Article

The Influence of Financial Literacy on Retirement Planning in South Africa

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Abstract

Background: A shift in the retirement planning and pensions landscape has created an enormous responsibility for individuals to plan for their retirement provision actively. Very few South Africans reach the average retirement age of 65 years with sufficient funds to sustain themselves during their retirement.
Purpose/objective: Using secondary data from the 2011 South African Social Attitudes Survey (SASAS), this study aims to examine the influence financial literacy has on the retirement planning of South Africans. The secondary aim of the study was to investigate the financial literacy and retirement planning behaviour of certain demographic groups: gender, age, race, education, and income levels.
Design/methodology: Binomial logistic regression is used to establish if financial literacy influences planning for retirement.
Findings: The results show that financial literacy significantly influences retirement planning. Furthermore, only 24% of South Africans actively plan for retirement and financial literacy was particularly low among women, less educated individuals and Black African people.
Research limitations: Firstly, the study relies on self-reported measures. Secondly, the binomial logistic regression analysis only indicates the likelihood of an individual planning for retirement based on their financial literacy score.
Originality/value: This study contributes to retirement planning literature as it is one of the few studies that explore retirement planning and financial literacy in the context of a developing country using a geographic, nationally representative sample.

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Introduction

Globally there is a concern that people are not adequately planning for retirement (Niu, Zhou, and Gan 2020, 1; Reyers, Van Schalkwyk, and Gouws 2015, 23). Academics have termed this global development a "retirement savings crisis" (Benartzi and Thaler 2013, 1152). Prior estimates indicate that only 6% of South African citizens will successfully maintain their standard of living when they retire (Lamprecht 2015, 1). This figure has remained consistently low as it is currently estimated that less than 10% of South Africans retire financially independent (Sanlam 2021). This is an indication that saving sufficiently for retirement has been a challenge for a number of years in South Africa (SA). The global outbreak of the Covid-19 pandemic, with its associated lockdowns and related economic downturns, has further harmed retirement savings (OECD 2020, 2). It is particularly concerning for individuals who have lost their jobs or have suffered wage reductions due to the financial distress of their employers, resulting in a lower capability to contribute to their retirement savings plans. A nationally representative study conducted post the pandemic found that the number of people in SA who are confident that their retirement savings will cover expenses during retirement has decreased from 20% to 14% as a result of the pandemic (Visser 2021, 1).

Amongst other countries, SA has proposed policies to encourage more retirement saving behaviour. The country faces three main challenges with its retirement system: 1) non-participation of some categories of workers in retirement schemes; 2) individuals not preserving their retirement savings; and 3) costs associated with retirement funds (National Treasury 2021b, 3). The government has proposed an amendment to the Pension Fund Act to address the challenges of allowing for limited pre-retirement withdrawals from retirement funds (National Treasury 2021a, 1). This proposal, which is yet to be legislated, has garnered both support and intense scrutiny from several interested parties. Those not in support of this policy, including retirement savings schemes and providers, have argued that early withdrawals of pension funds will have lasting consequences on the retirement well-being of individuals. In addition, a Green Paper has been released on a mandatory social insurance scheme, which aims to create a National Social Security Fund (NSSF) that will provide defined-benefit pensions to all workers (formal, informal and self-employed) who retire, amongst other social security arrangements (Government Gazette 2021, 8).

These recent developments in SA, coupled with global changes in retirement systems, have created a need for greater personal responsibility in making financial decisions (Agnew, Bateman, and Thorp 2013, 1; Moreland 2018, 198). Changing from a defined benefit to a defined contribution approach has taken over the landscape of retirement planning and pensions landscape. Circumstances have changed entirely, as individuals have a greater responsibility to financially plan for their retirement and make choices about the various investment options and retirement plans that are available (De

Beckker, De Witte, and Van Campenhout 2019, 490; Lusardi and Mitchell 2014, 6; Moreland 2018, 198).

Other studies conducted in SA by Zeka and Matchaba-Hove (2016, 436) and Zeka (2017, 22) found that most individuals are not confident that their retirement plans are adequate to cover expenses during retirement. In addition, there is a high rate of individuals withdrawing their retirement savings upon changing jobs before retirement (Reyers et al. 2015, 29). This increases the number of individuals who retire without sufficient funds. One of the reasons individuals are not adequately prepared for retirement is that they do not have the financial knowledge to calculate how much they need for their future financial well-being and whether they are saving enough. (Antoni, Saayman, and Vosloo 2020, 578; Hastings and Mitchell 2020, 2; Nkoutchou and Eiselen 2012, 40; Old Mutual Wealth 2012, 1).

Many researchers argue that financially literate consumers make better financial decisions, such as planning for retirement, compared to their illiterate counterparts (e.g., Boisclair, Lusardi, and Michaud 2017, 291; Shambare and Rugimbana 2012, 582–83). Financial literacy has, therefore, become a necessary survival instrument for ensuring one does not make financial decisions that are detrimental to oneself or the community at large (De Beckker et al. 2019, 490; Klapper and Lusardi 2019, 589; Refera, Dhaliwal, and Kaur 2016, 2; Wagner 2019, 132). Finally, it is plausible that those who are financially literate are most likely to save for retirement (Antoni et al. 2020, 578).

Retirement planning is a topic that has been studied by researchers in South Africa (Antoni et al. 2020, 279; Nkoutchou and Eiselen 2012, 33; Reyers 2018, 344; Zeka, 2017, 19). However, none of the studies looked solely at the relationship between financial literacy and retirement planning and the South African population. The studies either explored the influence of financial literacy, amongst other factors, on retirement planning or only focused on a certain sector or demographic of the South African population. This study aims to fill the abovementioned gap by conducting the study on a much bigger sample that took part in a national survey. The bigger the sample, the closer the results are to the reality of financial literacy levels, retirement planning behaviour and the association between the two variables in the country. Furthermore, the study will focus solely on the relationship between financial literacy and retirement planning.

The primary research objective of this study is to establish if financial literacy influences the retirement planning behaviour of South Africans. The secondary objectives of this study are to determine the financial literacy levels of South Africans and provide an overview of their retirement planning behaviour.

South Africa is particularly important as it is the leading economy in sub-Saharan Africa and a major emerging economy. The low retirement savings rate among South African citizens has severe repercussions on the economy and communities. If South Africans

do not effectively plan for retirement, the government faces the burden of financially supporting its citizens through social grants and other schemes (Le Roux 2010, 1; Reyers 2018, 343). Furthermore, the elderly in society end up depending on the younger generation for financial support, which affects the ability of the benefactors to plan and save for their retirement (National Treasury 2012, 8).

Literature Review

Definition of Financial Literacy

Financial literacy is a very common term that has been used by scholars and policymakers, but has no universal definition. The terms financial literacy, financial knowledge, financial capability, financial culture, and financial insight have often referred to the same concept and have been used interchangeably (Ahmad et al. 2020, 962; Huston 2010, 296; Louw, Fouché, and Oberholzer 2013, 440). Defining financial literacy is a challenging task as there are several definitions for the same concept (Louw et al. 2013, 440).

Despite the vast array of financial literacy definitions, these definitions are generally similar and have in common, explicitly or implicitly, the concepts of: a) skill and or knowledge to analyse; b) informed decision-making; and c) financial well-being. For this study, financial literacy will be defined as "a combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial wellbeing" (OECD 2011, 3). This definition does not contradict any of the other definitions by Xu and Zia (2012, 2), Atkinson and Messy (2011, 14) and Huston (2010, 296).

The lack of a universal financial literacy definition has also resulted in the absence of a standard measure of the concept (Huston 2010, 296). Studies have used surveys made up of various financial literacy questions as a tool to measure how much people know. The most commonly used questions test three basic financial concepts: compound interest, inflation, and risk diversification. The commonly used questions were adapted from the 2004 American Health and Retirement Survey and have been used by some authors (Boisclair et al. 2017, 280; Brown and Graf 2013, 4; Bucher-Koenen and Lusardi 2011, 568; Lusardi and Mitchell 2011; Moure 2016, 208). As a result of the popularity of the questions, one could infer that they are generally the standard measure of financial literacy. A similar approach is followed in this study, therefore, making it comparable to the abovementioned studies.

Concept of Retirement Planning

Retirement can be simplistically defined as the exit of an individual from the labour force or an individual who is no longer actively involved in full-time employment. Denton and Spencer (2009, 64) define retirement as the "withdrawal from paid working life" and the authors show that retirement is a transition. In another study, Duberley, Carmichael, and Szmigin (2014, 72) described two types of retirement: retirement as

continuity and retirement as a change. Retirement as continuity is characterised by one continuing to work on a smaller scale or to do activities related to their previous work. This is often through consultancy or voluntary work. On the other hand, retirement as a change is when retirees see it as an opportunity to venture out into new things, such as studying for a new degree or starting a business.

The above studies show that the definition of retirement involves the notion of not being actively involved in the workforce. Various factors influence the decision to retire, of which age is the most common. In most countries, including South Africa, the compulsory retirement age is between 60 and 65. Other factors that lead individuals to retire include ill health, family responsibilities and accumulation of wealth (Alavinia and Burdorf 2008, 40; Lumsdaine and Vermeer 2015, 452).

According to Noone, Alpass, and Stephens (2010, 716), retirement planning can be seen in two categories: financial preparedness and retirement thoughts. Financial preparedness is described as having some form of financial investments and savings for retirement. This was the approach used by Boisclair et al. (2017, 286) and Brown and Graf (2013, 11) in their studies. On the other hand, authors such as Van Rooij, Lusardi, and Alessie (2011b, 598) and Crossan, Feslier, and Hunard (2011) used retirement thoughts as an indicator of retirement planning. The authors would ask their respondents to indicate the extent to which they have thought about retirement. There are a few critics concerning retirement thoughts. According to Nansubuga (2018, 298), thinking and talking about retirement only psychologically prepares an individual for retirement, but does not necessarily result in retirement preparation behaviours such as financial planning.

For this study, an individual is considered to be planning for retirement if they indicated that they have a personal retirement savings plan. The rest of the options reveal a dependence on an institution or someone and also reactive behaviour to not have planned for retirement.

Theoretical Background

A relevant theory for this study is the theory of lifecycle hypothesis (LCH). The theory was developed by Modigliani and Brumberg in the 1950s and assumes that individuals know and plan for their lifetime income, will save during their working years, and dissave at retirement.

The LCH, therefore, assumes that individuals are financially literate, rational decision-makers who will plan financially for retirement during their working years (Reyers, Van Schalkwyk, and Gouws 2014, 419). To smooth out consumption, individuals need to know their lifetime income and certain calculations must be performed. These calculations are complex arithmetic concepts that cannot be understood by an illiterate individual. Under the LCH, individuals aim to smooth out consumption by borrowing and selling assets when income levels are low and increasing savings when income

levels are high (Sablik 2016, 8). As a result, individuals are making financial decisions that require a certain level of financial knowledge. The LCH thus highlights the importance of financial literacy in making retirement plans.

The Role of Financial Literacy in Retirement Planning

Financial literacy aids consumers in making sound financial decisions (Hussain and Sajjad 2016, 144). Studies have shown that financial literacy has a positive influence on household savings and the day-to-day financial management of consumers (De Bassa Scheresberg 2013, 17; Murendo and Mutsonziwa 2017, 102; Pangestu and Karnadi 2020, 11); influences their debt levels and types of mortgage loans they commit to (Gathergood and Disney 2011, 20; Hussain and Sajjad 2016, 145; Xu and Zia 2012, 16); and increases chances of stock market participation (Van Rooij, Lusardi, and Alessie 2011a 468). Financial literacy also has an influence on retirement planning, which entails having a voluntary retirement savings account.

Lusardi and Mitchell (2011, 518) pioneered research on the relationship between financial literacy and retirement planning and found that those with high scores for financial literacy were most likely to have retirement plans. Studies conducted in other developed countries, Germany, the Netherlands, Canada, and Switzerland, echo the same results (Boisclair et al. 2017, 291; Brown and Graf 2013, 12; Bucher-Koenen and Lusardi 2011, 575; Van Rooij et al. 2011b, 541). In a study conducted in Ghana, it was found that financial literacy had a significant positive relationship with retirement planning (Sarpong-Kumankoma 2021, 8). Another study conducted in China also found that financial literacy was associated with positive retirement planning behaviour (Niu et al. 2020, 15). Further studies of this nature are to be conducted in the context of developing countries where financial literacy and retirement planning may be a concern (Niu et al. 2020, 1).

Contrary to the findings above, studies by Tan and Singaravelloo (2020, 495) and Crossan et al. (2011, 632) found no correlation between retirement planning and financial literacy, nor a mediating role. This is also supported by Sabri et al. (2015, 410), who found an indirect relationship between the financial literacy and confidence of retirement planners. The practice of financial management had a mediating role, meaning that one could only be confident in retirement planning if one is financially literate and putting one's financial knowledge into practice.

The possible reason for the contradicting findings in literature could be attributed to differences in sample size. Studies that found a positive relationship between retirement planning and financial literacy had a much bigger sample than those that did not find a significant relationship between the two variables. Furthermore, the measurement of retirement planning was different in the abovementioned studies. Tan and Singaravello (2020, 495) and Crossan et al. (2011, 632) used different measures of retirement planning to those studies that found a significant positive relationship between retirement planning and financial literacy.

Although retirement finance has gained popularity in South Africa, there have been limited studies focusing on the relationship between retirement planning and financial literacy. Antoni et al. (2020, 579) conducted a study on the relationship between the two variables in the South African context, but the study focused on the population that is only based in Nelson Mandela Bay. Another study by Zeka (2016, 455) explored factors influencing the retirement savings of South Africans living in the Eastern Cape. In both studies, financial literacy was found to have an influence on retirement savings, amongst other factors. Similar to Antoni et al. (2020, 579), Zeka (2016) focused on a population that is living within a certain area of South Africa.

Reyers et al. (2015, 31) studied the factors that affect retirement preservation decisions, and the financial literacy score was found not to have a significant effect on this decision. Their study did not focus on the effect of financial literacy in isolation but on several other factors, and it assumed that individuals had already started planning for retirement. In the same study, Reyers et al. (2015, 24) sought to understand what drives retirement preservation decisions and not the actual decision to start planning for retirement. Their study, therefore, assumed that individuals had started planning for retirement.

In another South African study, Reyers (2016, 389) analysed the role of financial literacy in making and asking for advice regarding general financial decisions, not particularly on retirement planning. Other studies on retirement have been conducted in the South African context, and these include the retirement saving behaviour of young adults (Nkoutchou and Eiselen 2012, 33) and retirement adequacy goals of households in South Africa (Butler and Van Zyl 2012, 32).

Although there are a few contradictions, a review of literature shows that there is general consensus that financial literacy has a positive influence on retirement planning. Most of the studies conducted have been done in the context of developed countries, but there have been limited studies on this relationship in the context of developing countries.

Research Design

The study made use of secondary data from the 2011 South African Social Attitudes Survey (SASAS) that was conducted by the Human Sciences Research Council (HSRC 2011), a credible research institution in South Africa, as per the request of the Financial Services Board (FSB). The nationally representative study, in terms of the diversity of the population, attracted a sample of 2 972 respondents from a broad spectrum of South African individuals who participated in the survey

This study implemented a quantitative research design. Although the HSRC conducts annual national surveys on socio-economic and political issues, the 2011 survey is the only and most recent survey that includes questions on the variables of interest for this study, namely financial literacy and retirement planning. It is worth pointing out that based on the primary objective of this study, only employed or self-employed persons

between the ages of 25 and 65 years old earning an income were included in this study. This sample is consistent with previous studies that examined retirement adequacy and preparedness by individuals prior to retirement (Boisclair et al. 2017, 288; Lusardi and Mitchell 2011, 517). After removing individuals who are not between the ages of 25 and 65 years old and those who have missing data, the final sample of this study comprised 2 189 individuals.

Out of the total sample of 2 189 individuals, there were 939 males (42%) and 1 250 females (57%). The sample was mostly made up of Black Africans, individuals who have at least a high school education, and also low-income earners who are earning R10 000 and below.

Data Analysis

The study computed descriptive statistics to give information on the sample's financial literacy levels and retirement planning behaviour. Thereafter, binomial logistic regression was performed to predict the likelihood of respondents having a retirement plan based on their financial literacy levels and demographic factors. Binomial logistic regression was used because the dependent variable, i.e., retirement planning, was dichotomous. A respondent was considered either a retirement planner or a non-planner. Binomial logistic regression is similar to linear regression, but logistic regression considers that the dependent variable is dichotomous and not continuous (Tranmer and Elliot 2008, 3). Data analysis was carried out using a software package, Stata 16.

Model Specification

Due to the dependent variable, retirement planning, being binary, we used binary logistic regression. Logistic regression can be illustrated by the simple equation below:

$$\ln\left(\frac{\pi}{1-\pi}\right)=\alpha+\beta_i x_i+\varepsilon_i \quad (1)$$

Where:

ln = natural logarithm

π = probability of the outcome of interest

α = the Y-intercept

β = regression coefficient

X = independent variable

ε = error term

Dependent Variable

The dependent variable of the study was retirement planning. The question that sought to determine the retirement plans of the respondents was used as a measure of retirement planning. Respondents were asked, "Which of the following are included in your financial plan for retirement?" If an individual did not have a personal retirement savings plan, he/she was considered as not planning for retirement.

Independent Variable

The independent variable of this study was financial literacy, which was measured by eight questions that tested basic arithmetic skills and the concepts of simple and compound interest, inflation, and risk diversification. Each individual was given a score out of eight, which was computed by giving one point for each correct answer and no point for a wrong answer. The scores were converted to percentages. Respondents were considered to have low levels of financial literacy if their score was between 0 and 39%; medium levels if their score was between 40% and 59%; and high levels of financial literacy if their score was between 60% and 100% (Chen and Volpe 2002, 291).

Control Variables

According to previous literature, the retirement planning behaviour of individuals can be influenced by demographic factors such as gender, race, age, education and income levels (Bucher-Koenen and Lusardi 2011, 570–572; Githui and Ngare 2014, 12; Lusardi and Mitchell 2011, 519; Moure 2016, 215; Nkoutchou and Eiselen 2012, 34). These factors were included in the test as control variables.

Ethical Considerations

Permission to access the HSRC survey and outputs thereof has been granted through registration with the institution. Ethical standards and procedures were adhered to in conducting this research.

Results

Descriptive Statistics

The descriptive statistics results of the study presented in table 1 and appendix A are split into three sections: 1) financial literacy, where the results of the financial literacy levels of the sample are discussed; 2) retirement planning, where the retirement planning behaviour of the respondents is outlined; and 3) differences in the financial literacy levels and retirement planning behaviour of the demographic groups.

Table 1: Differences in financial literacy and retirement planning behaviour of socio-demographic groups

	Financial Literacy %		Retirement planning %	
	High level	**Low to medium**	**Planners**	**Non-planners**
Gender				
Female	60	40	20	80
Male	66	34	30	70
Age				
25–35	62	38	21.4	78.6
36–50	63	37	28.4	71.6
51–65	62	38	22.4	77.6
Race				
Black African	54	46	19.1	80.9
Coloured	62	38	20.8	79.2
Indian/Asian	88	12	34	66
White	82	18	46.2	53.8
Education				
No schooling	26	74	7.6	92.4
Primary	42	58	9.8	90.2
High School	67	33	21.9	78.1
NTC	76	24	34.2	65.8
Diploma	78	22	45.5	54.5
Degree	85	15	60.2	39.8
Postgraduate studies	88	12	63.2	36.8
Income level				
R1–R10 000	61	39	19.3	80.7
R10 001–R20 000	89	11	59.1	40.9
R20 001–R30 000	87	13	68.9	31.1
R30 001–R50 000	89	11	88.9	11.1
+R50 001	89	11	77.8	22.2
Do not know/ refused to answer	54	46	25.3	74.7

Financial Literacy

Financial literacy was tested using eight questions that incorporated the following principles: basic arithmetic, interest rates, inflation, and risk diversification. The wording of the questions and the percentage of those who gave correct and wrong answers for each question are reported in appendix A.

The sample was very comfortable with basic arithmetic skills and the basic meaning of inflation, as illustrated in questions 1 and 7 respectively. However, when it came to the practical implementation of the concept of inflation, the sample struggled, as shown in question 2, where only 22% of the sample answered the question correctly. Basic simple interest and risk diversification principles were fairly understood by the sample.

However, as interest concepts became more complex (as shown in questions 4 and 8), the pass rate became lower.

Overall, the financial literacy scores of the sample were high, as more than half of the sample had a score in the region of 60% to 100%. Based on Chen and Volpe's (2002, 291) classification, 24% of the sample had a low level of financial literacy (0 to 39 percentage points); 13% had a medium level of financial literacy (40 to 60 percentage points); and 63% had a high level of financial literacy (above 60 percentage points). The average financial literacy score was 60% and the mode score was 75%.

Retirement Planning

The retirement planning question aimed to establish the financial plans that individuals had made for retirement. According to our definition of retirement planning, only those who had a personal retirement savings plan were considered to be planning for retirement. Those who were financially planning for retirement made up about 24% of the population. The rest of the options revealed a dependence on an institution or someone and also reactive behaviour to not have planned for retirement. A significant number of people were relying on the government (48%), employer (32%) and family (27%) to provide financial resources during retirement.

The final question under retirement planning tried to determine whether the sample was confident that their retirement plans would provide a satisfactory standard of living (refer to appendix B). In total, 13.7% of the sample was very confident and 35.8% were fairly confident about their retirement plans providing a satisfactory standard of living during retirement. On the other hand, more than 50% of the sample was either not confident or did not know whether their retirement plans were sufficient. Considering that only 24% of the sample had a personal retirement savings account, it can be derived that more than 50% of the population was not confident about their retirement plans satisfying their financial needs during retirement.

Binomial Regression Analysis

The results of the binary logistic regression are presented in table 2.

Table 2: Logistic regression analysis model: Influence of financial literacy on retirement planning

Dp: Retirement planning	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
1b.gender	1	.	.	.	.	.	
2.gender	.679	.075	-3.50	0	.547	.844	***
1b.race	1	.	.	.	.	.	
2.race	1.076	.176	0.45	.654	.781	1.481	
3.race	1.259	.218	1.33	.184	.896	1.769	
4.race	1.761	.305	3.26	.001	1.254	2.475	***
1b.age	1	.	.	.	.	.	
2.age	1.392	.175	2.63	.008	1.088	1.781	***
3.age	1.022	.166	0.13	.895	.743	1.405	
1b.education	1	.	.	.	.	.	
2.education	1.042	.447	0.10	.923	.45	2.414	
3.education	1.91	.776	1.59	.111	.862	4.236	
4.education	2.633	1.452	1.76	.079	.894	7.761	*
5.education	4.598	1.996	3.51	0	1.964	10.766	***
6.education	5.24	2.441	3.56	0	2.103	13.058	***
7.education	4.298	1.904	3.29	.001	1.804	10.242	***
1b.income	1	.	.	.	.	.	
2.income	2.377	.51	4.04	0	1.561	3.619	***
3.income	2.98	1.053	3.09	.002	1.491	5.956	***
4.income	12.388	15.188	2.05	.04	1.12	136.961	**
5.income	1.164	.168	1.05	.293	.877	1.545	
Fl	1.014	.003	5.41	0	1.009	1.02	***
Constant	.049	.021	-7.22	0	.022	.112	***

Mean dependent var	0.244	SD dependent var	0.430
Pseudo r-squared	0.134	Number of obs	2189.000
Chi-square	257.750	Prob > chi2	0.000
Akaike crit. (AIC)	2142.488	Bayesian crit. (BIC)	2244.930

**** p<.01, ** p<.05, * p<.1*

1b is the reference groups; 1b gender is female; 2. gender is the male; 1b is the age group 25 to 35 years; 2. age is the age group 36 to 50 years; 3. age is the age group 51 to 65 years; 1b.race is the Black African; 2. race is Coloured; 3. race is Indian/Asian; 4. race is White; 1b.education is no schooling; 2. education is primary school; 3. education is high school; 4. education is NTC I, II & III; 5. education is undergraduate degree; 6. education is diploma; 7. education is postgraduate degree; 1b income is income bracket R0–R10 000; 2. income is income bracket R10 001–R20 000; 3. income is income bracket R20 001–R30 000; 4. income is income bracket R30 001–R50 000; 5. income is income bracket above R50 000.

The findings in table 3 indicate that financial literacy is a positive and significant predictor of retirement planning. Together with a higher level of financial literacy score,

the odds of planning for retirement increase by 1.014 times. The other variables that were significant and positive determinants of retirement planning included gender, race, education, income levels, and age. The results showed that men were .663 times more likely to plan for retirement as compared to women. This could be due to gender pay gaps and the fact that men usually participate in the labour market for more years than women. Individuals in the 36 to 50 years age range were 1.392 times most likely to plan for retirement, compared to individuals in the 25 to 35 years age group. There was no significant difference in the 56 to 65 age group. Finally, the higher the education and income levels, the more likely it would be that an individual plans for retirement.

Discussion

As a standalone, the results of financial literacy in South Africa seem to be high. The study found that more than 50% of the sample had a high level of financial literacy. This is similar to the findings by Antoni et al. (2020, 586) who found that at least 72% of the South African population living in Nelson Mandela Bay had adequate financial knowledge.

Based on the three financial principles that are commonly tested in financial literacy studies: compound interest, inflation, and risk diversification, the results of this study indicate that South African literacy levels are low in comparison to countries classified as higher-income countries (Bucher-Koenen and Lusardi 2011, 573; Boisclair et al. 2017, 282; Lusardi and Mitchell 2011, 513). However, when comparing literacy levels in the upper-middle-income countries, South Africa has a considerably high financial literacy level with an average of 43%. Russia and Chile have averages of 33.3% and 35.3% respectively (Klapper and Panos 2011, 604; Moure 2016, 209).

The binomial logistic regression established that those who are financially literate are most likely to plan for retirement. These findings support the results of similar studies done in various contexts such as the USA, Canada and Australia (Agnew et al. 2013,11; Boisclair et al. 2017, 288; Lusardi and Mitchell 2011, 518). In the context of upper-middle-income countries such as South Africa, similar findings were found in Russia and Chile (Klapper and Panos 2011, 606; Moure 2016, 213). This study also supports findings by Githui and Ngare (2014, 14) and Sarpong-Kumankoma (2021, 8) in their studies of the Kenyan and Ghanaian populations respectively.

On the other hand, the significant influence of financial literacy on retirement planning in South Africa contradicts findings in New Zealand, where financial literacy did not affect the retirement planning behaviour of the individuals concerned (Crossan et al. 2011, 634). In the South African context, the study contradicts the findings of Antoni et al. (2020, 588), who found that there was no relationship between financial knowledge and retirement planning. However, there was a positive relationship between financial numeracy and retirement planning.

In a study conducted by Xu and Zia (2012, 9), it was concluded that women are financially illiterate on a global level, and as shown above, South Africa shows to be no exception. These statistics agree with the ones found in the USA (Lusardi and Mitchell 2011, 514), Germany (Bucher-Koenen and Lusardi 2011, 570) and Switzerland (Brown and Graf 2013, 8), where financial literacy was lower among women as compared to men. Furthermore, there were more retirement planners among the men than women, and this agrees with the findings by Githui and Ngare (2014,13). Women are less financially literate as they are usually not involved in the household financial decision-making (Brown and Graf 2013, 8). This responsibility is left to the men, who in turn gain the knowledge and skills required to make sound financial decisions.

There is not much difference in the financial literacy levels of the age groups. The results show that financial literacy is one percentage point higher in the 36 to 50 years age group, and this is the group with the highest percentage of retirement planners. This is similar to the findings of Xu and Zia (2012, 11), who also found that financial literacy scores are highest with the middle-aged group. This age group is likely to be more financially literate than other age groups due to life experiences and increased financial responsibilities.

There were differences in the financial literacy levels of the racial groups. The Indians/Asians have the highest percentage of individuals with high levels of financial literacy, followed by the White population. The Black African population has the lowest financial literacy level, with only 54% of the sample falling in the high financial literacy group. A similar pattern is observed with retirement planning patterns. The Black African population has the least number of people who have a personal retirement savings plan. Only 19.1% of the Black African community has a personal retirement savings plan. In this case, the White population has the highest rate of individuals with a personal retirement plan, followed by the Indian/Asian population.

The higher the education level, the higher the number of people with a high level of financial literacy. Furthermore, the percentage of retirement planners increases with the education level. This is consistent with the findings in Chile, a fellow upper-middle-income country, where the more educated tended to plan for retirement more than those who were not educated (Moure 2016, 213).

There was not much difference in the financial literacy levels of the various income groups. However, those within the R1 to R10 000 income level group had low financial literacy levels compared to the other income level groups. Retirement planning activity increased with income level, but those earning above R50 000 had lower retirement planning activity than those earning between R30 000 and R50 000.

This supports the findings of Bucher-Koenen and Lusardi (2011, 577) who found that in Germany, the high-income individuals had prepared more for retirement. According to Noone et al. (2010, 719), those who earn a higher income have the flexibility to plan

and save for retirement. This is probably because they have more disposable income that allows for saving. The sample used in this study was made up of 72.1% low-income earners, i.e., those earning below R10 001. This could be the reason behind the low rates (24%) of retirement planning in the country, as most individuals do not have the flexibility to plan for retirement.

Limitations and Strengths

It is important to take into consideration the limitations of this study. The first limitation of this study is the issue of self-reported measures. The data were collected through a questionnaire and, therefore, relied on self-reported measures. Self-reported data can result in respondents not answering honestly due to concerns of anonymity and how they will be perceived socially (Podsakoff et al. 2003, 887). To overcome this limitation, respondents were informed that there were no right or wrong answers and that their participation and responses were completely anonymous.

The second limitation relates to the fact that the data were cross-sectional. The binomial logistic regression analysis only indicates the likelihood of an individual planning for retirement based on their financial literacy score. Therefore, the study did not establish a cause-and-effect relationship between the two variables, and this may result in issues of endogeneity. Further tests will need to be conducted to establish the causal relationship between the two variables. In addition, other variables can be investigated, such as retirement literacy as well as other demographic variables such as household composition to establish their influence on the retirement planning of South Africans.

Recommendations

Although this study was done using data from a 2011 survey, it is one of the few studies of its nature that collected data from across the country's wider population. It is, therefore, recommended that future studies use more recent data.

Since the variance explained by the binomial logistic regression was low, it showed that other variables affected retirement planning, that were not considered in this study. It is recommended that future studies include additional variables contributing to the retirement planning problem, such as retirement literacy and other demographic factors such as household composition in South Africa. This will give a more comprehensive view of the problem. It is also important to take into consideration the impact of Covid-19 on retirement planning behaviour.

Furthermore, the analysis method used in this study did not establish a cause-and-effect relationship between retirement planning and financial literacy. Additional tests need to be performed to know the cause-and-effect relationship between these two variables and the point at which financial literacy makes a difference in the retirement planning behaviour of the individual.

Implications

This study informs the government, policymakers and institutions on which socio-demographic groups to focus their financial education and adequately prepare them on how much they need for their future financial well-being. These groups include the less educated, Black Africans, women, and low-income earners. This study further informs the government on one of the contributory factors of ill-preparation of retirement in the country and thus knowing where to focus their attention when dealing with retirement planning issues.

Contribution and Value Add of the Study

This study contributes to retirement planning literature as it is one of the few studies that explore retirement planning and financial literacy in the context of a developing country using a nationally geographically representative sample.

Conclusions

This research paper provided an overview of financial literacy levels and retirement planning patterns of certain socio-demographic groups in South Africa with a focus on gender, age, race, education level and income level. Furthermore, it provided insight into the likelihood of individuals planning for retirement planning based on their financial literacy levels. The results revealed that only 24% of South Africans have a personal retirement savings plan. Most of the population depends on the government old-age pension, employer, and the wider family to financially support them during retirement. The findings also showed that more than 50% of the sample were not confident in the retirement plans they had made.

In comparison to upper-middle-income countries, South Africa's financial literacy level is high, but if compared to high-income countries, the level is low. Financial literacy was found to be particularly low among women, less educated individuals, and Black African people. Consequently, these groups also showed low retirement planning patterns. Overall, retirement planning was higher for those earning high monthly incomes, indicating that the more disposal income one has, the easier it is to plan for retirement.

In addition, the findings revealed that in South Africa, the odds are higher for those who are financially literate to plan for retirement than those who are not financially literate. This is also shown in the descriptive results, whereby the groups that were identified to be less financially literate were the same groups that had low rates of personal retirement savings accounts.

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Appendix A: Summary of financial literacy questions

Question	**% Correct**	**% Incorrect**
1. Imagine that five friends are given a gift of R1 000. If the friends have to share the money equally, how much does each one gets?	83	17
2. Now imagine that the brothers have to wait for one year to get their share of the R1 000. In one year's time, will they be able to buy: a) more with their share of the money than they could today b) less than they could buy today c) it depends on inflation d) it depends on the types of things that they want to buy e) don't know/refused	22.4	77.6
3. You lend R25 to a friend one evening and he gives you R25 back the next day. How much interest has he paid on this loan?	64.9	35.1
4. Suppose you put R100 into a savings account with a guaranteed interest rate of 2% per year. You don't make any further payments into this account and you don't withdraw any money. How much would be in the account at the end of the first year, once the interest payment is made?	49.1	50.9
5. And how much would be in the account at the end of five years? Would it be more than R110; exactly R110, less than R110, impossible to tell from given information, or don't know?	60.2	39.8
6. If someone offers you the chance to make a lot of money, it is likely that there is also a chance that you will lose a lot of money. True or False?	69.9	30.1
7. High inflation means that the cost of living is increasing rapidly. True or false?	79.5	20.5
8. It is less likely that you will lose all your money if you save it in more than one place. True or false?	48.1	59.9

Source: Questions from HSRC: South Africa Financial Literacy Baseline Survey 2011

Appendix B: Retirement planning questions

RETIREMENT

39. At what age do you think people should begin to make a financial plan for their retirement?

Age (in years)
(Don't know)
(Refused)

40. Which of the following are included in your financial plan for retirement?

INTERVIEWER: MULTIPLE RESPONSES ALLOWED. CIRCLE ALL THAT APPLY.

Government old age pension	01
Work-place pension	02
Personal retirement savings plan	03
Moving to a cheaper property in the same area	04
Moving to a cheaper area	05
Sell your financial assets (such as: stocks, bonds or mutual funds)	06
Sell your non-financial assets (such as: a car, property, art, jewels, etc.)	07
Use an inheritance	08
Rely on your spouse or partner to support you	09
Rely on your children to support you	10
Rely on financial support from your wider family	11
Drawing an income from your own business	12
Continue to work after retirement age to earn money	13
Other (SPECIFY)	14
(Don't know)	98
(Refused)	99

41. Taking all of the various sources of retirement income into account, how confident are you that your income will give you the standard of living you hope for throughout retirement?

Very confident	1
Fairly confident	2
Not very confident	3
Not at all confident	4
(Don't know)	8
(Refused)	9

Source: Questions from HSRC: South Africa Financial Literacy Baseline Survey 2011