Determinants of Women's Empowerment in Kenya: A Logistic Regression Approach

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ABSTRACT

Purpose: *This study uses basic individual and household characteristics to estimate the probability of a woman's empowerment. Specifically, it will use the logistic regression model to analyze determinants of women's empowerment to better understand the relationship between various factors and the likelihood of women achieving empowerment.*

Methodology: The study will utilize the 2014 Kenya Demographic Household Survey (KDHS) data. The various domains of empowerment will be considered. The domains identified in the Exploratory and Confirmatory Factor Analysis will be assigned equal weights, which will then be distributed equally among each of their constituent indicators. A woman will be considered to be empowered if her score is more than half the total weighted score, and not empowered otherwise. In the second analysis stage, basic household and individual characteristics of women (independent variables) will be used to estimate the likelihood of achieving empowerment using logistics regression. After fitting the model, post-estimation analysis will be carried out. Specifically, the Hosmer-Lemeshow test will be used to measure the goodness of fit of the model.

Findings: *The odds of a woman being empowered are 175 times higher if she has ever attended school compared to a woman who has never attended school if all other factors are held constant. Women who have attained the primary level of education are much less likely (98% less likely) to be empowered compared to women who have attained university education. Women who listen to the radio at least once a week are 2.51 times more likely to be empowered than women who do not listen to the radio at all. Women falling in the richest wealth quintile are 2.03 times more likely to be empowered compared to women falling in the poorest wealth quintile. Women falling in the poorer wealth quintile category are 27% more likely to be empowered compared to women in the poorest wealth quintile, with all other factors constant.*

A unique contribution to theory, practice, and policy: *understanding women's empowerment will assist policymakers and other stakeholders develop policies and strategies aimed at addressing constraints to women's empowerment.*

Key Words: Logistic regression, Empowerment, Decision-making, Score, Well-being

1. INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

Sustainable Development Goal Five seeks to achieve gender equality and empower all women and girls (UN, 2015). Empowerment can be defined broadly as the expansion of freedom of choice and action to shape one's life. It implies control over resources and decisions (World Bank, 2001). It is the expansion of assets and capabilities of poor people to participate in, negotiate with, influence, control, and hold accountable institutions that affect their lives (World Bank, 2005). Kabeer (2001) defines empowerment as being able to make "strategic life choices," which would refer to decisions that influence a person's life trajectory and subsequent ability to exercise autonomy and make choices. This may include decisions related to marriage, education, employment, and childbearing (Malhotra et al., 2002).

Empowering women and girls thus means that they can be able to voice their concerns in society and subsequently have equal economic and social opportunities with their counterparts. In recent years, women have increasingly been recognized by both men and women as active agents of change: the dynamic promoters of social transformations capable of improving the lives of all individuals (Sen, 1999).

In recognizing the important role women play in the development agenda in Kenya, the government came up with the National Policy on Gender and Development. The overall goal of the policy is "to achieve gender equality by creating a just society where women, men, boys, and girls have equal access to opportunities in the political, economic, cultural, and social spheres of life" (GoK, 2019). Additionally, the medium-term plan three (MTP III) of Kenya's Vision 2030 agenda emphasizes the promotion of gender equality through equal access, economic opportunities, prevention and response to gender-based violence (GBV), elimination of female genital mutilation (FGM), gender mainstreaming, and the sanitary towels program (GoK, 2018). All these programs and policies are geared toward ensuring gender equality and enhancing the role of women in economic development. Kenya has recognized that gender equality and women's empowerment are essential rights and that they are a key agenda for achieving sustainable development. This commitment is reflected in various national policies and documents, such as the Constitution of Kenya's Chapter 4 on the Bill of Rights, Vision 2030, and the County Integrated Development Plans (CIDPs) at the County level. These plans consistently prioritize gender equality and women's empowerment to foster inclusive growth and development. The efforts the government has put in place are bearing fruit. From the recent study by Kenya National Bureau of Statistics (KNBS, 2020), 29.3 percent of women aged (15-49) are empowered in 80% of the weighted indicators. When the threshold is lowered to 70% of weighted indicators, almost half (48.4%) of women are empowered. The proportion of women empowered at 60% of the weighted indicators rises to 68.1%.

The efforts of governments to empower women and girls are also evident in some key domains of women's empowerment. Between 2009 and 2019, the proportion of young women (18-34 years) deprived of secondary school completion declined by nearly 30 percent (from 77.3 to 54.3) percent compared with 33% for young men of the same age (from 75.0 to 50.8%). Despite the decrease,

women are more likely to be deprived of education compared to men. Over the same period, The gender gap in labor market outcomes, specifically economic activity deprivation, widened at the national level across all age groups, even though both women and men made improvements over the decade. For example, 65.1 percent of women aged 35-59 were deprived of economic activity compared to 50.8% of men of the same age (KNBS, 2023).

Empowering women is a key ingredient in poverty eradication and fostering shared prosperity (Ng'ang'a and Zikhali, 2024). Active participation and equal opportunities for women in decision-making processes, especially in government, ensure there is equal representation and women can hold their government accountable for the welfare of the general population. An empowering approach to reducing poverty is based on the belief that poor people themselves are essential partners in development, as they are the most motivated to overcome poverty (World Bank, 2005). Women's empowerment can strengthen good governance, which in turn enhances growth prospects. When women and society in general are engaged, exercise their voices, and demand accountability, government performance improves and corruption is harder to sustain (World Bank, 2002).
Based on their identities, circumstances, and socioeconomic status, women and girls are at a higher risk of social exclusion, thus limiting the opportunities available to them (Ng'ang'a and Zikhali, 2024). A continuous study on women's empowerment will help the government and other stakeholders, including policymakers, come up with policies and strategies that can further strengthen and entrench women's empowerment.

1.2 OBJECTIVES

The objective of this study was to use basic individual and household characteristics to estimate the probability of a woman being empowered. Specifically, the study utilized a logistic regression model to analyze the determinants of women's empowerment, aiming to better understand how various factors influence the likelihood of women achieving empowerment.

There have been numerous studies suggesting that women's empowerment and economic development go hand in hand (Duflo, 2012). As one of the objectives of this study, we explored if indeed there is any considerable relationship between women's empowerment and her wealth status (wealth quintile).

2. THEORETICAL ORIENTATION

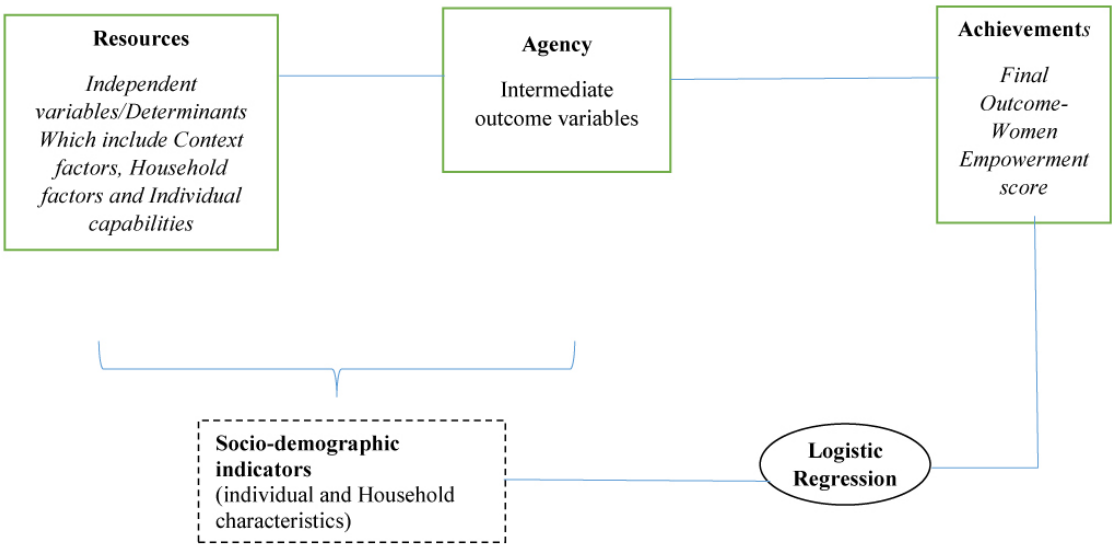
From recent studies, there is no doubt that empowerment plays a crucial role as both an intermediate step and an outcome in the causal chain linking program intervention to results. Program interventions could imply the resources available to women (Kabeer, 1999). This study will utilize a conceptual framework that conceptualizes women's empowerment both as a process and an outcome. The process of empowerment, also known as "the exercise of agency," is an intermediate step that leads to the outcome of women's empowerment (Buvinic, et al,2020). This outcome has both an objective and a subjective dimension. The objective dimension could be measured through productivity and earning while the subjective dimension, such as gains in self-confidence

or increased control over income, could be difficult to quantify and measure (Buvinic et al, 2013). The exercise of agency could also be defined as the ability of the woman to define her goals and act upon them, often measured through decision-making power (Kabeer ,1999).

Empowerment is a product of contextual, household, and individual (capabilities) factors. Contextual and household factors determine the opportunities available to women, both separately and collectively. Women's capabilities comprise their individual and community resources that enable them to exercise agency and capitalize on available opportunities. There are feedback loops connecting women's capabilities, opportunities, and outcomes, including both positive empowerment cycles and negative disempowerment cycles (Buvinic, et al, 2020).

Women's agency can play a critical role in addressing the inequities that undermine the well-being of women. Recent empirical research has highlighted the significant impact of various factors on the level of respect and consideration for women's well-being. These factors include women's financial independence, access to employment opportunities beyond the household, ownership rights, as well as literacy and education levels. They all play a crucial role in enabling women to actively participate in decision-making processes within their families and in broader societal contexts. (Sen, 1999).

Figure 1: Conceptual model for modelling Women's Empowerment



Source: Author illustration

Women's empowerment can be affected by factors at the individual, household, or community level. In their study, Mason and Smith (2003) used logit and ordinary least squares models to determine whether community or individual characteristics hold greater predictive power for women's empowerment. They also examine the relationship between various dimensions of empowerment

and community or individual traits. The analysis leads to the conclusion that community norms and values significantly influence gender relations, and that community factors are stronger predictors of women's empowerment than individual traits. Additionally, the relationship between community and individual traits and various measures of empowerment differs, highlighting that "empowerment" is inherently a multi-dimensional phenomenon.

The educational attainment of a woman is one of the key determinants of women's empowerment. Omwami (2014) used the Kenya Demographic and Health Survey to investigate the intergenerational comparison of education attainment and implications for the empowerment of women in rural Kenya. She concluded that women with greater access to education were more likely to exhibit traits of empowered individuals, such as having smaller households, fewer children, and relatively higher wealth. Sen (1999) argues that education is fundamental to development and freedom, empowering individuals, particularly women, to lead lives they value.

The age of a woman is also a determining factor in her level of empowerment. For instance, it is argued that older women have greater independence and empowerment compared to younger women (Mason & Smith 2003). Age can also impact a woman's access to resources and the level of empowerment can vary across different stages of a woman's life (Kabeer, 2001). The marital status of a woman could also determine her level of empowerment. Delays in getting married are also associated with greater educational achievement and lower fertility. Lower fertility can in turn increase women's life expectancy and has benefits for children's health and education (World Bank, 2014). All these socio-demographic factors interplay to determine the level of empowerment. This is a clear indication of women's empowerment as multidimensional.

Religion can have a profound impact on women's empowerment and capabilities, affecting various aspects of their lives such as social status, educational opportunities, economic participation, and personal autonomy (Nussbaum, 2000). The influence of religion on women's empowerment can be both positive and negative, depending on the specific religious beliefs, practices, and cultural context in which they are embedded.
Given that, each woman will be assigned an empowerment score, based on the domains of empowerment, basic socio-demographic characteristics will be used to estimate the probability of a woman being empowered.

3. METHODOLOGY

3.1 DATA

This study used data from the 2014 Kenya Demographic and Health Survey (KDHS). The survey gathered information on fundamental household and individual characteristics. For each individual listed, details were collected regarding age, sex, education, and their relationship to the head of the household. Moreover, the Household Questionnaire provided information about the dwelling unit, including the source of water, types of toilet facilities, materials used for the floor and roof of the house, and ownership of various durable goods.

The survey also had a specific questionnaire/module administered to women. This module collected data used to construct the Women Empowerment Index (WEI). The empowerment domains captured by the module included: Economic; Human and Social resources; Household and sexual/ reproductive decision-making; and Attitudes towards socio-cultural norms (KNBS, 2020).

To construct the WEI, two groups of women aged 15-49 were created based on their marital status. The variables/indicators constructed with their corresponding domain are presented for each group in Table 1.

The empowerment score for each woman was constructed based on her marital status (in union and not in union). If a woman had a total weighted score greater than or equal to 0.5, she was considered empowered and if she had a total weighted score less than 0.5 she was considered not empowered. In further analysis, basic individual and household characteristics were used to predict the empowerment status of a woman. This task was accomplished through the use of logistics regression.

Table 1: List of Domains, Indicators, and Weights Utilized in the Construction of the Women's Empowerment Index (WEI)

Domain	Women in union	Women not in union
Attitudes towards wife beating.	The woman thinks that wife-beating is not justified if the wife goes out without telling her husband (1/25). The woman thinks that wife-beating is not justified if the wife neglects the children (1/25). The woman thinks that wife-beating is not justified if the wife argues with her husband (1/25). Woman thinks that wife-beating is not justified if the wife refuses to have sex with her husband (1/25). The woman thinks that wife-beating is not justified if the wife burns the food (1/25).	The woman thinks that wife-beating is not justified if the wife goes out without telling her husband (1/15). The woman thinks that wife-beating is not justified if the wife neglects the children (1/15). The woman thinks that wife-beating is not justified if the wife argues with her husband (1/15). Woman thinks that wife-beating is not justified if the wife refuses to have sex with her husband (1/15). The woman thinks that wife-beating is not justified if the wife burns the food (1/15).
Human and social resources	Woman has access to media (1/20). The woman thinks that FGM should be stopped (1/20). A woman has exposure to family planning information (1/20). A woman knows about modern contraception (1/20).	Woman has access to media (1/12). The woman thinks that FGM should be stopped (1/12). A woman knows where male or female condoms can be accessed (1/12). A woman knows HIV/AIDS prevention and transmission, including MTCT (1/12).
Household decision-making (Familial/ Interpersonal)	A woman decides alone or with a partner about large household purchases (1/20). A woman decides alone or with a partner about her healthcare (1/20). A woman decides alone or with a partner about visiting family or relatives (1/20). A woman decides alone or with a partner about where/how her husband's earnings will be spent (1/20).	

Control over sexual relations	A woman can refuse sex with her husband/partner (1/15). A woman can ask her partner to use a condom during sexual intercourse (1/15). A woman knows where male/female condoms can be accessed (1/15).	
Economic	Woman have completed secondary education (1/10). Woman is in continuous paid employment (1/10).	Woman have completed secondary education (1/6). Woman is in continuous paid employment (1/6).

Source: KNBS, 2020

3.2 CONSTRUCTION OF WOMEN'S EMPOWERMENT SCORE

To construct the woman empowerment score, several indicators with their corresponding thresholds were used. All variables from the survey data that indicate women's empowerment in different conceptual domains were constructed. The conceptual domains identified included economic, socio-cultural, human, and social resources, as well as familial/interpersonal aspects. The socio-cultural and familial/interpersonal domains focused on indicators of instrumental agency, such as decision-making within the household and in sexual/reproductive matters. Additionally, intrinsic agency was assessed through attitudes towards social norms, including the justification of wife beating and female genital mutilation (FGM). Variables in the human and social resources domain covered education, access to information, and knowledge on topics such as family planning, HIV/AIDS transmission, and prevention. Each variable was coded as dichotomous or binary, with a value of 1 indicating empowerment and 0 indicating lack of empowerment (KNBS, 2020).

After variables construction, Exploratory Factor Analysis (EFA) was carried out. Orthogonal rotation was employed to identify the domains of empowerment (factors/latent variables) that can be explained more effectively by a group of indicators jointly. The selected variables were then analyzed using Confirmatory Factor Analysis (CFA) through structural equation modeling to evaluate the model's suitability and generalizability. The final indicators were grouped and assigned weights as shown in Table 1 above. Finally, the empowerment score of each woman was the weighted sum of the indicators for each group.

3.3. LOGISTIC REGRESSION

This study will utilize multiple logistics regression to predict the probability of a woman being empowered. The dependent variable will be the empowerment status of the woman (empowered or not empowered). The independent variables will include school attendance, level of education completed, age, relationship to household head, marital status, religion, wealth quintile, type of roof and wall material of the woman's dwelling.

Consider k independent variables denoted by the vector $X' = (x_1, x_2, x_3, \dots\dots\dots\dots\dots x_k)$. Let the conditional probability that a woman is empowered be denoted by $P_r(Y = 1|X) = \pi(X)$. The logit of the multiple logistic regression model is given by the equation

$$g(X) = ln\left(\frac{\pi(X)}{1-\pi(X)}\right) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \cdots\cdots + \beta_k x_k \quad \textbf{(1)}$$

where,

$$\pi(X) = \frac{e^{g(X)}}{1+e^{g(X)}} \quad \textbf{(2)}$$

Equation (1) is the logit transformation $\pi(X)$ while equation (2), represents the multiple logistic regression model that will be used in this analysis. The importance of this transformation is that $g(X)$ has many of the desirable properties of a linear regression model. The logit, $g(X)$, is linear in its parameters, may be continuous, and may range from $-\infty$ to $+\infty$, depending on the range of x (Hosmer, et al, 2013).

In logistics regression, the value of the outcome variable given x may be expressed as $Y = \pi(\boldsymbol{X}) + \varepsilon$. Here the quantity ε may assume one of two possible values. If $Y = 1$ then $\varepsilon = 1 - \pi(\boldsymbol{X})$ with probability $\pi(\boldsymbol{X})$, and if $Y = 0$ then $\varepsilon = -\pi(\boldsymbol{X})$ with probability $1 - \pi(\boldsymbol{X})$. Thus, ε has a distribution with mean zero and variance equal to $\pi(\boldsymbol{X})[1 - \pi(\boldsymbol{X})]$. (Agresti, 2013). That is, the conditional distribution of the outcome variable follows a binomial distribution with probability given by the conditional mean, $\pi(X)$**.**

For a probability of a woman being empowered(success) π, the *odds* of success are defined to be odds $=\pi/(1-\pi)$. When a success is more likely than a failure, the odds are nonnegative and greater than 1. If there is an association between two categorical variables, within row 1 the *odds* of success are $odds_1 = \pi_1/(1-\pi_1)$ and within row 2, the odds of success equal $odds_2 = \pi_2/(1-\pi_2)$. The ratio of the odds from the two rows gives the odds ratio expressed as (Agresti, 2007);

$$\theta = \frac{odds_1}{odds_2} = \frac{\pi_1/(1-\pi_1)}{\pi_1/(1-\pi_2)} \quad (3)$$

Values of θ farther from 1.0 in a given direction represent a stronger association. An odds ratio of 4 is farther from independence than an odds ratio of 2, and an odds ratio of 0.25 is farther from independence than an odds ratio of 0.50 (Fleiss et al,2003).

3.4 MODEL'S GOODNESS OF FIT

To evaluate the model's goodness of fit, the Hosmer-Lemeshow test and Receiver Operating Curve (ROC) were used. The null hypothesis for the test was that the observed and expected proportions are the same. Hosmer-Lemeshow statistic indicates how well-calibrated the model is while the ROC curve indicates how well the model discriminates success and failure. It is a summary commonly used to evaluate the trade-off between sensitivity and specificity and it is a plot of the sensitivity versus specificity as the parameters of a classification rule vary. (Hastie et al, 2009).

4. KEY FINDINGS AND DISCUSSIONS

4.1 Descriptive Statistics

4.1.1 Attitudes towards Wife Beating

In the construction of the empowerment indicator, a woman was considered empowered if they thought wife beating was not justified for whatever reason. Across the attitudes of wife beating, a higher proportion of women who are currently in union or married are empowered compared to women never in union or formerly in a union (Table 2). Among women who are currently in union, 60 percent of women think that wife-beating is not justified if she burns food while cooking.

Table 2: Proportion of empowered women by indicator (attitudes towards wife beating) and marital status

Empowerment Indicator	Currently in union	Never in union or formerly in union
Woman thinks that wife-beating is not justified if she goes out without informing her husband	59.1	40.9
Woman thinks that wife-beating is not justified if she neglects the children for whatever reason	59.4	40.6
Woman thinks that wife-beating is not justified if she argues with her husband	58.6	41.4
Woman thinks that wife-beating is not justified if she refuses to have sex with her husband	59.3	40.7
Woman thinks that wife-beating is not justified if she burns food while cooking	60.3	39.7

4.1.2 HUMAN AND SOCIAL RESOURCE

Similar to attitudes towards wife beating, a higher proportion of women currently in union are empowered in the domain of human and social resources compared to women never in union or formerly in union. Among women currently in union, a slightly higher proportion of women who have access to media (they read newspapers/magazines, listen to the radio, and watch television at least once a week) are empowered (59.8%). Less than half of women never been in a union or were formerly in a union are empowered across the domain of human and social resources (Table 3).

Table 3: Proportion of empowered women by indicator (human and Social resources) and marital status

Empowerment Indicator	Currently in union	Never in union or formerly in union
Woman has frequent access to media	59.8	40.2
Woman thinks that Female Genital Mutilation (FGM) should be stopped	59.5	40.5
Woman knows about modern contraception	58.8	41.2

4.1.3 ECONOMIC

Contrary to the other two domains of empowerment, a higher proportion of women never been in a union or formerly in a union are empowered in the economic domain. Less than half of women currently in union are empowered in the economic domain. 61.4 % of women never in union or formerly in union have completed secondary education while more than half (52.1%) are in continuous paid employment (Table 4).

Table 4: Proportion of empowered women by economic indicator and marital status

	Currently in union	Never in union or formerly in union
Woman has completed at least secondary education	38.6	61.4
Woman is in continuous paid/wage employment	47.9	52.1

4.2 STATUS OF EMPOWERMENT AND ITS DETERMINANTS

To carry out further analysis, a woman was deemed empowered if the total weighted score of all indicators was more than half and not empowered if the total weighted score was less than 50%. A tabulation of the empowerment status by various individual demographic characteristics and household characteristics of where the woman stays is presented in Table 5. Whether one has ever attended school or not is a key determinant of a woman's empowerment status. 85.1% of women who have ever attended school are empowered. On the contrary, two in three women (66.7%) who have never attended school are not empowered. Among the women who have ever attended school, the proportion of women empowered increases with an increase in the level of education. Almost all women (99.7% and 99.9%) who have attained college (middle level) and university level of education respectively are empowered. 23.7% of women who have attained a primary level of education are not empowered.

Access to media is also another determinant of women's empowerment. The proportion of women who are empowered increases with the increase in the frequency of access to media. Nine in ten women who read newspapers or magazines at least once a week (94.1%) or watch television at least once a week (93.1%) are empowered. 42.2% of women who do not listen to the radio at all are not empowered.

Religion also plays a critical role in the status of women's empowerment. This is because religion is closely related to cultural norms. From the analysis, the proportion of women who are empowered varies with the religion of the woman. Less than half of women with no religion are empowered while 84.2% of women who are protestant/other Christian are empowered. Only slightly more than half (51%) of women who profess the Muslim faith are empowered.
The relationship of a woman to the head of the household is also a determinant of women's empowerment status. Women whose relationship to the household head is foster/adopted children are more likely to be empowered than other women within the household. Nine in ten women who are adopted/foster children are empowered. 84.1% of women who are spouses to the head of household are empowered.

The housing characteristics of where a woman stays may also determine a woman's empowerment status. The type of floor, wall, or roof of the main dwelling may signify the economic well-being of the woman or her household. The proportion of women empowered increases with the refinement of the roof, wall, or floor materials used. Higher differences in the proportion of empowered women exist among the roof types of the main dwelling. Almost half of women (46.1%) who use natural/ rudimentary materials as roofs are not empowered while 93% of women who use refined roofing material are empowered.

The wealth quintile is a key determinant of the level of women's empowerment. The proportion of women empowered increases with an increase in wealth quintile. Slightly more than half (53%) of women from the poorest quintile are empowered while 94% of women from the richest quintile are empowered.

Table 5: Women's Empowerment status by Individual and Household characteristics

		The woman is not empowered.	Woman is empowered
Ever Attended School	No	66.7	33.3
	Yes	14.9	85.1
Highest educational level attained	Primary	23.7	76.3
	Post-primary/ vocational	14.8	85.2
	Secondary/ 'a' level	6.2	93.8
	College (middle level)	0.3	99.7
	University	0.1	99.9
Frequency of reading newspaper or magazine	Not at all	24.7	75.3
	Less than once a week	10.3	89.7
	At least once a week	5.9	94.1
Frequency of listening to the radio	Not at all	42.2	57.8
	Less than once a week	22.3	77.7

	At least once a week	12	88
frequency of watching television	Not at all	28.8	71.2
	Less than once a week	14.7	85.3
	At least once a week	6.9	93.1
Religion	Roman catholic	16	84
	Protestant/ other Christian	15.8	84.2
	Muslim	49.2	50.8
	No religion	51.2	48.8
	Other	18.4	81.6
Relationship to the household head			
	Head	22.2	77.8
	Wife/Spouse	15.9	84.1
	Daughter	19.5	80.5
	Daughter-in-law	21.6	78.4
	Grand daughter	18.6	81.4
	Mother	41.5	58.5
	Mother-in-law	100	0
	Sister	17.9	82.1
	Other relatives	21	79
	Adopted/foster child	9.3	90.7
	Not related	18.5	81.5
Predominant material of the household's dwelling wall			
	Natural/rudimentary wall	27.8	72.2
	Improved materials	22	78
	Refined materials	11.4	88.6
Predominant material of household's dwelling floor			
	Natural/rudimentary floor	27.6	72.4
	Improved floor	10.6	89.4
	Refined floor	7.1	92.9
Predominant material of household's dwelling roof			
	Natural/rudimentary roof	46.1	53.9
	Improved roof material	15.4	84.6
	Refined roof material	7.1	92.9
Wealth Quintile	Poorest	47	53
	Poorer	23.3	76.7
	Middle	17.2	82.8
	Richer	10.1	89.9
	Richest	6.2	93.8

4.3 LOGISTIC REGRESSION ANALYSIS

To detect the significance of relationship/association between the individual/household characteristics of a woman and her empowerment status, a logistics regression was fit. The first category of each variable was taken as the reference category. The results are presented in Table 6.

Table 6: Logistic regression output

	Odds ratio	Std. err.	z	P>z	[95% conf.	interval]
Never in union or formerly in union	0.34	0.03	-12.14	0.00	0.29	0.41
Ever attended school	175.53	177.12	5.12	0.00	24.29	1268.40
Highest level of eduation						
Primary	0.02	0.02	-3.92	0.00	0.00	0.14
Post primary/ vocational	0.03	0.03	-3.53	0.00	0.00	0.20
Secondary/ 'a' level	0.07	0.07	-2.71	0.01	0.01	0.47
College (middle level)	0.46	0.49	-0.72	0.47	0.06	3.75
Frequency of reading newspaper or magazine						
Less than once a week	1.26	0.09	3.16	0.00	1.09	1.45
At least once a week	1.48	0.15	3.94	0.00	1.22	1.81
Frequency of listening to radio						
Less than once a week	1.67	0.13	6.76	0.00	1.44	1.94
At least once a week	2.51	0.15	15.36	0.00	2.24	2.83
Frequency of watching television						
Less than once a week	1.18	0.09	2.12	0.03	1.01	1.37
At least once a week	1.56	0.13	5.11	0.00	1.31	1.84
Religion						
Protestant/ other christian	0.95	0.06	-0.82	0.41	0.84	1.07
Muslim	0.40	0.03	-10.74	0.00	0.34	0.48
No religion	0.62	0.10	-2.97	0.00	0.45	0.85
other	0.49	0.23	-1.54	0.12	0.20	1.21
Relationship to household head						
Wife	1.01	0.07	0.19	0.85	0.88	1.17
Daughter	1.21	0.13	1.8	0.07	0.98	1.49
Daughter-in-law	0.73	0.13	-1.77	0.08	0.51	1.04
Grand daughter	1.23	0.23	1.1	0.27	0.85	1.77
Mother	2.78	2.21	1.28	0.20	0.58	13.25
Sister	0.76	0.17	-1.22	0.22	0.49	1.18
Other relative	0.75	0.12	-1.73	0.08	0.54	1.04
Adopted/foster child	1.36	0.55	0.76	0.45	0.62	2.99
Not related	0.64	0.12	-2.34	0.02	0.44	0.93
Household size						
3-4 persons	1.01	0.10	0.07	0.94	0.83	1.22
5-6 persons	1.02	0.10	0.23	0.82	0.84	1.25
7-8 persons	0.89	0.10	-1.05	0.30	0.72	1.11
9-12 persons	0.84	0.10	-1.44	0.15	0.67	1.06
>=13 persons	0.61	0.14	-2.1	0.04	0.39	0.97
Woman's Age						
20-24 yrs	0.39	0.03	-10.55	0.00	0.33	0.47
25-29yrs	0.46	0.04	-7.98	0.00	0.38	0.56
30-34yrs	0.58	0.06	-5.18	0.00	0.48	0.72
35-39yrs	0.54	0.06	-5.76	0.00	0.44	0.67
40-44yrs	0.69	0.08	-3.16	0.00	0.55	0.87
45-49yrs	0.49	0.06	-5.96	0.00	0.39	0.62
Household has: electricity						
yes	0.94	0.10	-0.59	0.56	0.76	1.16

Main dwelling wall material						
Improved materials	1.02	0.08	0.24	0.81	0.88	1.18
Refined materials	1.11	0.07	1.65	0.10	0.98	1.27
Main dwelling Roof material						
Improved roof material	1.30	0.09	3.6	0.00	1.13	1.50
Refined roof material	1.65	0.38	2.2	0.03	1.06	2.58
Wealth quintile						
Poorer	1.27	0.10	3.16	0.00	1.09	1.47
Middle	1.46	0.12	4.49	0.00	1.24	1.73
Richer	1.83	0.20	5.63	0.00	1.49	2.27
Richest	2.03	0.32	4.5	0.00	1.49	2.77
Model constant	1.87	0.37	3.17	0.00	1.27	2.75

The results from logistics regression reveal quite interesting results. According to the results, there are several factors/variables that are positively related with probability of a woman being empowered. These are variables with an odds ratio greater than 1 and are significant predictors of woman empowerment. These include: School attendance, Access to information (frequency of reading the newspaper, frequency of listening to the radio and frequency of watching the TV), Main dwelling roof material and Wealth quintiles.

A number of factors are also significant but have an odds ratio less than 1. These factors are negatively associated with being empowered meaning that exposure is associated with lower odds of the event occurring (probability of being empowered). Factors that have a negative association with being empowered are: highest education level, woman marital status, relationship to household head (not related), household size (more than 12), Woman's age and religion

The relationship between marital status and empowerment status of a woman is significant (p-value of 0.00). The odds of being empowered is 66% lower for woman never married/not in union compared to a woman currently in union, if all other variables are constant.

There is a very strong relationship between school attendance and empowerment status (p-value of 0.00). The odds of a woman being empowered is 175 times higher if she has ever attended school compared to a woman who have never attended school, if all other factors are held constant. Among women who have attended school, the level of education has a negative association with the probability of a woman being empowered. Women who have attained primary level of education are much less likely (98% less likely) to be empowered compared to women who have attained university education. The likelihood of being empowered increase with increase in level of education albeit with a small difference. Women with secondary level of education are 93% less likely to be empowered compared to women with university education. These findings align with those of Monazza (2013).

The relationship between women empowerment status and access to media (frequency of reading newspapers/magazines, listening to radio and watching television) is also significant. Women who listens to the radio at least once a week are 2.51 times more likely to be empowered compared to women who do not listen to radio at all. There is a weak relationship between watching television

less than once a week and empowerment status (p-value of 0.03). Women who watch TV less than once a week are 18% more likely to be empowered compared to men who do not watch a television at all.

The relationship between a woman who have no religion or is a Muslim and the probability of being empowered is significant. Muslim women are 60% less likely to be empowered compared to roman catholic women while women with no religion are 38% less likely to be empowered compared to roman catholic women all other variables held constant.

The age of woman and her empowerment status has a very strong relationship. Across the age categories, p-value is highly significant (0.00). Generally, younger women are less likely to be empowered compared to older women. Women aged 20-24 years are 61% less likely to be empowered compared to 15-19 year old women while women aged 40-44 years are 31% less likely to be empowered compared to 15-19 year olds.

The wealth quintile and empowerment status also have a very strong relationship (p-value of 0.00). Clearly, women in the highest/richest wealth quintile are more likely to be empowered compared to women in the lower quintiles. Women in the richest wealth quintile are 2.03 times more likely to be empowered compared to women in the poorest wealth quintile. Women in the poorer wealth quintile are 27% more likely to empowered compared to women in the poorest wealth quintile, all other factors constant. The result underscore the important role that economic status of woman plays in her empowerment status. It indicates that wealthier women enjoy better access to resources, opportunities, and support systems, which help them attain higher levels of empowerment. These findings are consistent with (Lailulo et al.,2015).

4.4 TEST OF GOODNESS OF FIT

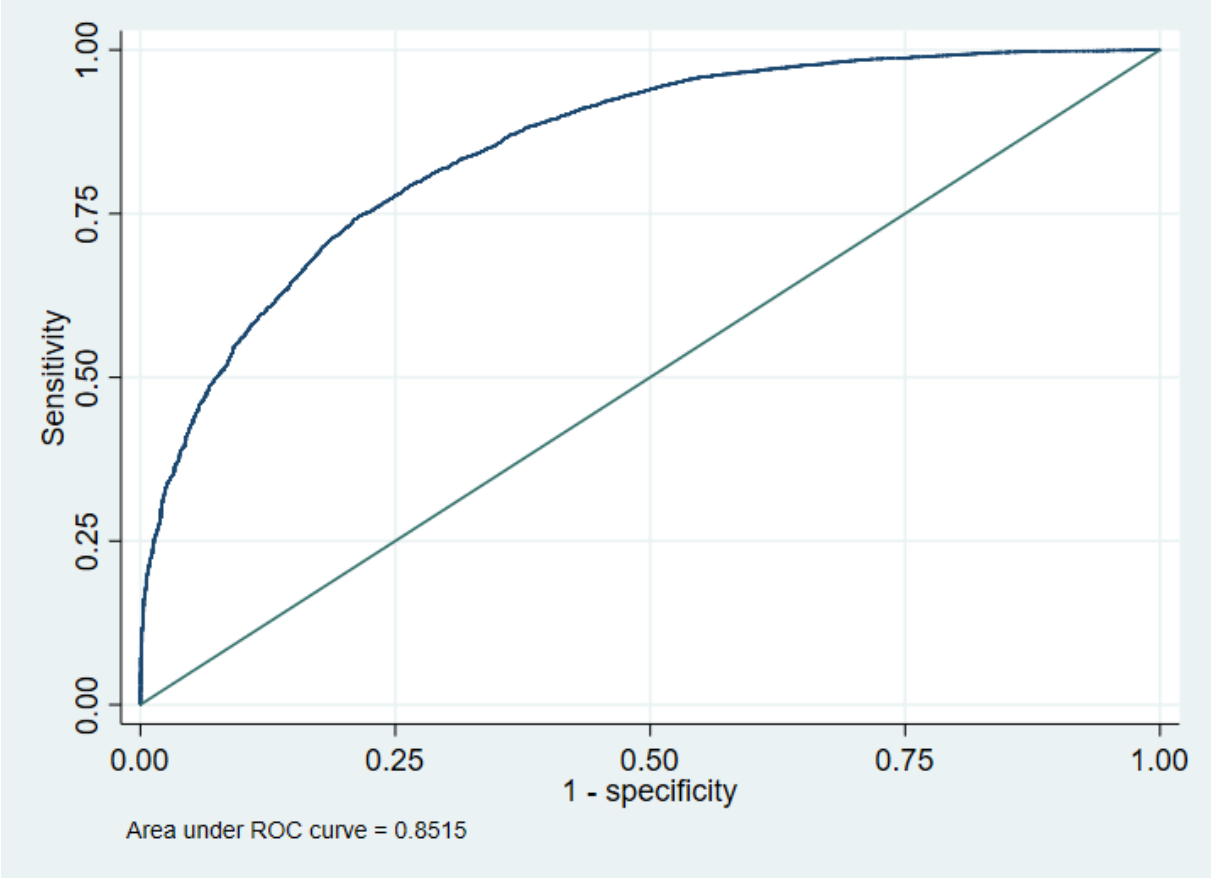
The goodness of fit model was assessed using the Hosmer-Lemeshow test. The null hypothesis for the test is that the observed and expected proportions are the same. From the results presented below (Table 7), we would fail to reject the null hypothesis since Prob > chi2 = 0.5379 is greater than the critical alpha value of 0.05. This means that the model can be used to predict the probability/ score of a woman being empowered. Furthermore, the Receiver Operating Curve (ROC) in Figure 2, shows that the model can discriminate between empowered and not empowered women based on individual and household characteristics. With a value of 0.85, the model has excellent discriminative power. It distinguishes between a woman who is empowered and one who is not, based on easily observable individual and household characteristics.

Table 7: Goodness of fit- Hosmer Lemeshow test

Number of observations	=	14,356
Number of groups	=	10
Hosmer–Lemeshow chi2(8)	=	6.99
Prob > chi2	=	0.5379

Group	Prob	Obs_1	Exp_1	Obs_0	Exp_0
1	0.28	230	241	1208	1197
2	0.56	640	610	794	824
3	0.70	927	914	508	521
4	0.79	1050	1075	387	362
5	0.84	1172	1169	262	265
6	0.88	1232	1236	204	200
7	0.92	1291	1297	145	139
8	0.95	1347	1347	88	88
9	0.98	1394	1398	50	47
10	1.00	1418	1416	9	12

Figure 2: Receiver Operating Curve (ROC)



5. CONCLUSION AND RECOMMENDATIONS

5.1 CONCLUSION

Women's empowerment is a complex process that enhances their ability to make strategic life choices in contexts where such choices were previously denied. The results from this analysis brings out key determinants of women's empowerment. They show that Education is a critical determinant as it increases women's knowledge, self-confidence, and ability to participate in decision-making processes. Highly educated women tend to be more aware of their rights and have access to better employment opportunities, resulting in increased economic independence and empowerment.

Access to continuous paid employment and control over income significantly contribute to women's empowerment. Economic independence allows women to make decisions about their lives and increases their bargaining power within households and communities. All these are reflected in the wealth quintile of the woman which has a very strong relationship to woman's empowerment.

Social and cultural norms especially religion play a crucial role in shaping women's empowerment. Efforts to challenge and change discriminatory norms and practices can create an environment that supports women's rights and gender equality. Specifically, the study highlighted the significance of religion to empowerment.

The model used in this analysis show that in absence of hard to measure dimensions of women empowerment, easily observable individual and household characteristics can be used to measure the empowerment of a woman.

5.2 RECOMMENDATIONS.

To increase the women's empowerment, the Government and other stakeholders should focus on providing accessible and quality education for girls and women. This includes addressing barriers to education, such as child marriage, gender-based violence, and cultural attitudes that devalue women's education.

Promoting economic opportunities for all, especially women and girls can significantly improve women's empowerment. This has a positive impact on their well-being. The government and other stakeholders should create and support initiatives providing women access to employment opportunities, credit, and entrepreneurship. Appropriate policies should aim to close the gender pay gap and promote equal work conditions. The government should prioritize women entrepreneurship as enshrined in the gender policy (GoK, 2011). This could be achieved through Women Enterprise Funds and by establishing other funds which are easily accessible.

Policymakers should prioritize reducing economic disparities to promote gender equality. This could involve establishing targeted programs that support women in lower wealth quintiles, ensuring they have access to education, healthcare, and economic opportunities.

Policymakers and stakeholders should incorporate cultural sensitivity and religious contexts into empowerment programs by highlighting religious teachings that promote empowerment and gender equality. Additionally, they should facilitate open dialogues within the community to address the impact of socio-cultural norms on empowerment. This approach would encourage community members to share their perspectives and experiences, thereby fostering a more inclusive environment.

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