

**SPORTS BETTING PARTICIPATION AND ITS EFFECTS ON YOUTHS' WELFARE
IN KENYA**

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DECLARATION

This research proposal is my original work and has not been presented for a degree in any University or for any other award.

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DEDICATION

Dedicated to my parents Dr. Daniel Gathuru Manguriu and Margaret Gathuru, my sister Grace Heta Gathuru and Brothers, Fredrick Wainaina and Joseph Ngugi

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ABBREVIATIONS AND ACRONYMS

BCLB	Betting and Control and Licensing Board
EGM	Electronic Gaming Machines
NBA	National Basketball Association
NHL	National Hockey League
PWC	Price Waterhouse Coopers
RDG	Random Digit Generating Machines
SEIG	Socio-Economic Impact of Gambling
SMS	Short Message Service
UK	United Kingdom
USA	United States of America

DEFINITION OF TERMS

Betting a means to gamble cash or treasured item by an individual on his/her own behalf or on behalf of another individual on a sport, race, game, lottery, fight, or any other occasion or eventuality

Bookmaker/ bookie a firm that provides sports betting services or gambling services

Gaming/Gambling engaging in a bet for the probability of winning some money or valuable possession

Lotteries Happens when the probability of winning some money or money worth happens through a random draw.

Odds A factor by which the amount wagered for a bet is multiplied with

Online betting gambling through the use of electronic gadgets which may include internet, computer and telephones

Sports betting placing a financial wager on the result of a sports game and on happenings that transpire within the larger contest or match

Stake This is the total monetary value of all bets or wagers put at risk to play a single game

Wagering another name for betting/gambling

Youth a person aged between 18 years and 35 years

Youth welfare the level of prosperity and quality of living standards being experienced by a youth as a result of change in income

ABSTRACT

Youths in Kenya have been placing bets on football games, with the hope of winning money and as a form of leisure. Participation in sports betting in Kenya has been increasing since 2013. The number of firms registered to provide sports betting services have increased from 1 in 2013 to 28 in 2018 attracting 5 million active customers in 2018 from 2 million in 2016. The increased participation in sports betting according to literature comes with economic benefits such as increase in income but also social cost which include breakage of families, suicide and bankruptcy among others. Since sports betting has been in existence for less than a decade, its effects on the population has not been well documented in many countries. The aim of this study was to explore sports betting participation and its effects on youths' welfare in Kenya. Primary data was collected using a structured questionnaire on a random sample of 343 youth in Kajiado North constituency. For objective one, a logistic regression model was specified and Maximum Likelihood Estimation method used to establish the key factors influencing participation in sports betting among the youth in Kenya. The study findings indicate that gender, technology, employment and income were more likely to increase participation in sports betting. Male youths were found to have a higher likelihood to participate in sports betting compared to their female counterparts. These results support the assertion that the lower the income an individual earns the higher the probability participating in sports betting. Individuals who are in full employment, self-employed and in part-time employment have a higher likelihood to participate in sports relative to youths who are not employed. The second objective was to determine the effect of sports betting participation on youth welfare. A linear model was specified and Two Staged Least Squares estimation method used to obtain estimates. The results found that there was a negative welfare effect on individuals participating in sports betting. The study recommends sensitizations of the youths on the negative effects of sports betting and employment creation to deter youth from participating in sports betting as a source of income.

CHAPTER ONE

INTRODUCTION

1.1 Background

1.1.1 General view on betting industry

Globally, the sports betting industry is among the fastest-growing sectors in the world. This is due to the high popularity of sports among people of different generations hence participants see it as an avenue to enjoy their favorite pass time while earning from the game they love (Killick & Griffiths, 2018). In a bid to attract new customers, sport betting companies have been engaged in sponsoring sports events (Phillips, 2013). This together with the digital revolution transforming the world every second, the sports betting market growth will continue into the future (Ssewanyana & Bitanihirwe, 2018). Introduction of gambling through SMS and internet has enabled gamblers to access bets anywhere anytime and at their own convenience (Paul & Weinbach, 2010). Different payment options allowing users to easily transfer funds from their savings account to betting sites have made betting more attractive to individuals around the world (Lopez-Gonzalez & Griffiths, 2016). These innovations in the gambling industry have led to increase in employment opportunities offered and the revenues obtained. (Deans, et al, 2017). According to Republic of Kenya, (1966) betting is the process of wagering cash or valued possession on a horse race, or any other race, fight, sport, game or lottery or any other exercise on ones own behalf or on another persons behalf. The Productivity commission (PC) (2010) describe gambling as the process where the exchange of one's fortune is determined by the outcome of a future event which is unknown at the time of placing a wager. Gambling over the years has evolved presenting itself into different forms. They include slot machines, electronic

gaming machines(EGM),random digit generating machines(RDGs),lotteries and betting on sport events from horse racing ,fights,football games,baseball,rugby and even political events (Binde, 2009). Sports betting as part of gambling is the process where one places a stake on the result of a sports event. (Republic of Kenya, 2006). According to Palmer, (2014) Sports betting involves guessing the results of a sports event and staking money on the results of the event. The gambler selects between the different results of a soccer game which are winning, losing or drawing or a win or loss in other games (Kiragu, 2016). In the choice selected by the gambler the amount he wagers is multiplied by the odds of the selection (Masaba et al, 2016).

Globally, the sports betting industry was valued at 104.31 billion dollars as at 2017 and was expected to grow to 155.49 billion dollars by 2024 representing an expected to grow at a rate of 8.83% between 2018 and 2024 (Zion Market Research, 2019).The United states sports betting industry grow from 430.7 million dollars in 2018 to 908.7 million dollars in 2019.This was due to relaxation gambling laws outlawed sports gambling in different states in the US (Statistica, 2020). Australias sports betting industry recorded a 16.3% increase from \$1.062 billion in 2016/2017 to \$1.235 billion. (Victorian Responsible Gambling Foundation, 2019).

In Europe, Online gambling revenues increased from €20 billion in 2017 to €22.2 billion in 2018 representing an 11% increase. Sports betting was the most popular representing 42.5% of all online gambling recording annual revenues of €9.4 billion euros (European Gaming and Betting Association, 2020). The United Kingdom was the largest sports betting industry in Europe with an annual revenue of 2.2 billion Euros in 2019.According to Gambling commission, (2019) the percentage of mobile gamblers accessing different type of gambling in the United Kingdom in 2019 is shown in figure 1.1 below;

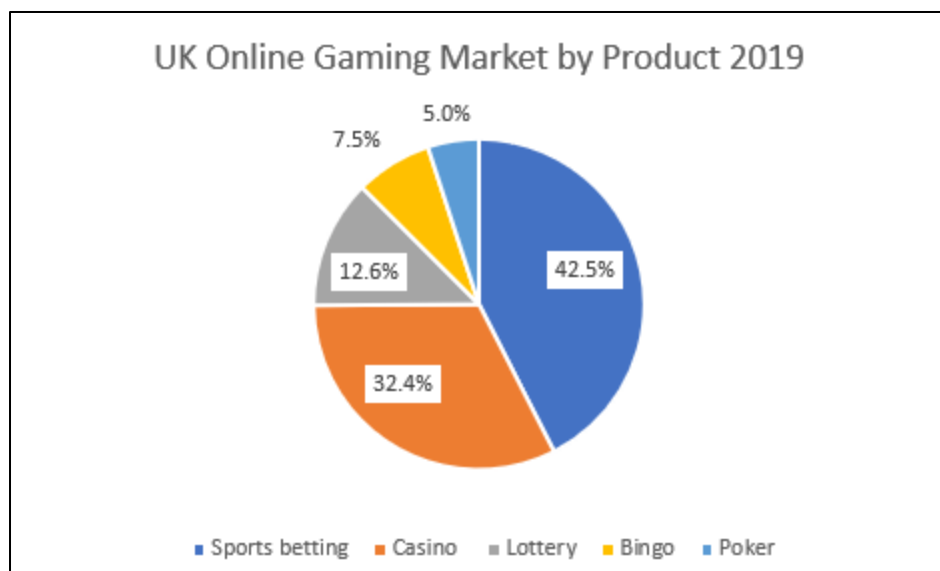


Figure 1.1;UK mobile gaming market by product

Source: Gaming Commission (2019)

Sports betting in the U.K is the most preferred type of gambling accounting for 42.5 percent of the gambling market, followed by casino gambling at 32.4 percent, lottery at 22.6 percent, bingo at 7.5 percent and poker at 5 percent. In Canada online sports gambling has attracted underage gamblers who were not likely to be admitted in land based gambling due to their age (Elton-Marshall, Leatherdale, & Turne, 2016).

Increased participation in gambling activities has been observed in African countries particularly Kenya, Ghana, Uganda, Nigeria, Tanzania and South Africa. Africa economies consider gambling and sports betting as a form of economic rejuvenation due to the high levels of unemployment recorded in those countries (Sammut, 2010). The high levels of unemployment and outdated laws on gambling has made the African Market attractive to International sport betting companies (Iwuoha, 2016) . According to the PWC, report (2014) on the gambling industry in Africa, South Africa's gambling industry is the biggest with gross revenues estimated

at \$1.7 billion followed by Nigeria with estimated revenues of \$31 million and the third largest industry being the Kenyan gambling industry with estimated revenues of \$18 million.

Uganda's betting industry has grown since 2002 with tax revenues having increased from 0.24 billion Ugandan shillings in 2002/3 to 11.1 billion Ugandan shillings in 2012/13 (Ahaibwe, et al , 2016). Among countries in the South of Sahara, Kenya has the highest percentage of young betters accounting at 76 percent followed by Uganda at 57 percent and Ghana at 42 percent (Ssewanyana & Bitanihirwe, 2018). Nigeria has over 12 registered sports betting companies with 10 having gaming websites where one can place a wager (Akanle & Kolade, 2015). Sports betting is the most preferred type of gambling with football betting being the most famous among youths in South of Sahara (Wangari, 2017).

1.1.2 Sports Betting in Kenya

Sports betting in Kenya dates back to the time of colonialists where the European nationals used to gamble on horses at jockey clubs as a way of passing time and leisure (Mbasi, 2013). So as to regulate the gambling industry the colonial government came up with the gambling (ordinance) Act cap 26 of 1948 (Republic of Kenya, 1948). The main objective of the gambling ordinance act was to decrease the number of gaming houses and discourage betting in public places. The gambling ordinance act prohibited the keeping, managing, and use of any premise by any individual for the purpose of gaming. Under the Act only lotteries and horse race betting were allowed by the government (Mbasi, 2013). In 1963 after independence, so as to earn revenue from gambling the government introduced the betting tax ordinance to tax bets on horse races and banned foreign gambling pools from Kenya. (Republic of Kenya, 1963). The banning of foreign gambling pools was to ensure all gambling revenues were not expedited to foreign nations (Mbasi, 2013).

In 1966 the betting, gaming and lotteries Act was passed to regulate gambling in Kenya. The main objective of the act was to control and license all betting and gaming activities, impose and collect tax on behalf of the government and set up a board to oversee the act is followed to the letter (Republic of Kenya, 1966). The inaugural board was formed in May 1966 and was tasked to license betting premises, issue licenses to betting companies and collect tax arising from betting (Republic of Kenya, 1966). The betting, gaming and lotteries act has not undergone major changes over the last four decades with only changes done by deleting and adding regulations on new betting forms and altering fees and tax to be charged on gaming activities (Mbasi, 2013).

Since the introduction of online sports betting in Kenya in 2013, 28 firms have so far been licensed. As of 2017 the firms had attracted 5 million active customers placing bets through their sites in Kenya and with a total revenue of 20 billion Kenya shillings (Omondi, 2018). One of the firms namely sport pesa attracted the highest numbers of gamblers in Kenya and East Africa in 2017 (Kimuyu, 2017). The introduction of online betting platforms coupled with the ease to send money through mobile wallets have led to the increased participation of sports betting among the youths in Kenya (Koross, 2016).

Compared to other gamblers in the sub-Saharan Africa, Kenyans wager the highest amounts at 5000 shillings per individual bet mostly on football games in the English premier league (Ssewanyana & Bitanhirwe, 2018). This is attributed to the adoption of mobile phone technology and mobile banking services that bring betting and gambling sites to the fingertips of young people across the country. Safaricom end of year results in 2017 acknowledged increase in revenues from their pay bill services due to increased sport betting activities (Kimuyu, 2017). The youth market makes up the bulk of the new demographic target market for sports betting firms in Kenya, where the companies use social media platforms to engage them (Kiragu, 2016). High

unemployment levels among the youths in Kenya has made sports betting attractive among the youthful populations since they can earn from their pass time (Wangari, 2017).

1.1.3 Effects of Sport Betting Participation

Governments are at pressure of legalizing gambling in a bid to benefit from the high revenues obtained from gambling activities (Masaba, et al, (2016). However the revenues obtained from gambling sometimes come with undesirable social –economic problems for example increased expenditure on gambling from low-income individuals means the household misses on essential goods. Other forms of gambling have an addiction effect and are likely to lead to criminal activities so the individual can have some money to place a wager (Layton & Worthington, 1999). Gambling disorders are twice likely to affect children and adolescents than adults (Fraseri & Shahini, 2017). In America, studies have shown that problem gambling during adolescence leads to adverse outcomes such as strained relationships, delinquency and criminal behavior, depression and even suicide (Williams, Rehm, & Stevens, 2011). Increased sports betting expenditure in Australia has led to an increase in individuals reporting to clinics to be treated with gambling related issues. Research observed that 72.1 % of sports betting losses come from people with problem gambling disorders (Deans , Thomas, Derevensky, & Daube, 2017). The UK experienced an increase in of underage gamblers by 1.8% from 2018 to 2019. Of the total underaged gamblers aged between 11 to 16 years,1.7% are problem gamblers, This translate to around 55000 young people across the United Kingdom (Gambling Commission , 2019)

Increased sports betting by Nigerian youths has led to increase in the number of people with gambling related problems. Young people in Nigeria have confessed to missing essential necessities in a bid to finance their gambling addiction. Cases of Nigerian students gambling

their school fees has increased leading them to miss classes and drop out of school (Mustapha & Enilolobo, 2019). In Uganda, Poor people who participate in Sport betting tend to spend a higher proportion of their income on gambling. This led to high displacement effect on households' necessities and an individual savings. Sport betting participation has led to an increase in cases of problem gamblers reported in Uganda where individuals sell household items and steal so as finance their betting addiction (Ahaibwe, et al, 2016).

This increase in Sports betting in Kenya has had some positive effects such as increased revenues and source of income to some participants, it also has been a source of pain for some families with individuals squandering their hard-earned cash, committing suicide, students wagering their school fees to win extra income and in other instances leading to family break ups (Mwadime, 2017).Sports betting participation among university students in Kenya has led to loss of school time by students,since students spent most of their time researching on teams to bet on than concentrate on their studies (Koross, 2016).

The increase in the number of youths involved in betting made the government initiate the betting, gaming, and, lotteries act amendment of 2017 where it put a 35 percent gross gambling revenue tax on all forms of Gambling (Republic of Kenya, 2017). The main objective of the 2017 amendment was to help government collect tax from a fast-rising industry and reducing the negative effects associated with gambling participation (Koross, 2016). According to Mwadime , (2017) the current regulation on betting is playing catch up with the industry hence not effective since the regulation was adopted before the advent of mobile phones,internet and mobile wallets.

1.2. Problem statement

Increasing levels of unemployment and lenient gambling laws in Africa has led to increased number of companies promoting sports betting and an increase in youths engaging in sports betting. Like other African countries, participation in sports betting in Kenya has been increasing since 2013. The number of firms registered to provide sports betting services increased from 1 in 2013 to 28 in 2017 . The number of people involved in sports betting in Kenya increased from 2 million in 2015 to 5 million in 2017 (Mwadime, 2017). Estimated revenues to be gained from both online and mobile gambling are projected to grow by 6.8 percent annually from 18.3 million dollars in 2015 to 25.6 million dollars in 2018 (Price Waterhouse Coopers, 2014). However sports betting has been associated with economic benefits as well as undesirable social outcomes. (Ssewanyana & Bitanihirwe, 2018)

Empirical studies have identified a relationship between sports betting participation and individual characteristics which include age, income, employment status and education level (Ahaibwe, et al, 2016; Masaba et al, 2016; Vongsinsirikul, 2010; Zou, 2011). Findings show the main motivation to participate in sports betting is for monetary gain, leisure and peer pressure (Herskowitz, 2016; Koross, 2016; Yawe & Ssenooba, 2014; Wanjohi, 2012). Studies have also found that effects from increased gambling and sports wagering participation are twofold; economic and social (Williams & Wood, 2007; Masaba et al, 2016). Revenues obtained from gambling come with undesirable social –economic problems which include; addiction, criminal activities by gamblers and increased expenditure on gambling from low-income individuals hence missing on essential goods (Ahaibwe, et al, 2016).

Sport betting industry has experienced a continuous growth in Kenya over the last past five years. The number of individuals involved in sports betting has increased from 2 million in 2015

to 5 million in 2017. Different researchers have come up with different findings on what motivates individuals to participate in sports betting and the effect of sports betting participation on youths welfare . Some studies suggest it has negative effects on youths welfare while others suggest it has positive effects on youth welfare However limited research has been conducted in Kenya for this economic activity despite its social economic effects on the youth, where some participants win others lose and despite the loss they continue participating. This study sought to understand the factors that motivate participation in sports betting and its effect on youths welfare in Kenya.

1.3. Research Questions

- i.** Which factors influence Kenyan youths to participate in sport betting?
- ii.** What are the socio-economic effects of sports betting participation on youths' welfare in Kenya?

1.4 Research Objectives

The study explored sports betting participation and its effect on youths' welfare in Kenya. The study examined the following specific objectives;

- i.** To determine the factors influencing sport betting participation by youths in Kenya.
- ii.** To determine the socio-economic effects of sports betting participation on youth welfare in Kenya.

1.5. Significance of study

This study sought to identify the factors that motivate youths to participate in sports betting and the socioeconomic effects of sports betting participation on the youth's welfare. The findings from this research will help the government to come up with policies to mitigate the effects from

participation in sports betting. The findings will be important to religious and social institutions in coming up with interventions in tackling the problems that come with increased participation in sports betting. This study will be useful to students undertaking research on sport betting its economic effects, social effects and the motivation for sports betting. Finally, this research will be useful to the betting companies in understanding the effects of their products to the society and which corporate social responsibility to undertake to as to reduce the negative effects of their product.

1.6. Scope of the study

This study analyzed the effects of sports betting participation on youth's welfare in Kenya. The sample consisted of youths who live in Kajiado North constituency. This was informed by the fact that there is a good demographic representation and reflection of the various social-economic profiles in the county. In addition, the county is a metropolitan area housing the different tribes residing in Kenya.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of the theoretical approaches to gambling and the motivations to gambling and empirical literature on motivations of betting, the social-economic effects of betting from around the world. An overview of the literature is presented at the end of the chapter

2.2 Theoretical literature

This section reviews theories important in understanding the betting attitudes of an individual, what motivates one to engage in betting and the effects after betting. These theories include the Friedman and Savage's utility function theory, the theory for demand of a gamble and the rational addiction theory

2.2.1 Friedman and Savage's utility function theory

This theory was developed by Friedman and Savage (1948). This theory shows the expected utility function of a gambler who purchases insurance. The theory assumes the utility function has a special shape, i.e. one containing non-concave sections as shown in figure 2.1. The major assumption of this theory is that people in different classes face different utility functions. According to Friedman and Savage (1948) the gambler faces a positive marginal utility of money income since utility increases with income. Friedman and Savage assumed that below some income the individual faced a convex utility function, between that low income and some higher income an individual faced a concave utility function and for higher incomes the individuals faced a convex utility function; that is, gamblers below some income face diminishing marginal

utility, gamblers between that low income and some larger income faces increasing marginal utility, and gamblers earning higher incomes face diminishing marginal utility. The different sections of the utility curve show different social economic classes. The stage between lower and higher social classes are shown by the section portraying increasing marginal utility. Increasing marginal utility section of the utility function shows individual who gamble and purchase insurance. The gamble, shows the probability of wagering a small amount with the hope of winning a large amount of money. This theory assumes that an individual gamblers utility increases with increase in income obtained from gambling.

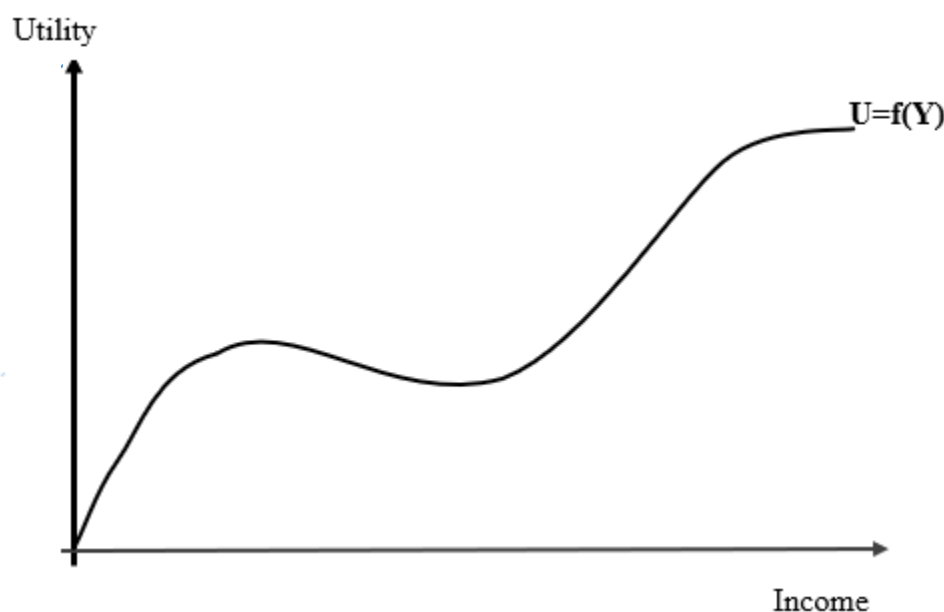


Figure 2. 1 Friedman and savage utility function

Source: (Friedman & Savage, 1948)

2.2.2 Nyman Theory for Demand of Gambles (2004)

Nyman (2004) came with a model in which he assumed that gambling is not just the prospect of gaining extra income but the probability of getting extra income without working for it. The

decision for a worker to accept a gamble is based on the labor supply model. Nyman stated that a gambling workers utility is derived from the amount of income earned (y) and amount of time spent on leisure (l). At wage rate w , he faces a labor market constraint based on the hours he has available for work and leisure

The workers utility maximizing equation can be stated as;

$$\text{Max } u(y, l)$$

$$\text{Subject to } y = w(1 - l), 0 < l < 1 \dots\dots\dots 2.1$$

The consumer maximizes utility at point y^*, l^* where y^* is the utility maximizing income and l^* is the utility maximizing labor hours and w is the amount of wage paid per hour of labor. The utility function is strictly concave, continuous and twice differentiable such that, $u_l, u_y > 0, u_{ll}, u_{yy} < 0$ and $u_{ll}u_{yy} - u_{ly}^2 > 0$.

Nyman model assumes that when the consumer uses part of his income to gamble a relationship needs to be established between utility, and gains and losses of unearned income from y^*

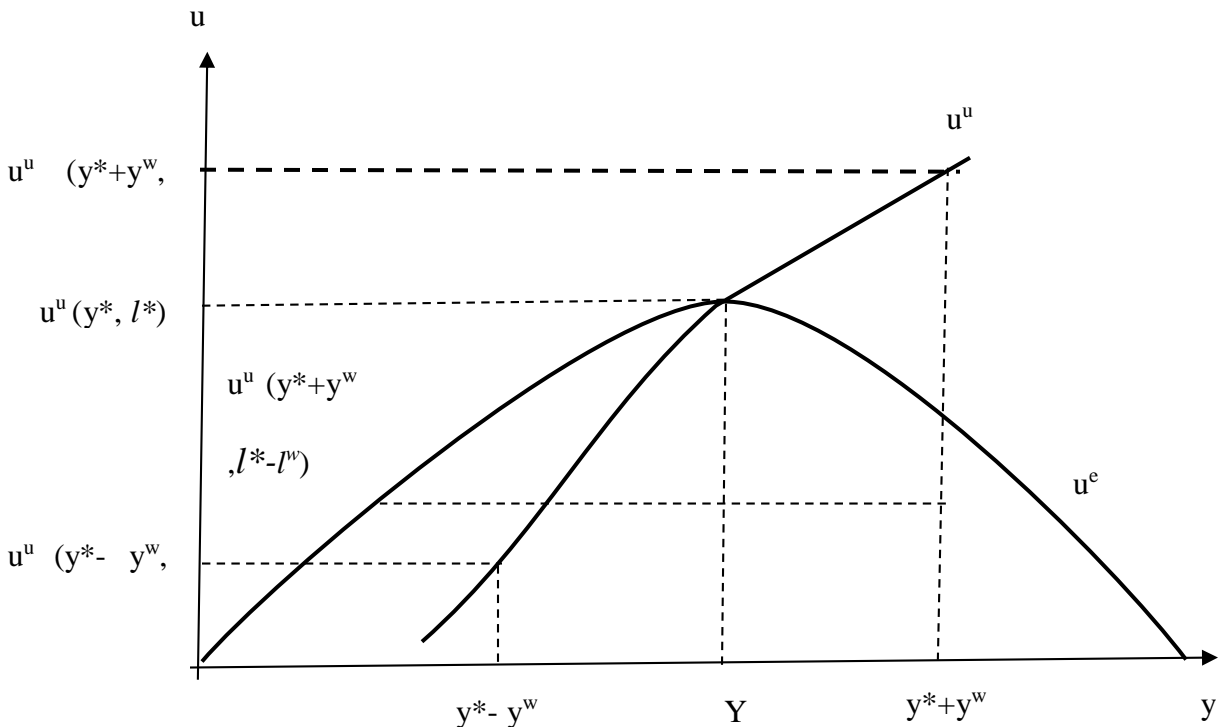


Figure 2. 2: Net gain from a fair gamble

Source: (Nyman,2004)

The association between utility and earned income is shown by the utility curve $U^e(y,l)$ while the correlation between utility and gains and losses of unearned income from y^* is shown by utility curve $U^u(y,l|l=l^*)$. The utility function of $U^u(y,l|l=l^*)$ is derived by holding leisure constant while income varies. Nyman explained the decision to gamble is made when one considers the gamble as a gain in utility measured from the point on utility curve $U^u(y,l|l=l^*)$ or from the point on utility curve $U^e(y,l)$. According to Nyman (2004) the choice to gamble is based on whether the gain in utility is from extra goods and services bought by amount won from a gamble or the worker had to dedicate some leisure to obtain the extra goods and service. The individual will gamble if the point of reference is U^u not U^e .

Nyman theory suggest that people earning low income are likely to gamble since extra income obtained from leisure foregone is expensive as compared to that obtained from extra income won from a gamble. The cost of getting extra income through working is greater for those earning low wages as compared to workers earning high wages, hence low wage workers have more leisure savings when extra income is gained through gambling. The model suggests that those who value leisure highly or hate their jobs and are likely to gamble than those who income and leisure are closer substitutes. This theory hence states that those holding white collar jobs that are less physically demanding are less likely to gamble as compared to those with physically demanding blue-collar jobs, wages held constant. This theory supports the utility theory under uncertainty where the utility gain for an extra income won from sports betting is higher for people with low income as compared to utility gain for people with higher income. This supports the idea where

people earning less income will tend to participate more in sport betting as compared to those earning a higher amount of income.

2.2.3 Rational Addiction Theory

This theory was developed by Becker and Murphy, (1988). This theory assumes that a consumer is rational in his/her consumption choices with the aim of maximizing utility. The consumer has a basket of goods which include an addictive good and other goods. The theory assumes that past consumption of the addictive good affects current consumption. The consumer even though knows the addictive nature of their choices, nevertheless performs them because future addiction makes expected gains from gambling higher than their costs. According to Becker and Murphy, incurring the full price of addictive consumption goods acts as a constraint since it designates not only a current monetary cost but also a permanent expected decrease in wealth due to the future expected gambling expenditure generated by addiction. Becker and Murphy (1988) incorporate the intertemporal aspect of addiction by defining a 'stock of addiction' variable that enters the instantaneous utility function; the consumer is, as it were, investing in a stock of addictive substances. This stock of addiction depreciates over time at a constant rate but it also increases by consumption of the addictive good. This 'consumption capital' approach results in interesting interdependencies in the consumption stream. The model postulates a higher consumption of the addictive good due to addiction will lead to reduction in an individual's wealth and this will affect their welfare.

2.3 Empirical literature

2.3.1 Factors Influencing Sport Betting Participation

Humphreys, Lee, & Soebbing, (2009) did a research on the Statistical Modeling of Consumers' Participation in Gambling Markets and Frequency of Gambling in Alberta .The study used a

random digit dial telephone survey conducted in Alberta in 2008 to determine an individual's attitude to gambling, participation in various gambling activities, expenditure used on gaming over the last 12 months and other risky behaviors such as alcohol and drug abuse, to determine gambling participation as a function of individual characteristics .The study used the first double hurdle model and the tobit model. There was a negative relationship between sports betting participation and age in the Tobit model but no correlation between age and sport betting participation in the first hurdle model. The Tobit model shows no relationship between sports betting and income while the double hurdle model shows that participation of sports betting declines with income but frequency of participation of sport betting increases with income. Findings show a higher frequency of participating on sports betting among males than females, no significant relationship between sports betting and education as compared to other forms of betting where the relationship between education and gambling participation is significant. Findings showed that betting frequency was a better measure of the intensity of customer participation on gambling as compared to gambling expenditure. The findings show that double hurdle model is preferred to the Tobit model as regards showing relationship between sports betting and social demographic factors.

Vongsinsirikul, (2010) did a study to understand the impact of gambling in Thailand adopted a logit and tobit model to analyze gambling participation in Thailand. The study used three research surveys conducted in Thailand. The results in the logit model where gambling participation was the dependent variable and the independent variables were education, gender, age, marital status, income and employment status observed that individuals of the male gender were likely to gamble as compared to their females all factors held constant. It was observed that people with higher income gamble more than people with lower income. The study also

observed that casinos and football betting were more prevalent to people between 15-50 years and students are more attracted to football betting. The study observed that highly educated people do not bet often as compared to the lowly educated in the society. The main reason respondents were involved in betting was due to the extra income obtained from betting. The major limitations of the study was definition of the gambling frequency and participation by the respondents and the study involved different betting forms and mostly concentrated on casino betting and not football betting

Zou, (2011) analysed The Utility of Uncertainty and used Gambling Behaviour to understand Individual Preferences under Background Risk in America. The study used two primary datasets with the first having 2250 respondents from united states and canada and the second was made up of 40499 gamblers who opened accounts with online gambling sites online including sports betting accounts. An OLS method was employed on a multiple linear regression model to determine the relationship between sports betting and income, sex, age, gambling attitude, political view and unemployment. The results showed a negative correlation between sports betting and unemployment such that unemployed people are less likely to be involved in sports betting, there was a strong positive correlation between gambling and income, the study observed that those that were morally opposed to gamble were less likely to gamble and liberals were more likely to gamble. In this model, age and sex seemed to have a weak co-relation with gambling. This study had limitations that may affect the results e.g the individuals that make up the sample were not carefully analysed and this model only considered the risky aspect of betting and not the entertainment aspect of it.

Wanjohi (2012) while analyzing the influence of unemployment on youth gambling in Nairobi, Kenya adopted a descriptive research design using frequency distribution tables and chi-square

to explore the extent to which the youth gambled ,to determine whether unemployment contributes to gambling,to establish whether youths engage in gambling as a source of income and the social economic characteristics of the youth who engage in gambling.The study analyzed a sample of 120 respondents 60 of who are involved in gambling and 60 who do not gamble.The study found out that the youth are directly involved in gambling visiting casinos two to three times per week.unemployment had no impact on their gambling behaviour but showed that youths were involved in betting so as to earn some income.

Ahaibwe, et al. (2016) while studying the Social Economic Effects of Gambling in Kampala city Uganda used a quantitative and qualitative survey design where data was collected through household survey questionnaires and interview with gamblers and gambling managers in outlets across Kampala city. The sample included 3330 households, 223 gamblers and 10 managers. The research adopted a probit model where participation in sports betting was the dependent variable and independent variable being Age, gender, personal income, employment status, education, and distance from the gambling shops. The findings show that males are likely to be involved in sports betting more than females, there was a positive and significant correlation between age and sports betting where people between the age of 18 and 30 gambled more as compared to those above 30 years. The research showed a positive relationship between education and Sports betting where people with post-secondary education are more likely to gamble on sports as compared to those with a low level of education. A positive correlation was observed between betting and employment status where one has to be employed to engage in betting and a high percentage of unemployed people are likely to be involved in sports betting. The study also observed that Gambling negatively affects household welfare through displacement effects, dissaving and domestic violence.

Herskowitz, (2016) analysed Gambling, Saving, and Lumpy Expenditures: Sports Betting in Uganda using a model that illustrates that the demand for lumpy expenditures generates demand for gambles, increased demand for gambles is due to increased demand for lumpy expenditures by people who cannot make the lumpy expenditure, income competes for priority between saving and betting when demand for lumpy expenditure increases improvement of savings decreases the demand for Sport betting. Herskowitz collected primary data from 5552 gamblers aged 18-40 across Uganda and found that 79 percent of the respondents gambled so as to win money followed by 15 % who recorded as a way to have fun as their main motivation of being involved in gambling. The results found out that financial constraints and lack of liquidity for lumpy expenditures as the major drivers of sports betting.

Mwadime,(2017) studied the implications of sports betting in kenya,accessing the role and impact of technology on sports betting and effects of sports betting on vulnerable users and analyzed the impact of the robust growth of the betting industry .Mwadime applied a descriptive research on a sample of 100 respondents who engaged in sports betting on platforms of 10 bookmakers who offered mobile betting.Mwadime found out that individuals who engage in sports betting were employed male below the age 40 years and above 21 years.The study found out that employed people had the highest probability of betting as compared to entrepreneurs and unemployed people.The study observed that mobile money had a major impact on sports betting since it offered an easy access,simple and reliable mode to place a bet.The study also found out that individuals participating in sports betting are aware of the risks they expose themselves to .A major limitation of the study was access to data on the respondents who used mobile payments to bet and the willingness of the respondents to answer the questions in the questionnaire.

2.3.2 Effects of Sports Betting Participation on Youth Welfare

Mustapha & Enilolobo, (2019) studied the effect of gambling on nigerian youths in Lagos. The study analysed the participation of gambling by the Youths and the effects of youths gambling on households spending and welfare. The study used a two staged survey to collect data from 100 respondents. The research adopted a probit model to determine participation in sports betting and welfare effects. The study found out that displacement of money meant for household consumption, domestic violence and sale household essentials as the main effects of sports gambling.

Gitau, (2018) analysed the problem of sports betting in Kenya, striking the balance between private profit and public good. The study analysed the legal framework guiding the sports betting industry and recent developments with regards to its social economic effects. The study observed that sports gambling has both positive and negative social economic effects. Positive effect observed included increase in revenue for government and a source of income and leisure activity for gamblers. The negative effects observed include depression and stress which could lead to suicide, increased domestic violence, lose of time in school or work and stealing of household items to finance gambling.

Ahaibwe, Lakuma, Katunze, & Mawejje, (2016) studied the Social Economic Effects of Gambling in Kampala city. The study used questionnaires to collect data from sample of 3330 households, 223 gamblers and 10 managers. The study used OLS to determine the effect on sports betting participation on a households' welfare. The study observed negative effects on a household's welfare which included, displacement effects on households' expenditure, increased domestic violence, decrease in savings and theft of household goods to finance betting

Koross, (2016) examined the effects of betting on Kenyan university students' behavior using a survey research design. The study collected data from a sample of 100 Kisii university students using a survey research design through the use of questionnaires. The study found that increased gambling among students has led to loss of valuable time, where students missed classes due to gambling. The study found that students had sold some of their valuable possessions to finance their gambling behavior. The study observed that the students had become debt strapped by using debt to finance their betting activities, where students were listed in the credit reference bureau. The study also found that some students used their school fees to finance sports betting. Cases of increased depression and stress were observed among the sampled students to levels where some contemplated suicide because of losing bets.

Anielski Management Inc, (2008) designed a framework for identification, measurement and assessment of socio-economic impact of Gambling (SEIG, Framework). The SEIG framework comprises of several themes geared towards impact assessment of gambling. The first impact theme is the impact of gambling on the health status and well-being of an individual that participates in gambling. The study found out the positive impact of gambling on an individual's health is the entertainment pleasure that the individual derives from betting. The negative impact on and individuals' health include the problem gambling prevalence, mental health problems, anxiety disorders, depressions and suicides due to gambling prevalence. Gambling was also found to have a negative impact on an individuals' social relations with their families and friends. Under the Financial and Economic impact of gambling, the benefits of gambling include; personal financial gain to the gamblers who win the prize. Among the cost associated with gambling include; personal bankruptcy, income lost from missed work, displacement effects on households' expenditure and depreciation in quality of life by the gamblers. Under the

employment and education impact of gambling, the study found that gambling led to employment creation by the gambling industry. The negative impacts of gambling on employment and education were; decreased productivity by pathological gamblers in places of work and school, employment costs due to possible turnovers in other industries and low performance by students in school. Since sports betting is a form of legalized gambling, it is bound to cause some of the effects highlighted under this framework. The SEIG framework is thus useful in determining the socioeconomic effects of sports betting participation on youth welfare in this study.

2.4 Overview of Literature

According to theoretical literature the decision to gamble is based upon the expected utility of an individual. The decision to gamble is based on whether the consumer sees it as a gain or loss in utility. Since gambling is considered an addictive good, past outcome is likely to affect present consumption. The theories show that up to a certain level of income and wealth the utility function increases with increase in income and wealth.

Most studies analyzed show that gambling participation is dependent on different social, economic and individual factors which include; income, Age, Sex, education, employment status, the betting attitude, technology adoption, one's political view and religion. To determine the relationship some of the studies used the probit and logit model. Tobit and double hurdle model were also used to determine the relationship, others used descriptive analysis. Most of the studies used survey data as their source of data, one used a random digit dial telephone random survey.

Studies analyzed the Impact on sports betting on youth welfare found that there were negative and positive effects of sports betting. Positive effects observed included increase in government

revenue,source of income and leisure for some participants.Negative effects of sports betting recorded included displacements of households expenditure,decreased saving, increased amount of debt, increased cases of depression and domestic violence,increased lost time at work or school by people engaging in sportts betting and cases of suicide due to loss of amount wagered. Effects of sports betting participation research has been conducted around the world and in other African countries e.g. Uganda and Nigeria where sports betting has been in existance for a number of years.Since sports betting is a new phenomenon in Kenya no study has been conducted on the effects of sport betting participation in Kenya.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents the research design, the theoretical and conceptual framework adopted as a foundation for the estimation model, the estimated model and description and measurement of variables. It also explain the type of data used, sources of data, data collection technique and methods used in data analysis.

3.2 Research design

The study adopted an exploratory research design since sports betting is a new phenomenon in Kenya and in Africa. Binary choice model was used to determine the drivers of sports betting participation and 2 stage least square regression analysis was used to determine the effects of sports betting on youth welfare.

3.3 Theoretical / Conceptual Framework

This section uses the random utility theory framework to determine factors that lead to participation since the random utility theory gives the probability with which each alternative is chosen, it links the individual's decision or outcome to a set of factors. The rational addiction theory framework is used to determine for socio-economic effects of sports betting on youth welfare since it introduces the addictive good in a consumer's basket of goods and determines the effect in consuming the addictive good.

3.3.1 Factors influencing sport betting participation by youths in Kajiado North Constituency in Kenya.

For the purpose of studying individual behavior, a model that links the individual's decision or outcome to a set of factors is considered (McFadden, 1975). Assuming Random Utility Model the choice on whether or not to participate in sports betting is based on net utility derived by an individual on sports betting. Utility is not observable, and the alternative chosen by the individual is an indicator of positive net utility evaluated based on costs and benefits of Sports betting (Ahaibwe, et al, 2016). Let U_a be the utility obtained from choosing to participate in sports betting, while U_b is utility derived from not participating in sports betting. An individual participates in sports betting if $U_a > U_b$ which means that net utility of participation is positive, *that is* $U_a - U_b > 0$. On the other hand, an individual fails to participate if the net utility is less than or equal to zero, that is, $U_a - U_b \leq 0$. An interpretation of data on individual choices is provided by the random utility model (Green 2012). From economic theory, utility is defined as:

$$U_a = w'\beta_a + z'_a\gamma_a + \varepsilon_a \quad (3.1)$$

$$U_b = w'\beta_b + z'_b\gamma_b + \varepsilon_b \quad (3.2)$$

U_a & U_b represent utility derived from participation and non-participation in sports betting respectively. The observable vector of characteristics of the individual is denoted \mathbf{w} ; it includes gender, age, income, and other demographics. The vectors \mathbf{z}_a and \mathbf{z}_b denote features (attributes) of the two choices \mathbf{a} and \mathbf{b} that might be choice specific. The random terms, ε_a and ε_b represent the stochastic elements that are specific to and known only by the individual, but not by the observer (analyst) (Greene, 2012). Let net utility be represented by y^* which is a latent variable. It follows that $y^* > 0$ if $U_a - U_b > 0$ and $y^* \leq 0$ if $U_a - U_b \leq 0$.

According to Jeffery (2002) the completion of the model for the determination of the observed outcome (choice) is the revelation of the ranking of the preferences by the choice the individual makes. The choice made by the individual reveals the greater utility level.

To model the relationship between choice and the factors influencing the choice made, let the observed choice be represented by $Y = 1$ if the individuals' choice is to participate in sports betting and $Y=0$ if the individual does not participate in sports betting. Consequently, it follows that

$$Y=1 \text{ if } y^* > 0 \quad \text{i.e (} U_a > U_b \text{)}$$

$$Y= 0 \text{ if } y^* \leq 0 \quad \text{i.e (} U_a \leq U_b \text{)}$$

Since the outcome is ultimately driven by the random elements in the utility functions, we construct the probability that individuals will participate in sports betting; $P(Y=1)$ as follows:

$$prob(Y = 1|w, Z_a, Z_b) = prob(y^* > 0) = prob(U_a > U_b) = prob(U_a - U_b > 0) \quad (3.3)$$

$$prob(Y = 1|w, Z_a, Z_b) = prob\{(w'\beta_a + z'_a y_a + \varepsilon_a) - (w'\beta_b + z'_b y_b + \varepsilon_b) > 0|w, Z_a, Z_b\}$$

$$prob(Y = 1|w, Z_a, Z_b) = prob\{w'(\beta_a - \beta_b) + z'_a y_a - z'_b y_b + \varepsilon_a - \varepsilon_b > 0|w, Z_a, Z_b\} \quad (3.4)$$

$$= Prob [X'\beta + \varepsilon > 0 | x], \quad (3.5)$$

Where $x'\beta$ collects all the observable elements of the difference of the two utility functions and ε denotes the difference between the two random elements $\varepsilon_a - \varepsilon_b$.

Depending on the distribution of the error term ε i.e. $\varepsilon_a - \varepsilon_b$ in equation 3.5, Logit or Probit model can be specified while the probability or likelihood of participation can be estimated using Maximum Likelihood Estimation method (Greene, 2012).

Equation 3.5 can be expressed as

$$Prob (Y=1 | X) = Prob (\varepsilon > -X'\beta | X)$$

Assuming asymmetrical distribution of the error term, then

$$\begin{aligned} \text{Prob}(Y=1 \mid X) &= \text{Prob}(\varepsilon \leq X'\beta \mid X) && \text{and} \\ \text{Prob}(Y=1 \mid X) &= F(X'\beta) && \text{(3.6)} \end{aligned}$$

Where $F(X'\beta)$ is a Cumulative Distribution Function (CDF) since the probability of Y is assumed to be monotonic in Y .

Assuming that ε (which includes random utility component) has a normal distribution, equation 3.6 translates to probit model which can be expressed as;

$$\text{prob}(Y = 1 \mid w, Z_a, Z_b) = F(X'\beta) = \Phi(X'\beta) \quad \text{(3.7)}$$

Where from theory

$$\Phi(X'\beta) = \int_{-\alpha}^{X'\beta} \phi(t) dt$$

Where $\phi(t)$ is the probability distribution function.

On the other hand, if ε has a logistic distribution the CDF can be given as

$$\text{prob}(Y = 1 \mid w, Z_a, Z_b) = F(X'\beta) = \Lambda(X'\beta) \quad \text{(3.8)}$$

$$\text{Where } \Lambda(X'\beta) = \frac{\exp(X'\beta)}{1 + \exp(X'\beta)}$$

Both logit and probit model were estimated giving almost similar results.

3.3.2 Socio-economic effects of sports betting participation on youth welfare in Kajiado North Constituency in Kenya

According to Becky and murphy, (1988) rational addiction theory, a consumers' basket of goods includes addictive goods and other goods. Utility is derived from consumption of both the normal good(y) and the addictive good (C). an individual's utility measures the current consumption of the normal good and addictive good and the past consumption of the additive good i.e.

$$u(t) = u\{y(t), c(t), S(t)\} \quad \text{(3.9)}$$

Assume u is a strong concave function of y , c and S . Past consumption of C affects current utility through ‘learning by doing’, identified by the stock of ‘consumption capital’ denoted by S . Consumption capital is a function of past consumption of the addictive good depreciated at rate δ and affects utility of current period negatively. An investment for present is thus equated as

$$\dot{S} = c(t) - \delta S(t) - h[D(t)] \quad (3.10)$$

Where \dot{S} is the rate of change over time in S , c is the gross investment in “learning”, the instantaneous depreciation rate δ measures the exogenous rate of disappearance of the physical and mental effects of past consumption of c , and $D(t)$ represents expenditures on endogenous depreciation or appreciation.

With the length of life being T and a constant rate of time preference, σ , the utility function will be

$$U(0) = \int_0^T e^{-\sigma t} u\{y(t), c(t), S(t)\} dt \quad (3.11)$$

Utility is separable over time in Y , c and S .

A rational consumer maximizes utility subject to a constraint on his/her expenditure. Assume an initial value of assets is A_0 , constant interest rates over time (r), earnings at time t are a concave function of the stock of consumption of capital at t , $w(s)$ and a perfect capital markets, then the budget equation is

$$\int_0^T e^{-rt} \{y(t) + p_c(t)c(t) + p_d(t)D(t)S(t)\} dt \leq A_0 + \int_0^T e^{-rt} w[S(t)] dt \quad (3.12)$$

Assuming price of y is constant overtime, an individual maximizes utility in equation 3.11 subject to the budget constraint 3.12. The optimal solution $V(A_0, S_0, w, p)$ gives the maximum obtainable utility from initial stock A_0 , initial stock of capital S_0 , earning function $w(s)$, and a price structure $p(t)$. Since $u(\cdot)$ and $w(s)$ are concave the F.O.C of V in respect to A_0 and $S_0 \leq 0$.

If $u = \frac{\partial V}{\partial A_0}$ then due to concavity $\frac{\partial u}{\partial A_0} \leq 0$

The first order conditions determine the optimal paths of y_t and c_t . If we let

$$a(t) = \int_t^T e^{-(\sigma + \delta)(r - t)} U_s d\tau + U \int_t^T e^{-(\sigma + \delta)(r - t)} w_s d\tau \quad (3.13)$$

Then

$$u_y(t) = \mu e^{(\sigma - r)t}$$

$$h_d(t)a(t) = \mu \rho_d(t) e^{(\sigma - r)t}$$

$$u_c(t) = \mu \rho_c(t) e^{(\sigma - r)t} - e^{\sigma t} a(t)$$

Equation 3.13 above represents the discounted utility and monetary cost or benefit of additional consumption of the addictive good c through the effect on future stock by measuring the shadow price of an additional unit of the addictive good.

$a(t)$ is the shadow price of the consumption stock and u_y are shadow prices for wealth, which are also the marginal utilities from a small change in stock and wealth.

So as to determine the optimal consumption path of c and y and state transition path of S we find the solution of the dynamic optimization problem using the following assumptions;

Infinite time: $T = \infty$, time preference equals interest rate: $\sigma = r$, no endogenous depreciation of S : $\dot{S} = 0$ and quadratic utility and earnings functions, so the relationship between c and S is linear.

If the utility function u is quadratic in c , y , and S , the earnings are quadratic in S , and if $p(t) = p$ for all t , then the value function is also quadratic. By optimizing y out with its first-order condition, we obtain a function that is quadratic only in $c(t)$ and $S(t)$:

$$F(t) = \alpha_c c(t) + \alpha_s S(t) + \frac{\alpha_{cc}}{2} [c(t)]^2 + \frac{\alpha_{ss}}{2} [S(t)]^2 + \alpha_{cs} c(t) S(t) - \mu p_c c(t) \quad 3.14$$

Where the coefficients α_s and α_{ss} contain the marginal and secondary effects of S on the utility function (u) and the earnings function (w).

Then;

If the good is a harmful addictive good, $U_s, w_s < 0$ and $\frac{\partial F}{\partial S} < 0$

I.e. it has adverse effects on utility and earnings due to an increase in “consumption stock” of a harmful addictive good

If the good is a beneficial addictive good, then;

$$U_s, w_s > 0$$

$$\frac{\partial F}{\partial S} > 0$$

I.e. it has positive effects on utility and earnings due to an increase in “consumption stock” of a beneficial addictive good

3.4 Empirical Model

Two empirical models were specified and presented in this section corresponding to objectives of the study

3.4.1 Model Specification for Sports Betting Participation

Conceptual and theoretical review given in section 3.3 and literature review helped in coming up with empirical model for the first objective. Gambling participation is a function of individual characteristics and choice specific attributes. Participation has a binary outcome where youth in Kajiado participate or do not participate in sports betting. Earlier research on sport betting participation has tended to express the outcome (SBP) as a function of the employment status of an individual, age of the individual, sex of the individual, income of the individual, highest education level obtained, religious beliefs, betting attitude, sport betting advertisements, peer pressure and technology by the individual. This relationship can be expressed as:

$$SBP = f(\text{INC, EDU, EMP, SEX, AGE, M. STATUS, RELIGION BELIEFS, BETTING ATTITUDE, ADVERTISEMENT, TECH}) \quad (3.15)$$

Where SBP is the sports betting participation, INC is the gross monthly income of the individual, EDU is the highest level of education; EMP is the employment status; SEX is the gender of the respondent; AGE is the number of years; M. STATUS is the marital status; REL.B is religion; ADV is whether the betting advertisements lead the respondent into betting; B.ATT is the respondent's attitude towards betting, TECH represents the effect of technology adoption on sport betting participation

To determine the drivers of sports betting participation by youth in Kajiado, the study specified a binary choice model as explained by Jeffery (2002) and Greene (2012). Since the choice is based on utility of the individual (i) which is not observable, a latent variable y_i^* for a particular individual person is specified and expressed as follows:

$$y_i^* = x_i'\beta + \varepsilon \quad i=1, 2, 3, \dots, n \quad (3.16)$$

A young person in Kajiado County decides to engage in sports betting if the utility derived in participation is greater than utility of non- participation. The observed choice is a binary outcome which can be represented by $y=1$ if the decision is made in favor of betting and $y=0$ if the decision is not in favor of betting. According to choice theory captured by equation 3.3, such an outcome would arise if y_i^* is greater than zero. In summary, the binary choice model for sport betting participation can therefore be specified as:

$$y_i^* = x_i'\beta + \varepsilon$$

$$y_i = 1 \quad \text{if } y_i^* > 0$$

$$y_i = 0 \quad \text{if } y_i^* \leq 0 \quad (3.17)$$

Where y_i^* (latent variable) is expressed in as a function of a vector of explanatory variables, X_i . The variables include individual characteristics variables, w and attributes of sports betting, Z as explained earlier. y_i is the observed binary outcome such that $y_i=1$ represents participation in sports betting and $y_i=0$ represents non participation. Using equation 3.8 the probability that an individual youth in Kajiado North constituency sample will participate in sports betting can be expressed as;

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

Assuming symmetry, the probability of Sports betting participation can be expressed as

$$\text{Prob}(y_i = 1 | x_i) = F(x_i' \beta) \quad (3.18)$$

Where $F(x_i' \beta)$ is a cumulative distribution function.

Since probabilities should always add up to one, the probability that an individual youth will not participate in sports betting is given by

$$\text{Prob}(y_i = 0 | x_i) = \text{Prob}(y_i^* \leq 0 | x_i) = 1 - F(x_i' \beta) \quad (3.19)$$

Both Logit and Probit models were estimated using Maximum Likelihood estimation method and it was observed that the two variants gave similar results. Consequently, the study presents logit results for equation 3.16.

The results were obtained from the maximum likelihood function whose theoretical construct is expressed as;

$$\begin{aligned} L(\beta | y_i, x_i) &= p(Y_1 = y_1, Y_2 = y_2, \dots, Y_n = y_n) \\ &= \pi_{y_i=1} F(x_i' \beta) \pi_{y_i=0} [1 - F(x_i' \beta)] \end{aligned}$$

$$= \prod_{i=1}^N \{F(x'_i\beta)^{y_i} [1 - F(x'_i\beta)]^{1-y_i}\}$$

Taking logarithms gives

$$\text{Log } L(\beta) = \sum_{i=1}^N \{y_i \ln F(x'_i\beta) + (1 - y_i) \ln [1 - F(x'_i\beta)]\} \quad (3.20)$$

From theory, the maximum likelihood estimation method seeks to maximize the objective $L(\beta)$ the explanatory variables x_i and the participation outcomes y_i , [$y_i=1$ if an individual participates or $y_i=0$ if an individual does not participate]. Borrowing from empirical literature the X_i vector in this study includes a set of individual characteristics and sports betting related variables

A logit model of the function was estimated and expressed as;

$$\ln \frac{p}{1-p} = \beta_0 + \beta_1 INC + \beta_2 EDU + \beta_3 EMP + \beta_4 M. STATUS + \beta_5 SEX + \beta_6 RELIGION + \beta_7 ATT + \beta_8 ADV + \beta_9 TECH + \beta_{10} AGE \quad 3.21$$

While the equation gives the log odds, marginal effects were used for interpretation of results.

3.4.2 Model specification for effects of sports betting participation on youth welfare.

This study sought to model youth welfare in the context of sports betting. According to the rational addiction theory by Becky and Murphy, (1988), continuous participation of sports betting is associated with some desired and undesired social economic effects which affect an individual's welfare. In line with the existing literature, youth welfare is expressed as a linear function of sports betting participation and other factors as given below. Those considered for this study include; household size, expenditure, Age, Gender, Education level and employment;

$$Y. WELF = f(SBP, EXP, AGE, SEX, EDU, EMP, HH. SIZE) \quad 3.21$$

Where Y. WELF represents youth welfare, SBP is the sports betting participation, EXP is the Expenditure of the individual, EDU is the highest level of education; EMP is the employment status; SEX is the gender of the respondent; AGE is the number of years, HH. SIZE is the household size. To help achieve objective two, a linear model is specified below such that youth

welfare is regressed on predicted values of youth participation estimated in objective one. This cautions against sample selection problem.

$$Y.Welf = \alpha_0 + \alpha_1\widehat{SBP} + \alpha_2EXP + \alpha_3AGE + \alpha_4Sex + \alpha_5EDU + \alpha_6EMP + \alpha_7HH.SIZE + \varepsilon \quad (3.23)$$

Where Y_welf represents youth welfare, α_i 's are parameters to be estimated and other variables are as explained above

To determine the effect of sports betting participation on youth welfare the study applied Two Stage Least Squares method to estimate equation 3.18. This estimation method was appropriate because it solves the problem of sample selection bias by including the individuals that did not participate in sports betting in the estimation process. Failure to capture the subsample of those who did not participate would have resulted in unrepresentative sample. The implication of this is that, 2SLS avoids sample selection bias for the specified linear model.

3.5 Definitions and Measurement of Variables

This table shows the variable description and how they are measured

Table 3. 1 Definitions and Measurement of Variables

Dependent variables

S/NO	Variable	Description	Measurement
1	Sports Betting Participation (SBP)	An individual participation in sports betting	Dummy variable Participation=1 Non participation =0
2	Youth Welfare (Y. WELF)	Improvement of quality of life due to sports betting participation	Derived by weighting indicators proposed in the SEIG framework developed by Anielski Management Inc, (2008). Which include; health, food security, absolute poverty, finances, debts and employment status. The results were weighted to come up with an index ranging between 1 and 5, which

			represented; very poor welfare =1, poor welfare =2, fairly good welfare=3, good welfare =4, very good welfare=5
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Explanatory variables

S/NO	Variable	Description	Measurement
1	Gender	Being male (M) or female (F)	Dummy variable. M = 1, F = 0
2	Age	Age of respondent in years	Years from date of birth
3	Marital Status (M. Status)	State of having or not having a spouse	Dummy variable Single=0; Married=1
4	Education (EDU)	Highest level of education attained by the respondents	Categorical variable. Primary=1, Secondary=2, Undergraduate=3, Postgraduate=4
5	Income (INC)	The average gross monthly earnings of the respondents in Kenya shillings	Categorical variable Below 10000=1 10,001-20000=2 20001-30000=3 30001-40000=4 40001-50000=5 Above 50000=6
6	Occupation	Income earning activity respondent is engaged in	Categorical variable Not employed=1; Self-employed=2 Employed Part-time=3 Employed full-time=4
7	Religion	The religion that an individual subscribes to	Categorical Christianity=1; Islam=2; Hindu=3
8	Advertisement (ADVERT)	Betting due to Sports betting advertisement such as radio television and other media platforms	Dummy variable Yes =1 No=2
9	Betting Attitude (ATT)	Respondent's attitude towards betting	Dummy variable Sport betting is beneficial=1 Sports betting is not beneficial=0
10	Technology	The influence of technology advancements on ease of accessing betting platforms	Dummy variable access =1 No access =0
11	Household size	Number of members living with the	Number of members

	(HHSIZE)	household head	
12	Expenditure (EXP)	amount of money used by a household in a given month in Kenya shillings	Categorical variable; Below 10,000=1; 20,001-25,000= 2; 10,001-15,000=3 25,001-30,000=4 15,001-20,000=5; Above 30,000=6

3.6 Study Area and the Target Population

The study was conducted in Kajiado North constituency. The constituency covers an area of 7,401 square kilometers (Km²). According to the 2009 census Kajiado North constituency has a total population of 97,163 spread across three towns; Ngong, Kiserian and Ongata Rongai (County government of Kajiado, 2013). The choice of the constituency is because the area of study is easily accessible since it's the location where I reside and also it hosts two universities and several colleges hence a large number of youths reside in the constituency. Being a metropolitan constituency, it is home to the different tribes in Kenya.

The target population for this study were youths residing in Kajiado north constituency, Kajiado County.

3.7 Sampling Techniques and sample size

The study adopted the fishers' formula to determine the sample size. The formula is expressed as follows;

$$n' = \frac{z_{\alpha}^2 \times p(1-p)}{d^2} \quad 3.25$$

Where n' is the sample size to be estimated, z_{α}^2 is the degree of confidence which is 1.96 at 95 percent, d is the level of statistical significance 0.05 (1-0.95). P is the proportion of the population estimated to have those characteristics being analyzed (since the proportion is

unknown the study will assume 50 percent or 0.5 have the characteristics being analyzed). The sample size is;

$$n' = \frac{1.96^2 \times 0.5(0.5)}{0.05^2} \quad \mathbf{3.26}$$

$$=384.16$$

Introducing the population size into the sample size formula as proposed by Israel (1992), will be expressed as

$$n = \frac{n'}{1 + \frac{n' - 1}{N}}$$

Where n is the sample size, n' is the sample size obtained from equation 3.7, N is the total youth population of 97, 123, the ensuing sample size is;

$$n = \frac{n'N}{1 + \frac{n' - 1}{N}} = \frac{384.16}{1 + \frac{384.16 - 1}{97123}}$$

$$=382$$

The study obtained data from a sample size of 382 respondents spread in three regions in the constituency Ngong, Kiserian and Ongata Rongai. The Youth populations of these towns according to the Kenya national bureau of Statistics, 2009 census are 25,724 in Ngong, 26,761 in Kiserian and 44,678 in Ongata Rongai.

Table 3. 2: Kajiado North Constituency Sample size distribution

Town	Youth population	Youth Population percentage	Sample size
Ongata Rongai	44,678	45.98	175
Kiserian	26761	27.54	105
Ngong	25,724	26.48	102
Total	97,163	100	382

Source: Kenya National Bureau of statistics, (2009)

According to the 2009 census Ongata Rongai town had 45.98 percent of the total youth population, Kiserian 27.54 percent and Ngong town 26.48 percent. Therefore, among the 382 respondents Ongata Rongai provided 175 respondents, Kiserian provided 105 respondents and Ngong provided 102 respondents'

3.8 Data Type and Source

Primary data of qualitative and quantitative nature was collected from sport betters located in Kajiado north constituency

3.9 Data Collection

Data was obtained from 382 respondents through the use of a questionnaire. The questionnaire was structured and thematically segmented into Demographic, sports betting participation and socio-economic welfare sections. Data was collected with the help of research assistants who were trained on the contents of the questionnaire and how they relate to the research objectives.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION OF RESULTS

4.1 Introduction

This chapter provides a comprehensive analysis of the data collected. The first part highlights the questionnaire response rate. The chapter goes ahead to present the descriptive analysis results, summary statistics of respondents involved in sports betting and finally regression analysis, after which the results are discussed in details in association to the empirical and theoretical aspects.

4.2 Summary Statistics

This section presents summary statistics for the study and has three subsections; 4.2.1 presents the response rate, 4.2.2 presents the results of continuous variables in term of mean and standard deviation and 4.2.3 presents the categorical variables in terms of frequency and percentages. Section 4.2.4 presents summary statistics of individuals who participate in sports betting

4.2.1 Response Rate

The study used primary data from a sample of 382 respondents residing in Kajiado north constituency, Kajiado County. Specifically, the study focused on three cosmopolitan regions, namely Ongata Rongai, Kiserian and Ngong towns. Out of the sampled 382 respondents the study managed to get responses from 343 respondents, representing a response rate of 89.8 percent. Mugenda and Mugenda (2003) asserted that a response rate of at least 70 percent is considered reasonable to infer from.

4.2.2 Summary Statistics for Continuous Variables of the Study

Summary statistics for all variables used in this study were explored before fitting in the data for estimation. This helped the researcher establish the distributional characteristics of variables

which is a necessary step in data analysis. Results are split into two tables where Table 4.1 presents the summary statistics for continuous and count variables while Table 4.2 presents categorical variables.

Table 4. 1: Summary Statistics of Ordinal, Continuous and Count Variables

Variable	Type	Code	Mean	Std. Dev.	Min	Max
Youth welfare	Ordinal	Y_welf	3.0908	1.3620	1.1428	4.857
Household size	Scale	HHsize	1.8746	.8335	1	6
Age	Scale	Age	25.1633	4.7771	18	35

Source: Research Data, 2020

Youth welfare was measured using a Likert scale of 1 to 5 where 1 represent poor welfare while 5 represented very good welfare. The variable youth welfare had a total of 14 welfare assessment questions encompassing physical well-being, mental well-being, poverty, food security and unemployment. Each participant was required to give a score to each of the questions. The questions were then summed together and divided by 14 to get an average score for each participant. The mean score for all the participant for this variable was 3.09 as shown in Table 4.1. These results imply that on average the respondents perceive their welfare to be fairly good.

The mean for household size was 1.8746, this was lower than the recorded average number of children per household in Kenya which stood at 3.9 (KNBS, 2019). The explanation for this is possibly because, the targeted respondents for the study were the youth, and thus it is expected that the figure would be slightly lower than that of entire population.

4.2.3 Summary Statistics for Categorical Variables

The study had 6 categorical variables namely sports betting participation, income, occupation, gender, religion and betting attitude. Table 4.2 present the summary statistics for categorical variables.

Table 4. 2: Summary Statistics for categorical Variables

Variable		Frequency	Percentage (%)
Sports betting participation (SBP)	Yes	171	49.85
	No	172	50.15
Education (EDU)	Primary	32	9.33
	Secondary	117	34.11
	University	163	47.52
	Postgraduate	31	9.04
Marital status (M. Status)	Single	188	54.81
	Married	155	45.19
Income levels (INC)	Below 10000	148	43.15
	10,001-20000	74	21.57
	20001-30000	55	16.03
	30001-40000	24	7.00
	40001-50000	24	7.00
	Above 50000	18	5.25
Occupation (EMP)	Student	32	9.33
	Not employed	104	30.32
	Self-employed	101	29.45
	Employed full-time	80	23.32
	Employed part-time	26	7.58
Gender (Sex)	Male	228	66.47
	Female	115	33.53
Religion	Christian	267	77.84
	Muslim	74	23.57
	Hindu	1	0.29
Attitude to betting (ATT)	Betting is beneficial	200	58.65
	Betting is not beneficial	141	41.35
Access to Technology	No	126	36.8
	Yes	216	63.16
Access to advertisement	No	109	31.87
	Yes	233	68.13

Source: Research Data, 2020

Table 4.2 shows 49.85 percent of the respondents take part in sports betting while 50.15 % do not take part in betting, meaning that the proportion of those that take part in betting is almost the same as those that do not. With regards to education, majority 47.52% of the respondents are university degree holders, followed closely by respondents with a secondary certificate at 34.11%. Those that have attained postgraduate degrees represented 9.04%, while those with

primary school certificate represented 9.33 %. The results are in tandem with the youth population distribution of the region owing to the presence of three universities and affordable housing.

When it comes to marital status majority of the respondents, 54.81% are single whilst 46.19% are either married or cohabiting. The gender distribution on the other hand is as follows 66.47% of the respondents are male while 33.53% are female. Majority of the respondents are Christians at 77.84%, followed by Muslims at 23.57% and Hindu at 0.29%, this is in line with the population distribution of these areas, as majority are Christians, followed by Muslims and a few Hindus.

With regards to attitude towards betting, majority of the respondents (58.65%) feel that betting is beneficial while 41.35% feel that betting is not beneficial. Majority of the respondents (30.32%) were not employed, 29.45% were in self-employment, 23.32% were in full time employment, 9.33% were students, while 7.58% were not employed. Finally, when it comes to the level of income, majority of the respondents (43.15%) earn less than Ksh 10, 0000 per month, followed closely by those that earn between Ksh 10001 and 20000 at 21.57%, those that earn between Ksh 20001 and 30000 were 16.3%, while those who earn above Ksh 30000 constituted 19.25% of the respondents.

With regards to access to technology majority of the respondents (63.16%) indicated that they have access to technology such as online betting platforms while 36.84% indicated that they have no access to technology including online betting platforms. On the other hand, 68.13% of the respondents have access to advertisement on radio TVs and other media platforms while 31.87% have no access to advertisement.

4.2.4 Summary statistics of respondents Participating in Sports Betting

This section provides results from respondents who participate in sports betting

4.2.4.1 How did you learn about sports betting?

Table 4.3 below shows how a respondent came to learn about sports betting. Majority of the respondents involved in sports betting learnt about it from their friends. This represented 52.91 percent of the respondents that participate in sports betting. From the total respondents who participate in sports betting 38.37 percent had learnt about sports betting from TV and radio advertisement. Respondents who learnt about sport betting from their family was the smallest proportion representing 8.72 percent.

Table 4. 3: How respondents learnt about sports betting

Source of information on sports betting	Frequency	Percentage
Friends	91	52.91
Family	15	8.72
TV & Radio advertisement	66	38.37
Total	172	100

Source: Research Data, 2020

4.2.4.2 Years Respondent has been participating in sports betting

Table 4.3 shows the number of years an individual has been participating in sports betting. Majority of the respondents indicated they have been participating in betting for between 1 and 2 years representing 44.9 percent of the total respondents, this was followed by those who have been involved in betting for 3 to 4 years representing 31.4 percent of the respondents. Individuals who had participated in sports betting for more than five years represented 17.44 of the total individuals sampled The smallest proportion was of those who had been involved in betting for less than 1 year representing 6.97 percent

Table 4. 4: Numbers of years betting

Years Betting	Frequency	Percentage
Less than 1 year	12	6.97
1 – 2 years	76	44.19
3 – 4 years	54	31.40
Above 5 years	30	17.44
Total	172	100

Source: Research Data, 2020

4.2.4.3 Betting platform used

Table 4,4 below shows the platform the respondents used to participate in sports betting. Of the total respondent's 81.98 percent place bets using their mobile phones. Those respondents who participated in sports betting at cyber cafes and betting shops were 15.7 percent and 2.32 percent respectively. This is a true representation due to the uptake of smart phones and internet by young people hence bring the betting platforms to their finger tips

Table 4. 5: Betting platform used to participate in sports betting

Betting platform Used	Frequency	Percentage
Cyber Cafe	27	15.70
Mobile Phone	141	81.98
Betting Shops	4	2.32
Total	172	100

Source: Research Data, 2020

4.2.4.4 Reason for participation in sports Betting

Table 4.5 below gives the reason an individual participates in sports betting. Majority of the respondents representing 44.77 percent participate in sports betting so as to earn an extra income. Respondents who participate in sports betting to start a business were 19.77 percent of the sampled respondents, while those who participate to get funds for entertainment representing 13.95 percent respectively. Respondents who participate in sports betting due to peer pressure

represent 9.88 percent. Respondents participating in sports betting to buy necessities and repay debts represents 6.98 and 4.65 of total respondents respectively.

Table 4. 6: Reason for Participating in sports Betting

Reason for Participating	Frequency	Percentage
To start a business	34	19.77
To earn extra Income	77	44.77
Entertainment	24	13.95
To Repay debts	8	4.65
To Buy necessities	12	6.98
Peer Pressure	17	9.88
Total	172	100

Source: Research Data, 2020

4.2.4.5 Source of funds used in Sports betting

Table 4.7 below shows the source of funds used in participation in sports betting. The results showed that 39.53 percent of the respondents obtain money to wage in sports betting from their employment income. Respondents who used winnings from previous bets to finance future bets represented 23.84 percent. Respondents who used money from saving represented 19.19 percent, while those who used money borrowed from loaning applications represented 13.37 percent. From the respondents who participate in sports betting 4.07 percent borrow money from their friends to wager in a sports bet.

Table 4. 7: Source of Funds for Participation in Sports Betting

Source of Funds	Frequency	Percentage
Employment income	68	39.53
Savings	33	19.19
Previous winnings from bets	41	23.84
Borrowing from friends	7	4.07
Borrowing from loaning applications	23	13.37
Total	172	100

Source: Research Data, 2020

4.2.4.6 Respondents Betting Frequency

Table 4.8 below represents the betting frequency of the respondents. The results showed that majority of the respondents of respondents bet once a day representing 31.40 percent of the total respondents who participated in sports betting. Respondents who place a bet once a week represented 30.23 percent. The respondents betting twice a day and twice week represented 17.44 percent and 16.86 percent of the total respondents participating in sports betting. The smallest proportion was for those who indicated they bet once a month at 4.07 percent

Table 4. 8: Respondents Betting frequency

Betting Frequency	Frequency	Percentage
Once a day	54	31.40
Twice a Day	30	17.44
Once a week	52	30.23
Twice a week	29	16.86
Once a month	7	4.07
Total	172	100

Source: Research Data, 2020

4.2.4.7 Amount wagered per bet by respondents

According to table 4.9 below, 36.33 percent of the respondents participating in sports betting wager less than 100 shilling per bet. Respondents placing a wager of between 100 and 300 shillings represents 18.02 percent,15.7 percent place a wager of 301-500 shillings,12.21 percent wager between 500 and 700 shillings,9.30 percent wager between 701 and 900 shillings ,5.23 percent wager between 901 and 1100 shilling per bet. Respondents wagering more than 1100 shillings represent the lowest percentage at 2.91 percent. The finding shows that majority of the individual bet very low amounts which they can risk losing,

Table 4. 9: Amount wagered per bet

Amount Wagered	Frequency	Percentage
Less than 100	63	36.63
101 – 300	31	18.02
301 – 500	27	15.70

501 - 700	21	12.21
701 - 900	16	9.30
901 – 1100	9	5.23
Above 1100	5	2.91
Total	172	100

Source: Research Data, 2020

4.2.4.8 Largest Amount won from betting in the Last Month

An analysis was done to determine the largest amount won from betting the last month and results presented in table 4.10 below. The highest percentage of the respondents indicated to have won below 1000 shillings representing 27.33 percent of the sample. Respondents who had won between 1001 and 5000 shillings represented 23.84 percent. Individuals who had won between 25001 and 30000 were the least at 4.03 percent. This showed that the chances of winning huge amounts through sports betting are very low.

Table 4. 10: Largest Amount won from betting in the Last Month

	Frequency	Percentage
Below 1000	47	27.33
1,001-5000	41	23.84
5,001-10,000	22	12.79
10,001-15,000	11	6.40
15,001-20,000	16	9.30
20,001-25,000	9	5.23
25,001-30,000	8	4.65
Above 30,000	18	10.46
Total	172	100

Source: Research Data, 2020

4.2.4.9 Alternative use of money used in sports Betting

Table 4.11 presents the results of the alternative use of money waged in sports betting. The results showed that the highest percentage of respondents would save the money used in sports betting representing 37.79% of sampled individuals. Respondents who indicated they would use the money to buy household necessities represented 24,42 %, while 20.93% indicated they would use the money used in sports betting to buy luxuries. Respondents who indicated they would use

money used on sports betting to entertainment purposes represented 16.86 %. This result showed that money used in sports betting leads to households missing out on important household necessities and reduced savings

Table 4. 11: Alternative use of money used in sports Betting

	Frequency	Percentage
Household necessities	42	24.42
Luxuries	36	20.93
Savings	65	37.79
Entertainment	29	16.86
Total	172	100

Source: Research Data, 2020

4.3 Empirical Findings

This study adopted regression analysis technique to empirically answer the two-study question of this study. The first objective sought to find out the factors that influence Kenya’s youth to participate in sport betting was achieved by fitting data into equation 3.18. The second objective analyze the effect of sport betting on youths’ welfare and was fitted on equation 3.23. Results are presented in the following section

4.3.1 Factors that Influence Kenya’s youth to participate in Sports Betting

The first objective sought to determine the factors that influence sports betting participation. The dependent variable was sports betting participation. To address the objective, a logistic regression analysis was carried out on equation 3.22 and marginal effects associated with explanatory variables were generated and presented in table 4.12.

Table 4. 12: Logistic Regression Results for Factors Affecting Sports Betting Participation

Sports Participation (Yes=1)	Betting	Coefficient	Marginal effects (dy/dx)	Std. Err.	Z	P>z	
Gender (Male=1)		0.6439	0.1159**	0.0508	2.28	0.022	
Age		0.0216	0.0039	0.0062	0.63	0.527	
Marital status (M-Status)		-0.1549	-0.0268	0.0586	-0.46	0.648	
Technology (TECH)		1.3073	0.3113**	0.1403	2.22	0.026	
Advertisement		-0.4391	-0.0671	0.0792	-0.85	0.397	
Betting Attitude		1.5660	0.3224**	0.1334	2.42	0.016	
Occupation (EMP) Base variable (Not Employed)							
Student		0.9590	0.021733	0.08547	0.25	0.799	
Self employed		1.4245	0.191111**	0.085604	2.23	0.026	
Employed Part Time		1.0462	0.204044**	0.100345	2.03	0.042	
Employed Full Time		-0.1326	0.249018****	0.08122	3.07	0.002	
Income (INC) Base Variable (>50000)							
<10000		1.7024	0.2881****	0.0953	3.02	0.002	
10001-20000		1.6396	0.2718****	0.0971	2.8	0.005	
200001-30000		1.3917	0.2403**	0.1045	2.3	0.022	
300001-40000		0.6116	0.1057	0.1299	0.81	0.416	
40001-50000		0.5919	0.1092	0.1313	0.83	0.406	
Religion Base variable (Hindu)							
Christian		-0.3623	-0.0633	0.1019	-0.62	0.534	
Muslim		-0.5868	-0.1024	0.1113	-0.92	0.358	
Education (EDU) base variable (Primary)							
Secondary		-0.5446	-0.0956	0.0889	-1.08	0.282	
Undergraduate		-0.6937	-0.1214	0.0864	-1.41	0.16	
Postgraduate		-0.0107	-0.0019	0.1158	-0.02	0.987	
		Number of obs = 341				LR chi2(20)	
		=112.97					

	Prob > chi2 = 0.0000 0.2390	Pseudo R2 =
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- Dependent Variable: A binary variable on whether youth participated or did not participate in sports betting
- *** significant at 1 percent level, and ** significant at 5 percent levels
- Source: Research Data, 2020

Results presented in table 4.12 show that the model has a likelihood ratio chi-square of 112.97 with a P-value of 0.000. This is an indication that the model fits significantly well than a model with no explanatory variables. Five variables were found to significantly influence sports betting participation, these were: income, employment, gender, attitude towards betting and access to technology. Five coefficients were also found to be statistically insignificant. These coefficients include age, religion, education, marital status and advertisement.

Gender was found to be statistically significant at 5 percent confidence level implying that gender was an important factor in determining whether an individual will participate in sports betting or not. Gender had a positive marginal effect of 0.1159. This indicates that males are 11.59 percent more likely to participate in sports betting compared to their female counterparts. This result was similar to that of Mwadime,(2017) who studied the implications of sports betting in Kenya and found out that individuals who engage in sports betting were employed male who highly engaged in sports betting. Ahaibwe et al., (2016) who conducted an analysis on the socio-economic effects of gambling in Kampala, Uganda. The study established that males were more susceptible to participate in betting than females. Similarly, these findings agree with the study conducted by Vongsinsirikul (2010) to understand the impact of gambling in Thailand. The study used a logit model where gambling participation was the dependent variable and the independent variables were education, gender, age, marital status, income and employment

status. The study found out that individuals of the male gender were likely to gamble as compared to their females all factors held constant.

Access to technology was also found to be statistically significant at 5% confidence level. The results showed a positive relationship between access to technology and sports betting participation. Technology access has a positive marginal effect of 0.3113. This indicates that an individual who has access to technology is 31.13% likely to participate in sports betting compared to an individual who doesn't have access to technology. These results are consistent with the findings by Mwandime (2017) who studied the implications of sports betting in Kenya, assessing the role and impact of technology on sports betting and effects of sports betting on vulnerable users. The study observed that mobile money and internet access had a major impact on sports betting since it offered an easy access, simple and reliable mode to place a bet.

Betting Attitude towards betting was also found to be positively related to participation in betting. The marginal effect coefficient for attitude toward betting was 0.3265 and statistically significant at 5% level. These results indicate that individuals who perceive sports betting to be beneficial is more likely to take part in sports betting by 32.65 percentage point compared to individuals who do not perceive sports betting to be beneficial. These results are in tandem with the study by Zou (2011) on the gambling behavior to understand individual preferences. By the use of Ordinary Least Squares and including attitude towards gambling as one of the independent variables, the study found a positive relationship between attitude towards gambling and gambling participation. The study observed that those that were morally opposed to gamble were less likely to gamble and liberals were more likely to gamble. Similarly, it conforms to the findings by Humphreys, Lee and Soebbing, (2009) who analysed an individual's attitude to

gambling, and how this influences participation in gambling. The study established that individuals who perceive perceived gambling to be beneficial were more susceptible to gambling than those who did not share this view.

Since occupation is a categorical variable, analysis was done to determine how moving from the base level of a not employed to the different occupational bands would affect an individuals' probability to participate in sports betting. The results found out an individual moving from not employed to being self-employed had a positive marginal effect of 0.1911 at 5 percent significance level. This indicates that if all factors held constant, a person who moves from being not employed to self-employment has a 19.11 percent chance of participating in sports betting. The results show a positive relationship for a person who moves from being not employed to being employed part time and sports betting participation recording a marginal effect coefficient of 0.2040. This indicates that an individual who is employed part time has an 20.40 percent likelihood of participating in sports betting all factors held constant. A positive marginal effect of 0.2490 was found for an individual who moved from being a not employed to being employed full time. This indicates that if all factors held constant a person who moves from being not employed to being employed full time has a 24.90 percent likelihood of participating in sports betting at 1 percent significant level. Being a student was not statistically significant, hence had no effect on the decision on whether or not to participate in sport betting. These results conformed to the works of Mwadime (2017) who found out that employed people had the highest probability of betting as compared to self-employed and unemployed people. This could be explained with the fact that employed people can spare some of their disposal income and use it in gambling.

Income being a categorical variable, the base level was set at individuals who earn more than 50000 shillings per month. The results found a positive marginal effect coefficient of 0.2881167 for individuals who earned less than 10000 shillings. This shows that there is a 28.81 percent for people earning below 10000 shillings to participate in sports betting at 1 percent significance level. Results obtained show a positive marginal effect coefficient of 0.2718 for an individual earning between 10,001 and 20,000 shillings at 1 percent significance level. This demonstrates that an individual earning between 10,001 and 20,000 shillings has a 27.18 percent likelihood of participating in sports betting. A positive marginal effect coefficient of 0.240259 was found for individuals earning between 20001 and 30001 at 1 percent significance level. This indicates that individuals' earning between 20,001 and 30,000 shillings have a 24.03 chance of participating in sports betting. The results for people who earned between 30001 and 40000 shilling and those who earned between 40001 and 50000 shillings were found to be insignificant. The results show that the lower the amount an individual earns the higher the probability of them participating in sports betting. The results agree with a study that was carried out by Humphreys', Lee and Soebbing (2009) who established that participation of sports betting declined with increase income. This could be justified by the findings of Korros (2016) whose results showed that betting participation was high among low-income earners whose main motivation was to gain more income from it.

4.3.2 Effect of Sports Betting Participation on the Welfare of Youth in Kenya

The second objective sought to answer the question what is the effect of betting on welfare of Youth in Kajiado County in Kenya. A linear model was estimated using Two Stage Least Square estimation method. The dependent variable was youth welfare which was measured using various indicators suggested by the SEIG framework. The indicators were health, food security,

absolute poverty, finances and debt, as well as employment levels. Further two-sample T test was conducted to carry out a hypothesis on whether there exists a difference in welfare between those individuals that participate in betting or not. Regression results are displayed in Table 4.13.

Table 4. 13: Effect of Sports Betting Participation on the Welfare of Youth in Kenya

Youth Welfare	Coef.	Std. Err.	z	P>z
Sport betting participation (SBP)	-2.441***	0.269	-9.070	0.000
Expenditure(<10000)				
10001-15000	-0.012	0.191	-0.060	0.949
15001-20000	-0.295	0.242	-1.220	0.222
200001-25000	0.057	0.294	0.190	0.848
250001-30000	0.458*	0.279	1.640	0.100
>30000	-0.317	0.246	-1.290	0.197
Occupation(Student)				
Not employed	-0.180	0.249	-0.720	0.470
Self employed	0.040	0.197	0.200	0.840
employed part time	-0.113	0.285	-0.400	0.691
employed full time	0.021	0.228	0.090	0.927
Education(Primary)				
Secondary	-0.089	0.247	-0.360	0.718
University	0.069	0.241	0.290	0.774
Postgraduate	0.128	0.306	0.420	0.677
HHsize	0.102	0.078	1.310	0.190

Gender	0.087	0.145	0.600	0.551
Age	-0.001	0.016	-0.070	0.945
_cons	4.105***	0.467	8.790	0.000
Number of obs = 343 Wald chi2(16) = 115.34 Prob > chi2 = 0.0000 R-squared = 0.2527 Root MSE = 1.1765				

Source: Research Data, 2020

***Coefficient was significant at 1 percent level, ** and * Coefficients were significant at 5 and 10 percent levels respectively

From the outcome in Table 4.13, the wald χ^2 and the P value ($\text{Prob} > \chi^2 = 0.0000$) meaning that the model is suitable for explaining the effect of explanatory variable on the outcome variable. The R-squared for the model is 0.2527, this indicates that 25.27 percent of the variation in youth welfare is caused by factors included in model while the rest, 74.73 % is explained by other factors that are not included in this model. These findings further suggest that the model is a good fit.

Since Expenditure was a categorical variable the k-1 dummy approach was used where expenditure below 10,000 was used as the base variable. From the expenditure levels developed, expenditure levels of between 25,000 to 30,000 were found to be significant at 10percent significance level. Individuals with an expenditure between 25,000 and 30,000 have a positive coefficient of 0. 458.This means that an individual whose expenditure increases from below 10000 to between 25, 000 and 30,000 their welfare increases by 0.458 units. This shows that an increase in expenditure levels increases youth welfare.

The partial slope coefficient for sports betting participation was -2.441 with a P-value of 0.000. These results indicate that sports participation leads to a deterioration in youth welfare,

Participation in sports betting reduces an individuals' welfare by an average of 2.441 units. The findings are in line with the findings of Ahaibwe (2016) who also established that sports betting led reduced welfare among youths in Uganda. The youth engage in sport betting negatively affects household welfare through displacement effects, dissaving and the general mental state.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the research findings, conclusions from the research work, as well as policy implication.

5.2 Summary of Findings

The study sought to find out the effect of sports betting participation on youth welfare in Kenya. Two specific objectives were formulated to help achieve this the main objective, these were: determination of factors that influence sports betting participation and to determine the socio-economic effects of sports betting participation on youths' welfare in Kenya? Two models were specified in this regard, the first model had youth participation in sports betting as an outcome variable, the predictors for these were income, marital status, gender and occupation, education, Access to technology and betting attitude. The second model had welfare as a dependent variable. Data was collected by the use of structured questionnaire on 332 youth who reside in the northern part of Kajiado.

The first objective was achieved by the use of logistic regression; this was because the outcome variable had a binary choice outcome of participation or non-participation. Given the choice outcome, a logit model which is a non-linear function would guarantee unbiased and consistent estimates.

The second objective was achieved by use of a linear regression model that was estimated using 2 stage least squares. The first stage involved generating a new variable that ensures the whole population of both participants and non- participants in sports betting are captured in the model.

The generated variable, as explained in the literature, is deemed appropriate in order to account for the population that was not participating in betting. In the analysis it is only sports betting participation and expenditure that were found to be significant in explaining participation. The entire model was found to be statistically significant in addition to being a fit model. Sports betting participation was found to have an inverse relationship with youth welfare.

5.3 Conclusion

From the aforementioned discussions, the study explored youth participation in sports betting participation and its effect on youth welfare in Kenya. From the first objective the study concludes that gender plays a critical role in sports betting participation in Kenya. Males have a higher likelihood to participate in sports betting than women, this is most likely because men enjoy watching sports than women hence more likely to participate in sports betting. Secondly, employment has been found to positively affect sports betting participation, people who are in full employment, are more likely to engage in sports betting compared to their counterparts that are part time employed and self-employed. This is explained by their ability to set aside part of their income for this activity. It is, however, interesting to find out that despite the revelation that betting is influence by the state of employment, the more income one earns the lesser his/her chances to engage in betting. From the sample, it is evident that less income earners in the study area are more prone to betting because they feel that the proceeds gained from it may help supplement their income making this a critical driving force. The study also found out that those individuals who perceive sports betting to be beneficial are more likely to take part in sports betting compared to those who do not subscribe to this notion. Finally, the study established that individuals who have access to technology such as smartphones, access to internet, social media

and online betting platforms among others are more likely to participate in sports betting compared to those who do not.

From the second objective, the study concludes that engagement in sport betting largely contributes to the worsening of youths' welfare. Individuals who participate in betting scored less on the welfare index than those who did not participate in betting. Considering that majority of those participating in betting are low income earners, they are more likely to fall into a state of depression when they do not gain from the gamble. This group is also most likely to undergo financial strain which might eventually affect overall quality of life such as inability to access better health care, constraint in emotional stability, shortage of balanced diet meal as well as social deprivation.

5.4 Policy Implication

The study has identified that males are more susceptible to betting than women, there is a need therefore for sensitizations to be conducted on effects of sports betting participation targeted to male youths. This sensitization can be done through market campaigns, organization of interactive forums that target the male youth and through the mass media as well as social media.

The study has also established that majority of the people who gamble are low-income earners. It is important for the government to come up with measures to ensure that the youth are well empowered and can have the ability to increase their income. This can be achieved through creation of more gainful employment in the talent industry so they can earn from their hobbies. In addition, the government should foster a conducive environment for business to thrive in the country as this will ensure that the youth are more engaged in participating in wealth generating activities, a factor which is likely to deviate their minds from sports betting.

5.5 Suggestion for Future Research

The current study was conducted around Kajiado North constituency. Future studies should widen the scope to focus on the whole country and use pooled time series for a wider sample. Respondents indicated that money borrowed from loaning apps was a source of income used for betting. Research should be conducted on the effect of mobile loan applications on sports betting participation. Research should also be conducted on the effectiveness of the betting regulation in regulating betting in the digital era.

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10. Did you take a loan to finance your expenditure in the last one month?

Yes [] No []

11. If YES how much did you take per month

.....

Section B: Sports Betting Participation

12. Do you participate in sports betting?

Yes [] No []

If YES proceed to question 13 if NO proceed to Question 23

13. What year did you first bet?

14. How did you first know about sports betting?

Friends [] Family [] Radio advertisement [] TV advertisement []

Other (please specify)

15. What platform do you use to bet?

SMS [] cyber café [] Mobile phone [] Betting shops []

16. What is your main reason to bet?

To start a business [] to earn extra money [] For entertainment and enjoyment []

To repay debts [] to buy necessities [] to buy luxuries [] Peer pressure []

Other {please specify}

.....

17. How many companies do you have accounts with?

Please state

18. What is the source of the money used in betting?

Income [] borrowing from friends []

Previous winnings from bets [] savings []

Borrowing from loaning facilities []

If borrowing from loaning facilities (please specify)

.....

19. How often do you bet?

Once a day [] twice a day []

Once a week [] twice a week []

Others (please specify)

.....
20. How much do you use per bet?

- Less than 100 [] 101-300 [] 301-500 []
501-700 [] 701-900 [] 901-1,100 []
Above 1,100 []

21. What is the largest amount you have won from a single bet in the last month?

- Below 1000 [] 15,001-20,000 []
1,001-5000 [] 20,001-25,000 []
5,001-10,000 [] 25,001-30,000 []
10,001-15,000 [] Above 30,000 []

22. If you were not betting what could you have used the money for

- Household necessities (food, soap, etc.) [] Luxury items (e.g. furniture, cell phones) []
Savings []
Other entertainment (please specify)

.....
23. I have access to Advertisements on radio, TV and other channels

- Yes [] No []

24. I have easy access to internet and money sending platforms

- Yes [] No []

25. In your opinion is sport betting participation helpful?

- Yes [] No []

explain.....

Section C: Youth Welfare

26. In the past 12 months, how often have you (or your household) experienced food shortage

1. Very often [] 2. Often [] 3. Occasionally [] 4. Rarely [] 5. Never []

27. Are you and/or your spouse unemployed at present

1. Yes, more than 12 months [] [] 2. Yes, 6 to 12 months [] 3. Yes, 3 to 5 months [] 4.
Yes, up to 3 months [] 5.No, not currently unemployed

28. In relation to Ksh 100 (1 dollar), How far above or below would you say your daily expenditure is?

1. A lot below that level [] 2. A little below that [] 3. About the same [] 4. A little above that level [] 5. A lot above that level []
- 29.** In the past 12 months have you been behind in paying your rent?
1. Almost Always [] 2. Often [] 3. Sometimes [] 4. Seldom [] 5. Never []
- 30.** Has any of your utilities been disconnected in the last 12 months eg water, electricity, TV channels etc.
1. Almost always [] 2. Often [] 3. Sometimes [] 4. Seldom [] 5. Never []
- 31.** In the last 12 months how often have you borrowed loans from money lending apps and/or informal lenders (shylocks) to meet your day to day needs
1. Almost always [] 2. Often [] 3. Sometimes [] 4. Seldom [] 5. Never []
- 32.** How satisfied are you with your place/area of residence?
1. Very dissatisfied [] 2. Slightly dissatisfied [] 3. Indifferent []
4. Fairly satisfied [] 5. Very satisfied []
- 33.** How can you rate your physical health over the last 12 months?
1. Very poor [] 2. Poor [] 3. Fair [] 4. Good [] 5. Very good []
- 34.** How many times in the last 12 months have you or anyone in your household required medical treatment for reasons other than pregnancy, screening , routine check up
1. Above five [] 2. Three to five [] 3. Two [] 4. One [] 5. None []
- 35.** In the last 3 months have you been able to concentrate in what you are doing much better than usual?
1. Much less than usual [] 2. Somewhat less than usual [] 3. Same as usual [] 4. Somewhat better than usual [] 5. Much better than usual []
- 36.** In the last three months have you lost much sleep because of stress/worrying
1. Almost always [] 2. Often [] 3. Sometimes [] 4. Seldom [] 5. Never []
- 37.** In the last 12 months have you constantly felt under strain?
1. Almost always [] 2. Often [] 3. Sometimes [] 4. Seldom [] 5. Never []
- 38.** In the last 3 months, have you felt unhappy or depressed?
1. Almost always [] 2. Often [] 3. Sometimes [] 4. Seldom [] 5. Never []
- 39.** In the last 3 months have you felt you could not overcome your difficulty?
1. Almost always [] 2. Often [] 3. Sometimes [] 4. Seldom [] 5. Never []

Appendix 2: Companies involved in sports betting in Kenya

1. Sport pesa
2. Mcheza
3. Betin
4. Betway
5. Betpawa
6. Shabiki
7. Dafa bet
8. 1*bet
9. Kenya sports bet
10. Lucky2u
11. Elitebet
12. Eazibet
13. Justbet
14. Kwikbet
15. Superbet247
16. Cheza cash
17. Hollywoodbets.co.ke
18. Bet yetu
19. Betika
20. Sportybet Kenya
21. Mozzartbet Kenya
22. Power bet
23. Safari bets
24. premier bet
25. Tucheze Afrobets Kenya
26. sahara games
27. Bet 365
28. Helabet

Appendix 3: Logit regression Tables

logit betting gender age marital_status Technology advertisement Attitude i.occupation

b6.income i.education b3.religion

Iteration 0: log likelihood = -236.34999

Iteration 1: log likelihood = -180.55787

Iteration 2: log likelihood = -179.86724

Iteration 3: log likelihood = -179.8663

Iteration 4: log likelihood = -179.8663

Logistic regression

Number of obs = 341

LR chi2(20) = 112.97

Prob > chi2 = 0.0000

Log likelihood = -179.8663

Pseudo R2 = 0.2390


Sports betting participation	coef	Std. Err.	z	P> z 	[95% Conf. Interval]	
gender	0.64386	0.285014	2.26	0.024	0.085243	1.202477
age	0.021618	0.0354	0.61	0.541	-0.04776	0.0909998
marital_status	-0.15489	0.336414	-0.46	0.645	-0.81425	0.5044715
Technology	1.307314	.6447777	2.03	0.043	.0435727	2.571055
advertisement	-0.43913	0.520512	-0.84	0.399	-1.45932	0.5810533
Attitude	1.565988	0.634894	2.47	0.014	0.321619	2.810357
Occupation						
student	0.12409	0.49003	0.25	0.8	-0.83635	1.084531
Self employed	1.099055	0.517313	2.12	0.034	0.08514	2.112971
employed part time	1.227706	0.665238	1.85	0.065	-0.07614	2.531548
employed full time	1.542248	0.588476	2.62	0.009	0.388856	2.69564
income						
<10000	1.702421	0.724739	2.35	0.019	0.281959	3.122883
10001=20000	1.639563	0.702872	2.33	0.02	0.26196	3.017167
200001-30000	1.391673	0.696439	2	0.046	0.026678	2.756668
300001-40000	0.611642	0.786145	0.78	0.437	-0.92917	2.152458

40001-50000	0.59192	0.799721	0.74	0.459	-0.9755	2.159345
education	-0.54459	0.511144	-1.07	0.287	-1.54642	0.4572312
Secondary	-0.69368	0.502374	-1.38	0.167	-1.67831	0.2909587
University	-0.01074	0.660824	-0.02	0.987	-1.30593	1.284448
Postgraduate						
religion	-0.36228	0.586879	-0.62	0.537	-1.51254	0.787982
Christian	-0.5868	0.64913	-0.9	0.366	-1.85907	0.6854702
Muslim						
_cons	-3.56008	1.359905	-2.62	0.009	-6.22545	-0.8947179

Appendix 4: Research Permit

REF. NO: 427485

RESEARCH LICENSE




This is to Certify that Mr. James Mugaithi Gathuru of Kenyatta University, has been licensed to conduct research in Kajjumo on the topic: SPORTS BETTING PARTICIPATION AND ITS EFFECTS ON YOUTH'S WELFARE IN KENYA for the period ending : 05/July/2021.

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