Prob}(Y_i = 0) = (1 - prob(Y_i = 1)) = (1 - \Phi(\beta X_i / \sigma))$$

Φ is the cumulative probability function. Since y_i^* is assumed to be normally distributed, Φ is the cumulative normal probability function.

The standardized cumulative normal function is given as:

$$P_i = F(Z_i) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{t} \ell^{\frac{-t^2}{2}} dt$$

where t is a random variable which is normally distributed with mean zero and unit variance. By construction Pi lies in the range [0, 1] and Pi represents the probability that an event occurs.

Estimation of this model is by Maximum Likelihood Estimation (MLE). Therefore the parameters β and α are obtained by maximising the following likelihood function:

$$\prod_{i=1}^{n} \Phi\left(\frac{\beta X_i}{\sigma}\right)^{y_i}\left[1 - \Phi\left(\frac{\beta X_i}{\sigma}\right)^{1-y_i}\right]$$

It is however much more convenient to estimate the log-likelihood function than the likelihood function.

The log-likelihood function is given as:

$$Ln(L) = \sum\left\{y_i Ln\left[\Phi\left(\frac{\beta X_i}{\sigma}\right)\right]\right\} + (1-y_i) Ln\left[1 - \Phi\left(\frac{\beta X_i}{\sigma}\right)\right]$$

The parameters β and σ always appear as a ratio and not separately identified. When we normalize σ to be equal to one we obtain β.

This model avoids the problem of non-normal error terms and heteroscedasticity associated with the linear probability model.

The estimated dependent variable therefore is no longer a dichotomous variable, but a conditional probability which is continuous.

Equation (1) can be expressed as:-

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \varepsilon i \quad \ldots\ldots\ldots\ldots\ldots\ldots (3)$$

Where:-

X_1 = Age

X_2 = Age Squared

X_3 = Marital Status

X_4 = Highest academic level reached by the female

X_5 = Number of pre-school children (aged 0-5years) in the household

X_6 = Number of school going children (6-17 years) in the household

X_7 = Household size

X_8 = Household income

X_9 = Female household head

3.3 DISCUSSION OF THE VARIABLES

The variables used in the analysis of the determinants of female labour force participation are defined in appendix 1. We describe the variables used in the estimation, starting with the dependent variable.

LABOUR FORCE PARTICIPATION STATUS:

The dependent variable used in this study is female labour force participation status. A female is considered to be in the labour force if during the past one week's reference period she is reported to have undertaken some economic activity or she sought to undertake some economic activity. This dependent variable is a dummy variable which takes on the value 1 if a female is in the labour force and takes the value 0 if a female is not in the labour force.

AGE AND AGE SQUARED

From theory we expect that age will be positively related to female labour force participation up to a certain age then declines thereafter. In the younger ages women will participate less in

the labour force as they are still dependent on parents. In the older ages they drop out of the labour force.

Several studies have been conducted that relate female labour force participation to age. Manda (1997) used age and age squared as explanatory variables using Kenyan data for three periods 1977/78, 1986 and 1995. The results showed that age and age squared had positive and negative signs respectively. Other results which showed that female labour force participation increases with age up to some point and then decline were found by Mariara (2003) and Ongile (1989). Saget (1999) however found contradicting results for women in Hungary. Lim (2001) observed that in the past especially in developed countries women would enter the labour force in their twenties, leave after a few years to bear and raise children and re-entered the labour force towards the end of their child bearing years. In such circumstances where females withdraw from the labour force to give birth and re-enter the labour force after child rearing the labour force participation would be U- shaped with respect to age.

From these studies we expect that female labour force participation for the rural Kenyan woman would form an inverted U-shaped relationship with respect to age just according to the priori expectation. This is because most women in Kenyan rural areas lack social protection and cannot afford to forgo work during their child bearing and rearing years. This means we expect the coefficient of age to be positive while that of age squared to be negative. In this study the age of a female is measured as the number of completed years.

MARITAL STATUS

Theoretical expectation is that there is a negative relationship between marital status and female labour force participation. The probability of participation is higher among the unmarried females. Married females are expected to participate less in the labour force due to family obligations such as taking care of children. Most married women, unlike their single counterparts can afford longer periods of job search without losing their means of livelihood because of financial sustenance from their spouses. This priori expectation of negative relationship between marital status and female labour force participation is supported in studies by Mariara (2003), Manda (1997) and Ongile (1989). In this study marital status is measured as a dummy variable which takes the value of 1 if a female is married and a value of 0 if a female is not married. A female is married if she is either in monogamous marriage or polygamous marriage.

EDUCATION STATUS

From theory education is expected to have a strong positive relationship with female labour force participation such that the higher the level of formal education attained by a female the higher would be the probability of the female participating in the labour force. This is because a higher level of education can increase the assets a woman can offer to a potential employer thereby raising her probability of being employed. At the same time since education increases her productivity, this raises her opportunity cost of not working and provides her with an incentive to work and recoup the human capital investment embodied in her. This priori position is supported in studies by Maglad (1998), Manda (1997), Mariara (2003) and Ongile (1989). This study uses seven education dummy variables of the highest education level completed to capture the impact of education on participation decision. We expect the coefficients of the education dummy variables to be positive and significant.

NUMBER OF PRE-SCHOOL GOING CHILDREN

Female labour supply studies in developed countries show that the presence of children in a household usually has a significant negative impact on female labour supply probably due to high child care costs in those countries. This mainly applies to women seeking formal wage employment in which work places are separated from home and work attendance is at fixed periods of the day. Informal sector labour markets in developing countries give women a more flexible working environment by enabling them engage in economic activities while simultaneously caring for their children (Hill, 1988). Hired private child care is cheap in developing countries and the presence of extended family members in the household help in alleviating the problem of child care.

In this study the impact of pre-school going children on labour supply decision by a female is captured using the number of children 5 years or less in a household. Past studies which support the priori expectation are those of Manda (1997), Maglad (1998) and Saget (1999). Mariara (2003) however contradicted this priori expectation. Given the unique conditions that prevail in rural areas in which children can accompany their mothers to the farms, extended families presence in households and child care costs being cheap, we cannot determine a priori the sign of the coefficient of this variable.

SCHOOL GOING CHILDREN

The presence of school going children in a household is expected to be positively related to female labour force participation. This is because either their presence in a household represents a higher financial constraint on the household income or because of the greater time available to their mothers to engage in work. This priori position is supported in studies

by Manda (1997), Maglad (1998) and Saget (1999). Mariara (2003) however found that older children discouraged participation in the labour market for females.

In this study the impact of school going children on labour supply decision by a female is captured using the number of children six to seventeen years of age in the household. The sign of the coefficient of this variable cannot be determined a priori for the rural females given that the predominant economic activity in the rural areas is mainly subsistence agriculture. It is common in the rural areas to find a mother with old children working less in the farm as most of the farm work on the family farm may be done by the older children.

HOUSEHOLD SIZE

The priori expectation is that the larger the household size the more a female would participate in the labour force in order to meet the increased demand of the large number of household members. The situation in the rural areas however could be the opposite. This is because in the rural areas there is a tendency that where household size is large some female members of the household may be left back to prepare food for those who have gone to the farm. It is therefore not possible to determine a priori the sign of this coefficient for the rural areas. This variable is measured by the total number of the household members.

HOUSEHOLD INCOME:

From the literature the effect of household income cannot be determined a priori. In a number of cases though it is assumed that the higher the income the less a woman is expected to participate in the labour force. However, in the rural areas the higher income could be the result of increased commitment by a female in the labour force participation. The effect of

household income cannot be predicted a priori. This variable is measured by the mean monthly income of the household.

FEMALE HEAD OF HOUSEHOLD

Females who are heads of households are expected to participate more in the labour force compared to their counterparts who are not household heads. This is because they are the sole breadwinners of their households and they bear the full burden of the household upkeep and demand. The coefficient of this variable is therefore expected to be positive. This variable is measured by a dummy variable which takes the value 1 if a female is a household head and a value of 0 if a female is not a household head.

3.4 THE DATA

The data used in this study are from the 1998/99 Integrated Labour Force Survey (ILFS) conducted by the Central Bureau of Statistics during the months of December 1998 and January 1999 in all administrative districts in Kenya as constituted in 1989; excluding Turkana, Samburu and Marsabit districts. The Survey utilized the National Sample Survey and Evaluation Programme (NASSEP III) frame which was created after the 1989 Population and Housing Census. In designing NASSEP III, the Enumeration Areas (EAs) of the 1989 population census were the Primary Sampling Units (PSUs). The Primary Sampling Units were selected using the Probability Proportional to Size (PPS) and were then segmented into smaller units of about 100 households constituting one Measure of Size. One segment from each Primary Sampling Unit was selected randomly for the creation of a "cluster". The frame had 1,139 clusters of which 930 were rural and 209 were urban.

Using the results of the 1989 population and housing census and a margin of error of 5% and a confidence level of 95 percent, a sample of 54000 persons was estimated for the survey for

the ILFS nationally. Working with an average household size of 4.2 persons, the sample size translated into 12,814 households, which were selected by a systematic selection of every tenth household in each cluster. Where the calculated number fell below 10 households, a minimum of 10 households was taken in all cases. This resulted in a total of 52016 individuals from whom information were sought nationally.

This study adopts this national sample from which a total of 10593 females living in the rural areas aged between 15 and 64 years and not at school full time were drawn. This study sample was selected as shown in the sample selection table 4 below.

Table 4: Selection of the Sample

Total no. of records	52016
Selection Criteria	Number of observations deleted
urban records	6646
rural males	22566
rural females aged 14years and below	9756
rural females aged 65 years and above	979
rural females aged 15 to 64 years at school full time	1413
rural females aged 15 to 64 years whose employment status not stated	63
Selected sample	10593

Source: compiled by the author

The information gathered in the survey included household composition of the economically active population, educational attainment of the Kenyan population by age and sex, patterns of employment, hours of work in various activities and open unemployment amongst other variables.

The dependent variable is labour force participation in which an individual female was deemed to be in the labour force if during the reference period (i.e. a week before the interview day) the individual undertook some economic activity for pay, profit or family gain

or sought to undertake such economic activity. The independent variables were the various socio-economic characteristics of the individual females.

4.0 CHAPTER FOUR

4.1 RESULTS

INTRODUCTION

This chapter has two sections. The first section gives some descriptive statistics of the data set. The second section presents and discusses regression results.

4.2 DESCRIPTIVE STATISTICS

This section presents some descriptive statistics of the data set used in this study.

Table 5 below provides summary of descriptive statistics for the dependent and the independent variables used in the study.

Table 5: Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Participation	10593	0	1	0.74	0.439
Age of female	10593	15	64	34.32	13.04
Age squared	10593	225	4096	1347.9043	981.27952
Married dummy	10593	0	1	0.6584	0.47428
Education non dummy	10593	0	1	0.2872	0.45246
Education nursery dummy	10593	0	1	0.0034	0.0582
Education primary dummy	10593	0	1	0.5494	0.49758
Education secondary dummy	10593	0	1	0.1571	0.3639
Education undergraduate dummy	10593	0	1	0.0016	0.04003
Education post graduate dummy	10593	0	1	0.0006	0.02379
Education not stated dummy	10593	0	1	0.0008	0.02747
Number of Pre-school going children in a hhold	10593	0	6	0.6225	0.92554
Number of School going children in a hhold	10593	0	11	1.3848	1.6371
Household size	10593	1	30	6.17	2.989
Mean household income for last month	10593	0	210000	5841.25	8997.902
Female headed household	10593	0	1	0.2116	0.4085

Source: compiled by the author

For the study sample of 10593 females, some 7829 participated in the labour force while 2764 females did not participate in the labour force. The age of the sampled females ranged between 15 years and 64 years with a mean age of 34 years and a standard deviation of 13 years. In this study females were considered to be married if they were either in monogamous

marriage or polygamous marriage. The marital status of the sampled women was such that 22.4% were never married, 57.9% were in monogamous marriage, 7.9% were in polygamous marriage, 1.9% were separated, 3.7% were divorced and 6.0% were widowed.

The highest education level completed was also such that of the sampled females, 54.9% had completed primary school level of education, 15.7% had completed secondary education level, 0.2% had completed undergraduate level of education and 28.7% of them had no education. Household size ranged between one person and 30 persons per household with a reported mean of 6 persons and a standard deviation of 3 persons. The mean monthly income of a household was ksh.5841 with a maximum of Ksh.210000 while some households reported 0 incomes. Females who were household heads constituted 21.2% of the sampled females.

Of the sampled females 61.4 % of them had no pre-school going children while 19.8% had one pre-school going child with 14.4% having two pre-school going children. Of the sampled females 47% had no school going children, while 13% of them had one school going child and 14% of them had two school going children.

Table 6 : Labour Force Participation and Marital Status

Participation status	Never married	Married monogamous	Married Polygamous	Sep /Divorced/Widowed	Total
Not in Labour force	9.5	11.9	2.2	2.5	26.1
In Labour Force	13.0	46	5.7	9.2	73.9
Total	22.5	57.9	7.9	11.7	100

Source: compiled by the author

Table 6 above shows the labour force participation status by marital status of the 10593 females sampled for the study. It shows that a majority of the females interviewed were in polygamous marriage (57.9%) comprising 46% who participated in the labour force and 11.9% who did not participate in the labour force. The never married females were 22.5% of the females interviewed composed of 13% who participated in the labour force and 9.5 % who did not participate in the labour force. The category of the Separated/Divorced/Widowed females formed 11.7% of the females sampled constituting 9.2% who participated in the labour force and 2.5 % who did not participate in the labour force.

Table 7: Labour Force Participation and Education

Participation status	Non	Nursery	Primary	Sec.	Undergrad.	Post gra	Total
Not in Labour Force	7.34	0.09	15.12	3.47	0.02	0	26.09
In Labour Force	21.38	0.26	39.82	12.24	0.14	0.06	73.91
Total	28.72	0.35	54.94	15.71	0.16	0.06	100

Source: compiled by the author

Table 7 above shows the labour force participation status by the highest level of education completed for the 10593 females sampled for the study. The majority of the females interviewed had completed primary level of education forming 54.9% of the sample comprising 39.8% who participated in the labour force and 15.1% who did not participate in

the labour force. This was closely followed by those without any level of education at 28.7% composed of 21.4% who participated in the labour force and 7.3 % who did not participate in the labour force. Only 0.06 % of the interviewed females had completed post graduate level of education all of whom participated in the labour force. Females who had completed secondary school level of education in the sample were 15.7% composed of 12.2 % who participated in the labour force and 3.5 % who did not participate in the labour force. These figures indicate that formal education increases labour force participation rates for females.

Table 8: Labour Force Participation and Household Headship

Participation status	Non household head	Household head	Total
Not in Labour force	22.5	3.6	26.1
In Labour Force	56.4	17.5	73.9
Total	78.9	21.1	100

Source: compiled by the author

Table 8 above shows the labour force participation status by household headship status for the 10593 females in the study. It shows that a majority of the females interviewed were not household heads at 78.9% comprising 56.4 % who participated in the labour force and 22.5% who did not participate in the labour force. Of the 21.1% of the females who were household heads, 17.5% participated in the labour force compared to 3.6% who did not participate in the labour force.

4.3 THE ESTIMATED MODEL RESULTS

In this sub-section we present the regression results of the estimated model as shown in Table 9a and 9b below. Table 9a provides the probit estimation regression results while Table 9b gives the marginal effects.

Regression Results

Table 9a: Probit Regression Results

Variable	Coefficients	Z-value
Age	0.1358672*	16.66
Age squared	-0.0015674*	-14.90
Marital Status	0.0056875	0.15
No Education	1.199606***	1.93
Nursery level of Education	1.475295**	2.22
Primary level of Education	1.413146**	2.28
Secondary level of Education	1.528986**	2.46
Undergraduate level of Education	1.585007**	2.13
Pre School Going Children	0.0391612**	2.25
School Going Children	0.0308196*	2.59
Household Size	-0.0268681*	-5.19
Household income	0.0000106*	5.61
Female Headed Households	0.1471613*	3.45
Constant	-3.22576*	-5.11

Source: Compiled by the author

* -1% significance level

** -5% significance level

***-10% significance level

Table 9b: Marginal Effects

Variable	Marginal Effect	Standard Errors
Age	0.0426725	.00256
Age squared	-0.0004923	.00003
Marital Status	0.0017874	.01189
No Education	0.3033361	.12047
Nursery level of Education	0.2308472	.02653
Primary level of Education	0.4418384	.18184
Secondary level of Education	0.30205	.06471
Undergraduate level of Education	0.2339012	.0231
Pre School Going Children	0.0122996	.00547
School Going Children	0.0096797	.00374
Household Size	-0.0084386	.00163
Household income	0.00000332	.00000
Female Headed Households	0.0448231	.01257

Source:Compiled by the author

From the results in Table 9a the coefficients of age and age squared have positive and negative signs respectively and are both significant at the 1% level of confidence. The marginal effects results indicate that an increase in age by one year increases the probability f a rural female's participation in the labour force by 4.23%. The negative coefficient of age squared indicates that female labour force participation rate increases with age but at a decreasing rate. This result therefore shows that females' participation probabilities form an inverted U-shaped relationship with respect to age.

In the younger ages, a number of females are still dependent on their parents and their participation in the labour force is low. As the females advance in age, they loose parental support and their participation in the labour force increases up to a certain maximum before it starts to decline. This result is consistent with priori expectations and the findings of several studies (Manda (1997), Mariara (2003) and Ongile (1989)), in which labour force participation was found to increase with age up to some point and then declined. This seems to suggest that Kenyan rural females just like their urban counterparts do not withdraw from the labour force during their child bearing and rearing ages. This may be an indication that

females in both rural and urban areas of a developing country like Kenya lack social protection and therefore cannot afford to forgo work.

Although theoretical literature indicates that married females participate less in the labour force compared to those who are not married, this particular study found that being married does not significantly affect the probability of participating in the labour force by the rural Kenyan female. This result contradicts the findings of other studies for urban areas which found that being married reduced the probability of participation in the labour force (Ongile (1989) and Manda (1997)). It is possible to explain the difference in the results of the urban areas and rural areas. In the rural areas, since the dominant economic activity is subsistence agriculture, family members work in the family farm regardless of whether they are married or not. On the other hand married women in the urban areas would only engage in work if there is necessity to supplement the incomes of their husbands.

Furthermore, during the data collection exercise for this study, a female in the rural area who worked in the family farm was considered to have participated in the labour force, unlike in the urban areas where housewives were never considered to have participated in any gainful economic activity. It is therefore possible that marriage may not affect the probability of participation in the labour force for the Kenyan rural female but reduces the probability of participation of the Kenyan urban female.

All the education dummies in this study have positive coefficients which are significant at 5% level of significance. The result therefore suggests that education increases the probability of the rural female participating in the labour force. The results indicate that attaining primary level of education increases the probability of participation in the labour force by 44.2%

while attaining secondary education level increases the probability of participation by 30.2%. The probability of participating in the labour force for the Kenyan rural female increases by 23.4% if the female has an undergraduate level of education.

Priori expectation was that having pre-school going children would reduce a female's participation in the labour force. The result obtained for this study however shows that having pre- school going children increases participation in the labour force of the Kenyan rural female and the result is significant at 5% level of significance. If the number of pre-school going children of a Kenyan rural female increases by one, then this increases her probability of participation in the labour force by 1.2%. This result is a deviation from the findings of a number of studies for urban females which found the coefficient to be negative (Manda (1997), Maglad (1998), and Saget (1999)). The result is however consistent with the findings of Mariara (2003) who found a positive and significant relationship between female labour force participation and pre – school going children for the Kenyan female. This result therefore reinforces the argument that theoretically small children have inconclusive effects on a woman's participation in the labour force as they need care and at the same time increase the demand for goods.

Furthermore, this result is expected in rural areas. Hill (1988) observed that the working environment in developing countries and more so in the informal sector give women a more flexible working environment by enabling them to engage in economic activities while simultaneously caring for their children. Hired private child care is cheaper in rural areas compared to urban areas. The presence of extended family members which is also more common in rural households than in urban households too helps in alleviating the problem of child care. In rural areas it is also common to find older siblings taking care of their younger

brothers and sisters as their mothers engage in economic chores. Thus a Kenyan rural female with young children has a higher probability of participating in the labour force compared to the urban counterpart.

The coefficient of the school going children variable was found to be positive and significant at the 1% level of significance. If the number of school going children of a Kenyan rural female increases by one, this will increase her probability of participating in the labour force by 1%. The result therefore is consistent with the findings of many authors (Manda(1997), Maglad (1998), Saget(1999) and Ongile (1989)). This result supports the priori expectation that either because their presence in a household represents a higher financial constraint on the household income forcing their mothers to work harder or because of the greater time available to their mothers to engage in work. We therefore conclude that having school going children increases the probability of the Kenyan rural female participating in the labour force.

The priori expectation is that a larger household size would increase the participation of a female in the labour force since the female would be forced to work harder to cater for the increased household demand. The result here however contradicts the priori expectation and instead finds that a larger household size actually reduces the probability of the Kenyan rural female in participating in the labour force. Increasing the number of household members by one person will reduce the probability of a Kenyan rural female participating in the labour force by 1%.

This result can however be explained for the rural female. In sub-Saharan African countries, socio- cultural norms support high fertility and women are oriented towards motherhood with the expectation that they marry early and give birth to many children who would eventually

help them in old age (ILO, 2001e). The dominant economic activity in the rural areas is subsistence farming. In circumstances where the number of people in the household is large, there is a tendency of some female members of the household being left back at home to prepare meals for the other household members working in the farms. This may explain the reported negative relationship between household size and labour force participation for the Kenyan rural female.

Literature reviews indicates that the effect of household income on the female labour force participation cannot be determined a priori. However in a number of cases it is generally thought that as household income increases, a female will participate less in the labour force. The result obtained in this study however indicates that household income is positively related to female labour force participation and this result is significant at 1% level of significance. In terms of marginal effects, a one shilling increase in the household's mean monthly income increases the probability of the female participating in the labour force by 0.00000332 units. The positive relationship between household income and the rural female labour force participation though small can be explained. Most of the income from the rural areas is derived from agricultural produce surplus which is sold in the market. For greater surplus to be achieved it calls for increased work effort on the part of the female and other household members. Hence it is possible that where household incomes are high, the work effort on the part of the female members of the household is also high hence the positive relationship.

The results show that there is a strong positive relationship between household headship and female labour force participation. This result therefore supports priori expectations that females who are household heads participate more in the labour force than their counterparts

who are not household heads, being the sole breadwinners of their households have to bear the full burden of the household demand. Being a household head increases the probability of a female participating in the labour force by 4.1%. Females who are household heads therefore participate more in the labour force compared to their counterparts who are not household heads.

5.0 CHAPTER FIVE

5.1 CONCLUSION AND POLICY RECOMMENDATIONS

This chapter summarizes the study findings and outlines policy implications based on the results of the study. The study of the determinants of rural female labour force participation is important. This is because the bulk of the Kenyan population lives in the rural areas and the study would therefore help planners identify and rectify issues that hinder labour force participation for this large segment of our population.

5.2 SUMMARY OF FINDINGS

All the education dummies were found to be positive and the higher the level of formal education a female attains the higher is her probability of participation in the labour force. Culturally however, females have been disadvantaged in receiving education compared to the males. (Doelalikar, 1999) observes that where income is a constraint, it is the boys who would be given preference of going to school over the girls.

The study found that having young children less than five years of age increases the probability of a female participating in the labour force. The study further found that there was a positive relationship between labour force participation and female headed households. Because they do not have the support of their spouses they have to work hard for the upkeep of their household members. Household income was also found to be positively related to female labor force participation just as having school going children in a household also increase the probability of participation. Household size too had a positive relationship to participation.

5.3 POLICY RECOMMENDATIONS

One of the major findings of this study is that females' education is positively related to labour force participation. The first major policy therefore is on education. The following policies should be considered in enhancing girls' education:-

(i) Females should be encouraged and assisted to get the highest education possible. This can be achieved through more affirmative action.

(ii) Increased investment in women's education by the Government.

Despite the finding in this study that large family size reduces the probability of a female participating in the labour force, we should never the less encourage policies aimed at reducing family sizes. The effects of large family size may have serious effects in the labour force and the economy at large in the long run. Policies aimed at reducing population growth should therefore be put in place. Such policies would include:-

(i) Increasing the resources that go towards improving family planning. This will in effect result in manageable small family sizes with the result that such families will be able to provide their children with good education and hence improve their probability of participating in the labour force.

APPENDIX 1: Variable Description

Description of Variables

Variable Description	Measure
Age of female	Completed Years
Square of age of female	Completed Years
Marital Status	Dummy(1=married,0 = otherwise)
No education	Dummy(1=Noeducation,0=otherwise)
Highest academic level Nursery	Dummy(1=Nursury,0 =otherwise)
Highest academic level Primary	Dummy(1=Primary,0 =otherwise)
Highest academic level Secondary	Dummy(1=Secondary,0=otherwise)
Highest academic level Undergraduate	Dummy(1=Undergraduate,0=otherwise)
Pre-school going children	Number of children less or equal to 5 yrs of age in a household
School going children	Number of children aged 6-17 yrs in a household
Household size	Total number of people in the household
Total Household Income	Mean monthly income
Female Headed Household	Dummy(1=Female household head ,0=otherwise)

Source: Compiled by the author

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