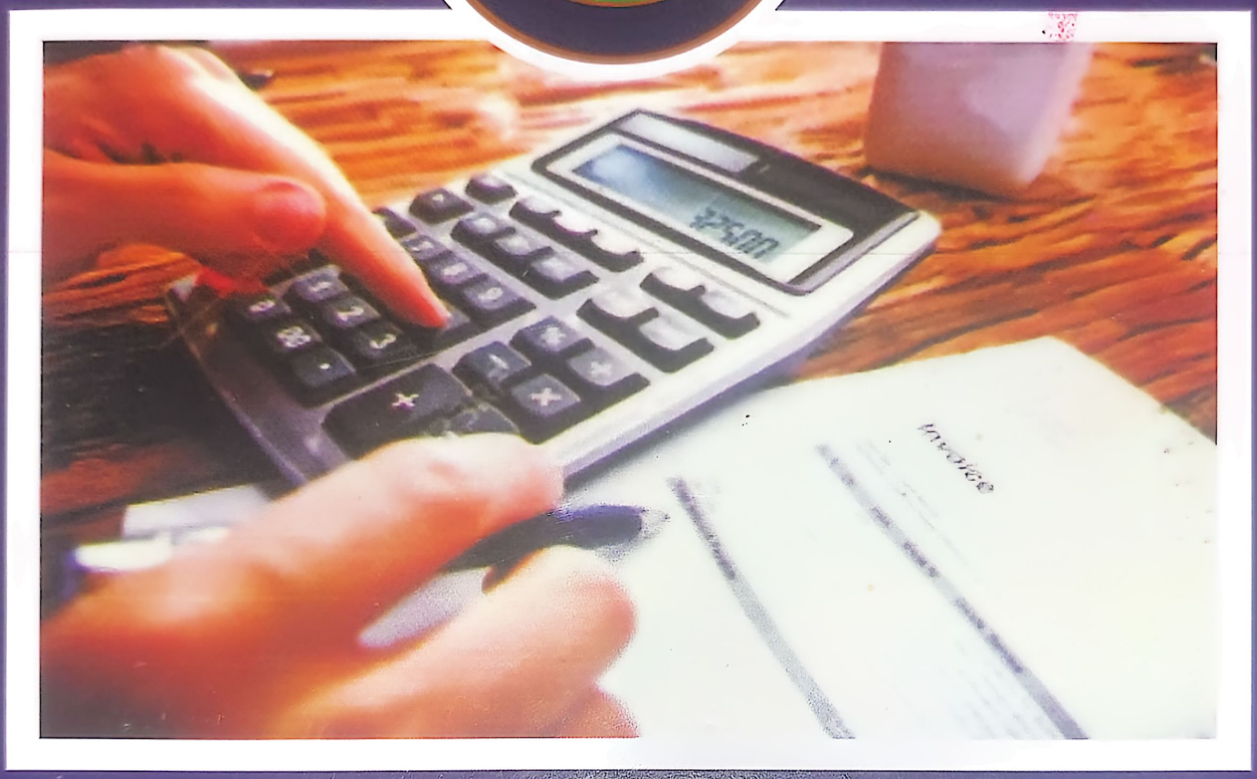
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FINANCIAL LITERACY AND GAMBLING BEHAVIOUR IN NIGERIA

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ABSTRACT

The study investigates the influence of financial literacy on gambling behaviour among the Nigerian populace. Easy access to gambling outlets and an increase in the number of online gambling sites have caused gambling among the Nigerian population to rise significantly. We assume that it is less likely that financially literate individuals who use their knowledge to make sound financial and investment decisions will gamble. The study adopts the survey research design and employed a sample of 1448 respondents whose responses were obtained through questionnaire. The finding from the Probit regression model shows that the relationship between financial literacy and gambling frequency is significantly negative. We, therefore, recommend the need to promote financial literacy within the community, both at the school level and for adults. This will help gamblers to understand the financial risks they are exposed to and the options available to them. Financial institutions should establish appropriate processes for the disclosure of gambling problems and strategies to detect potentially risky transactions. The behavioural finance theorists identified the role of banks regarding how customers use their money such that banks may compensate for bias in decision-making, which is fundamental to problem gambling behaviour.

Keywords: Financial literacy; Gambling; Gambling behaviour; Nigeria; Problem gambling

INTRODUCTION

Gambling has been widely acknowledged as a socially appropriate recreation (Stucki & Rihs-Middel, 2007). Therefore, many people often gamble for fun, to win money, for excitement, for social reasons, or just to get occupied. Sports betting, gambling machines, scratch cards, and lotteries are now the most popular gambling practices in most countries (Abbott *et al.*, 2014; Çakici, 2012; Castrén *et al.*, 2013; Kun *et al.*, 2012; Wardle *et al.*, 2012). Gambling can, however, be detrimental (Calado & Griffiths, 2016; Churchill & Farrell, 2018). Gambling activities become a problem when an individual cannot control himself or herself. About the psychological effects, gambling addiction is often associated with mental health problems such as alcoholism, depression, abuse, phobia, anti-social behaviour, and consumption of drugs. Another side-effect of gambling addictions is a marked increase in impulsive behaviour (Haydock *et al.*, 2015; Leeman & Potenza, 2012). Furthermore, there may be other devastating social and familial consequences of problem gambling, including job loss, broken marriages, bankruptcy, crime, and suicide (Cassetta *et al.*, 2018). The number of individuals seeking assistance for gambling-related problems has increased exponentially as problem gambling also increases (Watanapongvanich *et al.*, 2020). Governments need to dedicate more budgets to intervention programmes, including health, education, housing, jobs, and criminal justice, to reduce the impact of gambling-related problems (Calado & Griffiths, 2016). The continued increase in gambling activities has contributed to unprecedented growth in the studies related to gambling. Many of these studies focused on the health and social consequences of gambling (see, for instance, Livazović & Bojčić, 2019; Paterson *et al.*, 2019).

Apart from the social and psychological problems associated with problem gambling, it also has financial implications for the gamblers. An increased loss due to gambling could put serious pressure on the gamblers' savings and investments. Gambling may create debt (Alessi & Petry, 2003) and impulsivity (Hurla *et al.*, 2017; Leeman & Potenza, 2012). Financial literacy can help individuals make informed decisions that ensure wealth accumulation, financial planning, debt settlement, and pension savings (Watanapongvanich *et al.*, 2020). Financial literacy offers people the opportunity for financial management, mainly through budget planning, credit knowledge, savings, and spending plans. Higher financial literacy could make it easier for people to retire financially secured (Lusardi & Mitchell, 2011; 2014). Good financial choices are made by financially literate individuals who accumulate more assets and earn more income to decrease anxiety about life in their old age (Kadoya & Khan, 2018; Kadoya *et al.*, 2020). Consequently, examining whether financial knowledge can deter people from gambling is vital. We, therefore, assume that people who use their knowledge to make sound financial decisions are less likely to be gambling.

This study explores how financial literacy tends to influence gambling behaviour among the Nigerian population. This is necessitated by the growing number of gambling outlets and services spreading across the country, causing many Nigerians to lose a lot of money to various forms of gambling activities. As more Nigerians engage in the act, youths, in particular, may continue to expose themselves to the social and health consequences of problem gambling. Hence, it is critical to determine if

financial literacy can influence gambling behaviour. Based on the literature search, Nigeria does not have any empirical studies on the relationship between financial literacy and gambling behaviour. This study is essential, considering that Nigeria is a fast-growing gambling market (Ssewanyana & Bitanihirwe, 2018). Thus, the proliferation of gambling websites could expose many adults to problem gambling. This study shifts the frontiers of the existing literature by analysing whether financial literacy reduces gambling in Nigeria. It contributes to the understanding of the relationship between financial literacy and gambling behaviour; therefore, this study has important policy implications. Its findings may help policymakers to devise an effective mechanism of intervention in preventing and minimising the negative consequences of addictive gambling.

The remaining part of the paper is organised thus: Section 2 reviews the previous literature, while Section 3 examines data and methods. Section 4 shows empirical results and discussion, and Section 5 entails the conclusion.

Literature Review

Financial Literacy

The Financial Literacy and Education Commission (2018) identifies financial literacy as the capacity and cognizance to use skills and knowledge in managing available financial resources to achieve maximum financial well-being. The process of decision-making is dynamic and requires financial information. Financial literacy is, therefore, essential for informed decision-making. Financial literacy studies have shown that financial literacy increases the ability of individuals to make choices that are desirable for their well-being (Lusardi & Mitchell, 2011; Yoshino *et al.*, 2017) and to manage financial information, make informed financial decisions for wealth accumulation, debt repayment, and pension's savings. Financial literacy has been shown to support informed financial decision-making, even within the context of decisions related to gambling (Lusardi & Mitchell, 2011; Yoshino *et al.*, 2017). It is critical to investigate the influence of financial literacy on the gambling decisions of individuals. Consequently, financial literacy is a crucial element in understanding gambling behaviour.

Gambling Behaviour

Gambling behaviour, in this study, refers to the frequency of gambling or the intensity of participation in gambling. It also encompasses gambling activities, gamblers' characteristics, and the amount of time and money involved in gambling. Churchill and Farrell (2018) argue that gambling is a leisure activity that generates fun and that the expected utility function has been augmented by a psychological component to improve utility enhancement. How individual psychological effects are observed depends on how people turn from gambling to not gambling. If the utility associated with gambling is positive and exceeds the expected adverse psychological effects, the person may continue gambling (Churchill & Farrell, 2018).

Theory of Gambling Behaviour

The leading theories of gambling behaviour can be separated into two classes: the psychological and behavioural theories and the alternative utility function theories. Herrnstein and Prelec (1992) advocate the theory of addiction, which assumes that people can be irrational by choosing to gamble since they can be much better when they do not gamble. The theory is criticized for not explaining why all gambling occurs, but rather that they provide a foundation for

understanding this behaviour. Hurla *et al.* (2017) categorised gamblers into three groups and provided a behavioural model of gambling. The three groups are recreational, frequent, and problem gamblers. A recreational gambler undertakes low-rate gambling and goes ahead performing their other activities. Thus, the individual takes control of their gambling activities. However, an individual may choose to gamble as a form of stress relief and socialising with friends. These groups of individuals may gamble more and become frequent gamblers due to peer influence, such that they are trapped in financial problems, social disapproval, together with personal and professional consequences. The risk exposure of problem gamblers becomes higher when they spend more time and money on gambling (Calado & Griffths, 2016). The most obvious problem associated with problem gambling is financial instability; problem gamblers try to chase their losses and win back. Financial illiteracy seems to be a severe problem affecting problem gamblers in their ability to identify and manage their addictions. Gambling and financial decisions are inter-temporal; therefore, people need to make sound financial decisions (Watanapongvanich *et al.*, 2020). Many gamblers have limited expertise in making accurate risk evaluations (Hurla et al., 2017). Risk evaluation is challenging and may require financial literacy; therefore, financially literate persons could make informed decisions.

Empirical Review

Bankole *et al.* (2019) studied personality traits and financial strain as determinants of gambling behaviour in Nigeria. The multiple regression results showed that personality characteristics and financial strain predict gambling behaviour. It further showed that sex differences influence gambling behaviour. Using the logit regression model with marginal effects, Becchetti, Bellucci, and Rossetti (2018) investigated the relationship between gamblers, scratchers, and their financial education in Italy. The study found a negative relationship between financial literacy and gambling behaviour. Chan, Li, and Leung (2016) looked at problem gambling in Hong Kong and Macau; the study identified the Chinese problem gamblers' personalities and their pathways development. In a study for Japan, Watanapongvanich *et al.* (2020) studied the relationship among financial literacy, financial education, and gambling behaviour. The Probit-instrumental variable results have shown a significantly negative relationship between financial literacy and gambling frequency. Financial education, on the other hand, is not significantly associated with the frequency of gambling.

Furthermore, low financial literacy and education are critical factors for informed financial decisions. The survey of the available empirical studies shows that literature is scarce on the association between financial literacy and gambling behaviour. Watanapongvanich *et al.* (2020) carried out the frontline study in this area of research. This study, therefore, provides the first empirical evidence which supports the government's promotion of financial literacy and its impact on reducing frequent gambling in Nigeria.

Methodology

The methodology adopted is straightforward and widely embraced in existing literature (Kadoya & Khan, 2019; Kadoya *et al.*, 2018, 2020; Klapper & Panos, 2011; Lusardi & Mitchell, 2011; 2014; Sekita, 2011; Watanapongvanich *et al.*, 2020). This study measures financial literacy from an investment perspective and followed Lusardi

and Mitchell (2008; 2011) since it emphasises financial knowledge.

Questionnaire Structure

The study tests the current level of financial knowledge of the respondents with three questions. These are: (1) interest rate estimation capacity, (2) their understanding of inflation, and (3) their knowledge of risk diversification (Lusardi & Mitchell, 2008; 2011). These questions are investment-related and are slightly different from savings behaviour. The questionnaire includes a question as follows: "Do you bet with bookmakers on sporting events or horse races? And provided seven responses, where 1 implies 'do not gamble at any time,' 2 means 'used to gamble in the past,' 3 means 'hardly engage in gambling,' 4 implies 'gamble multiple times a year,' 5 implies 'gamble only once a month,' 6 implies 'gamble only once a week.' 7 indicates 'gamble at least once in a day.' When answering the research questions, the responses are classified into a binary scale, using a low-risk limit put forward by Currie *et al.* (2006). Respondents who responded from 1 to 5 were therefore coded as 0 to represent non-frequent gamblers, and respondents with responses from 6 to 7 are frequent gamblers. This measurement follows the lead of Currie *et al.* (2006).

Sample and Sampling Procedure

The participants for the study were recruited using purposive and snowball sampling techniques. Purposive sampling helps to classify the participants based on stratified groups, which emphasise the participation level in gambling activities; the recreational facilities in urban areas are likely to induce gambling activity than the rural areas. The pool of sports gamblers in Nigeria remains unknown, hence the need for the snowballing sampling technique. The study used a questionnaire survey with a sample of 1448 respondents. However, 1846 questionnaires were distributed through survey monkey. The study excluded 398 individuals with missing data for socioeconomic and demographic variables.

This study investigates how financial literacy is related to gambling behaviour and illustrates the effect of financial literacy on gambling behaviour in Nigeria, as shown in Eq. (1). Following the study of Watanapongvanich *et al.* (2020), we assume some demographic variables may influence gambling frequency. Hence, the study included some demographic variables as plausible determinants of gambling frequency: gender, age, marital status, employment status, and university degree. It is also accounts for the risky behaviour of drinking alcohol and smoking since extant studies suggest that risky behaviour could explain gambling behaviour (see Castren *et al.*, 2017; Watanapongvanich *et al.*, 2020).

Model Specification

The model for the study is specified as:

$$Y_i = f(FL_i, X_i, \varepsilon i)$$

where Y represents the gambling behaviour of the i respondent (non-frequent or frequent gamblers); FL signifies the score on the three investment-related questions used to measure financial literacy, as mentioned earlier. X refers to the matrix of respondents' characteristics, while ε is the disturbance term. In this study, gambling behaviour is the dependent variable, while financial literacy is the independent variable. The dependent variable exists as a binary choice. Therefore, we employed the Probit regression framework for estimating the models.

$$Gambling\ behaviour_i\ (1 = frequent\ gambler\ and\ 0 = non-frequent\ gambler) = \beta_0 + \beta_1 financial\ literacy_i + \beta_2 male_i + \beta_3 age_i + \beta_4 university\ degree_i + \beta_5 marriage_i + \beta_6 divorce_i + \beta_7 children_i + \beta_8 unemployed_i + \beta_9 smoking_i + \beta_{10} alcohol_i + \beta_{11} smoking * alcohol_i + \varepsilon_i \quad (2)$$

Empirical Results & Discussion

Table 1. Variable Description

Variable	Description
Gambling behaviour	Binary variable: 1 to represent frequent gambler (gamble once a week or more) and 0 if otherwise
Financial literacy	Continuous variable: number of correct answers to the three questions about financial literacy
Gender	Binary variable: 1 to represent male and 0 for female
Age	Age of respondent
University degree	Binary variable: 1 to represent recipient of university degree and 0 if otherwise
Marital status	Binary variable: 1 to represent married and 0 if otherwise
Divorce	Binary variable: 1 for the divorced or separated respondent and 0 if otherwise
Children	Binary variable: 1 to represent those that have a child/children and 0 if otherwise
Unemployed	Binary variable: 1 to represent unemployed respondent and 0 if otherwise
Smoking	Binary variable: 1 to represent respondent that smoke (sometimes–more than two packs a day) and 0 if respondents do not smoke (do not smoke at all, quit, or hardly smoke)
Alcohol	Binary variable: 1 to represent respondent that drink (sometimes –five cans of beer everyday) and 0 if a respondent does not drink (do not drink at all or hardly drink)

Source: Authors' Compilation (2020)

Tables 2 and 3 show gambling behaviour based on specific demographic details, risky behaviour, and situation of the respondents, respectively. The reports help to explain gambling behaviour, particularly to a different set of gamblers: frequent and non-frequent. About 30% of the total sample gambled at least once a week, representing 436 frequent gamblers while 1012 are non-frequent gamblers. Gambling behaviour among men and women and between age groups were substantially differentiated. Approximately 44 percent of male respondents were frequent gamblers compared to 14 percent of female respondents. For the middle-aged groups of 31–40 and 41–50 years, more than 30 percent of the respondents frequently gamble, but in other age groups, less than 30 percent of the frequent gamblers were involved.

The differences in gambling behaviour between those with a university degree and higher and lower qualifications were insignificant. In particular, more than 24% of smokers and more than 9% of drinkers were frequent gamblers. The gambling differences between the

unemployed and the employed were also insignificant.

The demographic characteristics are reported in Table 2. We observed that more than half of the sample were male, and respondents averaged 35.5 years. About 39.57% of the sample received a university degree. Approximately 64 percent had been married, and only 2% were divorced. Over 55% of the sample had a child/children, and about 45% were currently unemployed, and around 45% were unemployed. 27% of the s ample had smoked, on average, while 55% took alcohol.

Table 2 shows the representation of respondents based on specific demographics: gender, education, and age bracket.

Table 2. Gambling behaviour based on specific demographics

Gambling behaviour	Gender		Education		Age					
	Male	Female	Lower than a university degree	University degree and Higher	≤ 20	21–30	31-40	41-50	≥ 51	Total
Non-frequent gambler	483 (56.49%)	508 (85.67%)	814 (93.03%)	534 (93.19%)	86 (73.5%)	203 (71.48%)	284 (69.95%)	253 (66.58%)	186 (71.26%)	1012 (69.89%)
Frequent gambler	372 (43.51%)	85 (14.33%)	61 (6.97%)	39 (6.81%)	31 (26.5%)	81 (28.52%)	122 (30.05%)	127 (33.42%)	75 (28.74%)	436 (30.11%)
Total	855 (100%)	593 (100%)	875 (100%)	573 (100%)	117 (100%)	284 (100%)	406 (100%)	380 (100%)	261 (100%)	1448 (100%)
Mean difference	*t*-value = -6.075**		*t*-value = 0.0524		*F*-value = 1.74***					

Source: Authors' Compilation (2020) Note: *** $p<1\%$, ** $p<5\%$, and * $p<10\%$

Table 3 shows the representation of respondents based on risky behaviour and situation: drinking alcohol, smoking, and being unemployed.

Table 3. Gambling behaviour based on risky behaviour and situation

Gambling behaviour	Smoking		Alcohol		Unemployed		
	Yes	No	Yes	No	Yes	No	Total
Non-frequent gambler	293 (75.13%)	841 (79.49%)	723 (90.71%)	491 (75.42%)	436 (67.18%)	576 (72.09%)	1012 (69.89%)
Frequent gambler	97 (24.87%)	217 (20.51%)	74 (9.28%)	160 (24.58%)	213 (32.82%)	223 (27.91%)	436 (30.11%)
Total	390 (100%)	1058 (100%)	797 (100%)	651 (100%)	649 (100%)	799 (100%)	1448 (100%)
Mean difference	*t*-value = −2.5263*		*t*-value = −1.0523**		*t*-value = 0.5196		

Source: Authors' Compilation (2020) Note: *** $p<1\%$, ** $p<5\%$, and * $p<10\%$

Financial Literacy and Gambling Behaviour in Nigeria

Table 4. Results of the Probit Regression Model

VARIABLES	PROBIT		
	Equa. 1	Equa. 2	Equa. 3
Gambling behaviour			
Financial literacy	- 0.0349**	-0.0862***	-0.0513**
	(0.0006)	(0.0217)	(0.0082)
Gender	0.452*	0.269**	0.165*
	(0.165)	(0.113)	(0.061)
Age	0.00896***	0.00932**	0.00716**
	(0.0014)	(0.0026)	(0.0039)
University degree	-0.389***	-0.394**	-0.432***
	(0.0732)	(0.0519)	(0.0354)
Marital status	0.0821	0.0602	0.0843
	(0.167)	(0.184)	(0.125)
Divorce	-	0.0285	-0.0003
		(0.353)	(0.384)
Children	-0.371**	-0.279*	-0.2254**
	(0.110)	(0.096)	(0.1215)
Unemployed	-	-	0.169
			(0.218)
Smoking	-	-	0.384
			(0.147)
Alcohol	-	-	0.106
			(0.185)
Smoking*Alcohol	-	-	-0.295***
			(0.086)
Constant	-1.963***	-1.992**	-1.448***
	(0.152)	(0.176)	(0.183)
Observations	1448	1448	1448
Log likelihood	-672	-524	-537
Chi^2 statistics	187.45	164.63	133.24
p-value	$p<0.01$	$p<0.01$	$p<0.01$
AIC	683.02	742.18	601.72
BIC	742.26	963.24	759.16

Source: Authors' Computation (2020)

Note: The figures which appear in parentheses ( ) are the robust standard errors, and *** signifies $p<1\%$, ** $p<5\%$, * $p<10\%$.

Discussion of Results

The Probit regressions show that the coefficient of financial literacy is negative and significant. We observed that across the regressions, financial literacy has a significant impact on gambling behaviour, thus suggesting that an individual with high financial literacy is less likely to become a