The Mediating Effects of Financial Sophistication on the Relationship Between Financial Literacy and Perceived Retirement Saving Adequacy among University Public Employees in Kenya

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Abstract

Sustaining adequate retirement savings has received increased attention as a result of ageing population across the globe and an increase in retirement poverty. According to Retirement Benefits Authority only 21% of the working population is part of pension schemes. Perceived retirement saving adequacy is a measure of whether current retirement savings are adequate for a comfortable retirement and should be classified as priority in ensuring financial security at old age. Several studies show an increase in post-retirement poverty which is occasioned by lack of preparedness over one's active work life. Financial literacy has been singled out as a major determinant of perceived retirement saving adequacy however the results are inconclusive. Furthermore, studies indicate that financially sophisticated workers tend to make more rational financial decisions. The objective of this study is to determine the mediating effects of financial sophistication on the relationship between financial literacy and perceived retirement saving adequacy among University Public Employees in Kenya. The study was guided by Victor Vroom's Expectancy Theory of Motivation. The study adopted explanatory research design and was anchored on a positivist paradigm. The study used primary data from public university employees within Nairobi Metropolitan area in Kenya. Questionnaires were used to collect data. The research targeted 17,320 employees and a sample of 390 was selected. Stratified systematic random sampling was used to arrive at the respondents. Multiple regressions were used and Sobel's test was used after which bootstrap test of the indirect effect was carried out. Results showed a positive relationship between FL and PRSA (β=.664, p<000), FL and FS (β=.8064, p<.000). Further, financial sophisticated mediated the link between financial literacy and retirement savings adequacy (β=.554) was significant. Based on the findings, financial literacy, financial sophistications have a significant effect on perceived retirement savings adequacy among public university employees in Kenya. The findings of the study suggest that financial literacy and sophistication should be intensified by both Government institutions and private investors to improve knowledge and skills on financial matters. The findings of the study will also help the government in transforming pension sector by making notable improvements in turn will improve savings culture.

Keywords: Financial sophistication, Government, financial literacy, perceived retirement saving adequacy, Public University Employees

INTRODUCTION

According to Van Schie *et al.* (2012), the term "perceived retirement savings adequacy" refers to an individual's belief that the retirement funds they have accumulated would be sufficient for a retirement that may be characterized as comfortable. According to research conducted by Stockdale (2022), individuals do not feel as though they have sufficient self-assurance regarding their retirement funds, despite the fact that there are numerous public and private pension choices available to provide a comfortable retirement. Even in cases where pensions systems are structured, there is a significant disparity in retirement security reported due to the major differences between defined benefit plans and defined contribution plans, with the majority of sponsors preferring defined contribution plans to shield themselves from investment risk (Poterba, 2014; Wang *et al.,* 2016).

A significant portion of the working population is currently living longer in retirement, and it is possible that retirement benefits may continue to decrease as a result of rising prices across the board, particularly rising medical costs. Again, majority of Kenyan workers retire with only 20% of their pre-retirement income, which is very little and can hardly support them upon retirement now that there is a change in social culture where parents may no longer rely on their working children to support them in old age (Kiptanui, 2017). Furthermore, majority of Kenyan workers retire with only 20% of their pre-retirement income, which is very little and can hardly support them upon retirement. According to an estimate provided by the Institute for Pension Supervisors (IOPS) (2008), the retirement poverty rates are as follows: 30.6% of people in Ireland, 26.9% of people in Australia, 23.6% of people in the United States of America, 22% of people in Japan, 10.3% of people in the United Kingdom, 9.9% of people in Germany, 8.8% of people in France, and 56% of people in Kenya recorded higher rates. This indicates that saving for retirement is extremely important and ought to be regarded as a priority, and that effective management of one's personal retirement savings is a prerequisite for ensuring financial security in old age (Musembi, 2018). It has been previously identified that inadequate pre-retirement financial planning and inadequate retirement savings are major contributors to the creation and promotion of major economic problems in the majority of developed nations, and it is possible that the situation is even more dire in developing nations (Hershey & Mowen, 2000).

Previous studies indicate a positive relationship between financial literacy and retirement planning: with the ability to have adequate income for retirement being an important consideration in predicting the quality of life after retirement (Lusardi & Mitchell, 2011; Hershey, Jacobs-Lawson, & Austin, 2013; Githui & Ngare, 2014). Although some findings on financial literacy and retirement savings are inconclusive (Willis, 2008). Financially sophisticated workers have reported more experience and tend to make fewer financial mistakes (Kyoung and Hanna, 2015). Financial literacy has been previously reported to have a positive association with perceived retirement saving adequacy. There is similarly strong economic association between financial sophistication and planning for retirement. Lusardi (2011) noted that basic financial literacy may not be a factor in predicting planning for retirement and therefore literacy alone may not be sufficient in making proper financial decisions and may not result retirement preparedness.

Extensive studies on perceived retirement savings have been done mostly in developed nations, literature and data on retirement saving adequacy in developing countries is limited, with very little evidence of studies evaluating the relationship between financial literacy, financial sophistication and perceived retirement savings adequacy. Previous studies have also focused on actual retirement savings but the study under review puts an emphasis on the subjective part of retirement savings. This study therefore aimed at determining whether the level of perceived retirement saving adequacy tends to vary according to financial literacy and financial sophistication among public university employees in Kenya.

LITERATURE REVIEW

Theoretical review

Victor Vroom's Expectancy Theory of Motivation

Prior research has identified motivation as a critical component in individual behavior as a crucial driver. Tolman (1932) and Lewin (1938), who established the theory and linked perception to conduct, are credited with its development. Vroom (1964) and Samuelson (1967) conducted more research on the model, which gave a theoretical foundation for characterizing the influences that motivate human behavior as being a function of expectation, instrumentality, and valence or utility.

The concept of expectation refers, in its most fundamental form, to the anticipation or possibility that particular behaviors would result in particular outcomes. This further emphasizes that performance is dependent on the amount of effort put in. The relationship between performance and reward, which indicates that the outcome is determined by performance, is referred to as instrumentality. The importance or value that an individual places on a perceived outcome is referred to as valence and can also be referred to as utility. According to these theories, the things that inspire people in general are the things that can lead to desirable outcomes that are effectively achieved (Mandel & Klein, 2007).

A person's ability to make important decisions regarding their finances can have a significant impact on their quality of life and can be greatly improved by increasing their level of financial literacy. Having adequate pension savings to meet one's retirement demands is one of the most significant needs in one's life and is an important outcome that an individual would aim to achieve. This is one of the most essential needs that an individual would aim to achieve. Therefore, according to this theory, one may enroll in financial literacy programs based on the expected reward of the outcome (Mandel & Klein, 2007). In other words, one will enroll in these programs if they believe they will benefit from them. This further indicates that workers will engage in retirement planning activities if they believe that the said activities may assist them in making better decisions which may improve their long-term perceived outcome, which is the accumulation of enough pension funds. The action that is supposed to lead to the desired outcome, which is adequate savings for retirement, is participation in literacy programs, as well as investment, savings and wealth accumulation, with the goal of improving retirement savings and ultimately one's perception of retirement savings.

Empirical Review

A questionnaire was used to collect data for the study that Nguyen et al. (2019) conducted, which investigated the influence of employees' levels of financial literacy and pension awareness on the investment decisions they made for their retirement. The data collection took place in 2018, and a total of 427 valid questionnaires were used for the study. According to the findings of the study, an employee's level of basic financial literacy and knowledge about pensions are significant factors that increase the likelihood that the employee will exercise their choice of retirement investment. On the other hand, an employee's level of advanced financial literacy has a significant effect on the choice of growth investing options for retirement.

In their study, Adam *et al.* (2017) explored the factors that influence the seniors' financial well-being in the Cape Coast Metropolis of Ghana. These factors included retirees' financial knowledge and behavior, family support, the number of dependents they supported, and retirement preparation. A cross-sectional survey approach was used to choose 400 respondents from among the association's total membership of 1500 people in order to investigate the effects of financial literacy, financial behavior, family support, the number of dependents, and retirement planning on financial wellness. According to the conclusions of the study, seniors' financial well-being was greatly impacted by their financial behavior, financial literacy, retirement planning, and the support they receive from their families.

Foster *et al.* (2015) conducted research on the presentation format as well as financial literacy, accessibility, and an assessment of the ability to save for retirement. It was observed that the participants had an improved ability to obtain vital information and to evaluate the relative performance of funds as a result of the salience that was brought about by the presentation format. According to the findings of the study, there is value to be had from financial literacy programs, which are called for by regulators. However, the study also stated that further benefits may be obtained by placing an emphasis on numeracy abilities and by adopting presentation forms that promote information accessibility and checkability.

Sabri et al. (2015) conducted research on the level of financial literacy, financial management habits, and retirement confidence held by women employed by government organizations. The investigation into the function that financial management practices play in mediating the relationship between financial literacy and retirement confidence was carried out with the help of structural equation modeling. In order to collect data, questionnaires that respondents had to fill out on their own were employed. The sample consisted of 626 people with an average age of 36.06 years and a standard deviation of 9.855 years. The vast majority of responders (73%) were married in some capacity. According to the findings of the research, the connection between the benefits of financial literacy on retirement confidence is one that is indirect and wholly mediated by the practices of financial management. There was a substantial link between retirement confidence, financial literacy, and the behaviors of financially managing one's finances.

Anantanasuwong (2019) evaluated the influence of financial literacy on retirement savings as well as the impact on present bias and exponential growth bias, both of which have been identified in earlier research as being detrimental to savings. The study came to the conclusion that higher levels of financial literacy are linked to an accurate picture of exponential growth, which in turn encourages retirement savings. In addition, those who are financially savvy are less likely to be influenced by the present bias when they are saving for their retirement.

In their 2015 study, Chou *et al.* (2015) investigated the elements that contribute to the perception of adequate retirement savings in Hong Kong. This study used data from a survey that was done in 2012 with 999 workers in Hong Kong to replicate earlier studies that were conducted on workers in the United States and the Netherlands using an interdisciplinary model of financial planning. The findings of the study identified six different factors: three psychological factors (financial knowledge, future time orientation, and goal clarity), three social support variables (support from spouse, early learning from parents, and support from friends), three institutional factors (trust in the government, quality of employer pensions, and trust in banks and fund managers), retirement savings planning activity, and perceived retirement savings adequacy. According to the findings of the research, path analyses were applied in order to validate the model for the entire sample as well as separately for younger (N = 437) and older (N = 562) workers. The model was shown to be beneficial in studying the elements that contribute to retirement savings planning. This was found to be the case despite the fact that the path analyses discovered a relatively small number of age differences.

Research conducted by Reyers (2018) looked on people's perceptions of whether or not they have saved enough for retirement in South Africa. The findings of the study made use of data from South Africans to evaluate how confident workers feel about their future retirement income adequacy and whether or not behavioral variables play a part in their impression of being ready for retirement. The findings of this research shed light on the important part that behavioral factors play in the way people in developing markets in Africa think about the sufficiency of their retirement income. It has been discovered that respondents' retirement confidence is positively associated to factors such as self-assessed knowledge, financial risk tolerance and excellent financial behavior.

Financial Sophistication as a Mediating variable

Niazi and Malik (2019) investigated the effect that socio-demographics, risk inclination, investment variety, and the level of financial expertise had in moderating the relationships between these variables. This descriptive study was conducted using a survey questionnaire that contained 70 items on 775 respondents from Pakistan, Canada, Tunisia, Romania, Jordan, Moldova, and the UK. The respondents consisted of 85 military personnel and personal interviews with 18 respondents. The outcomes of the research led the researchers to the conclusion that socio-demographic factors, risk inclination, and investment decision-making are highly influenced by a person's level of financial sophistication.

Akhtar *et al*. (2018) conducted research to determine the extent to which a person's level of financial sophistication and personality influence their involvement in the stock market. A random sample of 451 people who participate in the stock market was used to test the hypothesis utilizing archival research as the research methodology. The process developed by Andrew Hayes was used to evaluate moderation. Extroversion and openness to experience are two of the psychological variables that have been found to have a favorable correlation with stock market participation. On the other hand, awareness, agreeableness, and neuroticism were found to have a negative effect. The most likely ways in which a person's personality can influence their participation in the stock market are through their level of financial literacy, their gender, and their trading experience. It was also shown that a person's level of financial acumen can help to mitigate the association between certain fundamental personality qualities and involvement in the stock market. It was also established that behavior finance may not be entirely predetermined by one's DNA, but rather, it is identified by qualities that are less influenced by financial literacy. This was another conclusion that was reached.

Li and Lu (2018) conducted a theoretical and empirical investigation of the effects of research and development constraints, as well as funding limitations, on the level of environmental sophistication of Chinese businesses. According to the model's predictions, firms' expenditures on research and development have the potential to increase their degree of green sophistication, while limitations on firms' access to financing have a moderating effect on the level of green sophistication of their exports. The findings of the research are used to create an index of green sophistication by incorporating a green coefficient into conventional export sophistication. Our assumptions were verified by the information contained in the database of China's industrial firms. It was discovered that the limitations on finance had a considerable moderating influence on the connection between research and development and the level of green sophistication achieved in exports.

Financial Sophistication has been explored as an independent variable, as a moderator, and as a mediator; however, little has been done to investigate its role as a moderator in the relationship between financial literacy and the perception of one's ability to save for retirement financially. The capacity to make sound financial decisions, positive investment options, and actual wealth building are all outcomes that can be attributed to one's level of financial sophistication. Sophistication in this area is crucial because it serves as a measure of one's ability to avoid making mistakes in this area.

Conceptual Framework

The conceptual framework depicts independent, dependent, moderating, and mediating variables. The independent variable is financial literacy, the dependent variable is perceived retirement saving adequacy, the mediator is financial sophistication.

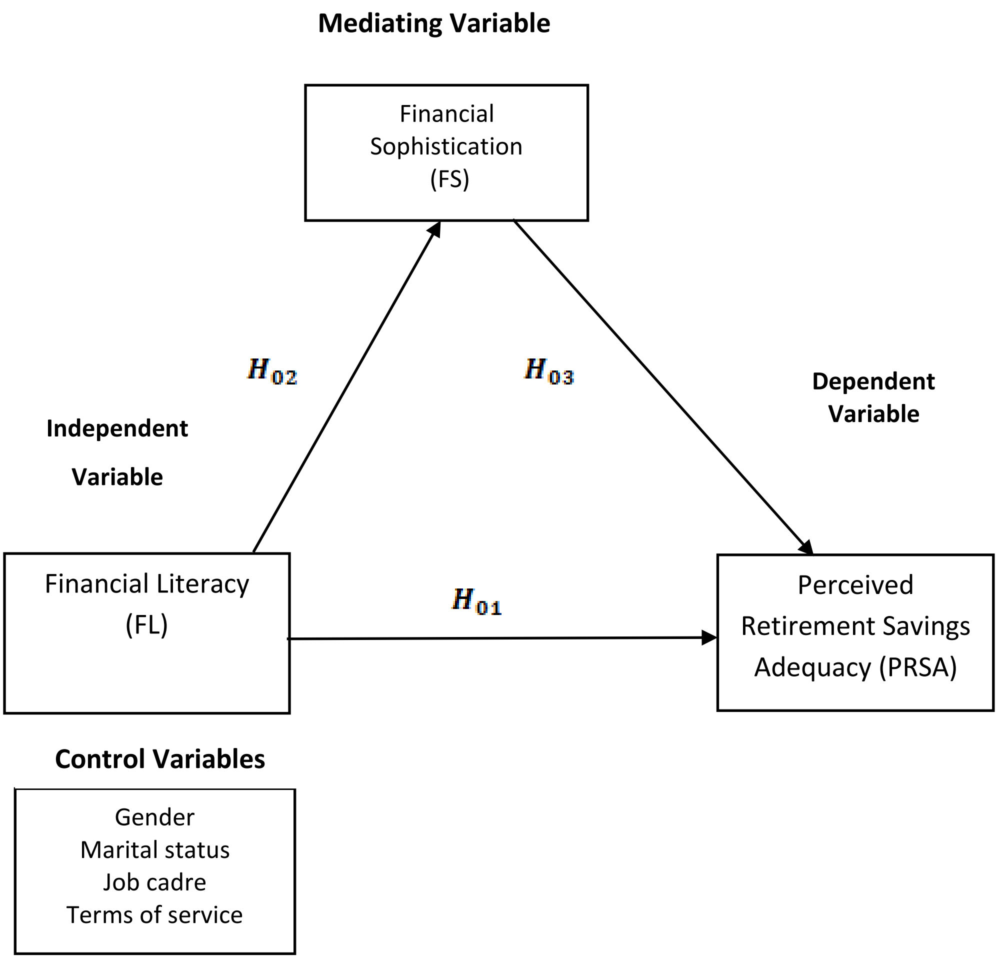

Figure 1: Conceptual Framework Hayes Model 4
Source: Researcher's Conceptualization, 2022

METHODOLOGY

The study adopted explanatory research design and was anchored on a positivist paradigm. The target population comprised of the 1,7320 academic staff members working in the metropolitan area of Nairobi, Kenya. The study was carried out at Kenyatta University

(KU), University of Nairobi (UON), Jomo Kenyatta University of Science and Technology (JKUAT), and Technical University of Kenya (TUK). From the target population of 17320 Taro Yamane (1973) sample size formula and modified by Kent (2008) was used to calculate a sample size of 389 respondents as presented in table 1. The respondents were selected through stratified systematic random sampling.

Table 1: Sampling Distribution Table

Institution	N		Nh=n(Nh/N)	Sample per stratum	
		Public universities			
University of Nairobi	8195	Academic 2,670 Adm-5,525	390x 8,195/17,320	184	Academic -60 Adm- 124
Kenyatta University	5210	Academic-1,610 Adm-3,600	390x 5,210/17,320	117	Academic-36 Adm- 81
JKUAT	2630	Academic 500 Adm- 2,120	390x 2,630/17,320	59	Academic-11 Adm- 48
TUK	1285	Academic 689 Adm- 596	390x 1,285/17,320	29	Academic-16 Adm- 13
Total	17320			390	

Source: (University websites, 2021)

Questionnaires which were used to collect data were subjected to pilot testing with university staff members in Eldoret with the goals of removing any ambiguous wording and improving the clarity of the questions in order to raise the level of dependability. Cronbach's alpha was utilized to make a determination on the instrument's reliability. Confirmatory factor analyses were carried out to determine validity.

The data that was collected from the field was coded, cleaned, and entered into SPSS version 22 for analysis. Utilizing descriptive statistical approaches such as cross-tabulations and frequency distributions. Inferences based on statistics were carried out, including the use of a multiple regression model and a bivariate correlation analysis.

Model specification

$Y = b_1 + c'X + \varepsilon$……………………...…………….1

$M = b_2 + a_{1i}X + \varepsilon$…………………………………....….2

$Y = b_3 + b_iM + \varepsilon$……………………..……………………3

RESULTS

Reliability of the Research Instruments

Cronbach's alpha coefficient was used to examine the internal consistency of the measuring scales' items and determine whether they are statistically acceptable.

Table 2: Reliability of Research Instruments before and after Standardization

	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Perceived Retirement Savings Adequacy	.910	.919	4
Financial Literacy	.968	.969	6
Financial Sophistication	.855	.846	8

Source: Research Data, 2022

The findings shown in Table 2 demonstrated that all coefficients were within the generally recognized limits of 0.7 proposed by Hair *et al* (2010). Reliability for perceived retirement savings adequacy with for items was .910 and 9.19 after items have been standardized. Financial literacy and financial sophistication each had reliability of .968 and .855 respectively.

Descriptive Statistics for Perceived Retirement Savings Adequacy

Table 3 indicates the perceived retirement savings adequacy was measured using four items. Each item was rated in a five Likert scale for which 5 = Strongly Agree, 4 = Agree, 3 = undecided, 2 = Disagree, 1=Strongly Disagree.

Table 1: Descriptive Statistics for Perceived Retirement Savings Adequacy

Descriptive Statistics

	N	Min	Max	Mean	Std. Dev
I am saving enough to retire comfortably	382	1	5	3.72	1.468
I expect to have a good retirement income	382	1	5	4.11	.928
I think I will have enough money to retire comfortably	382	1	5	3.99	1.378
Based on how you expect to live in retirement and given that you do not adjust your current saving behavior, it's expected that you will have adequate resources to retire comfortably	382	1	5	4.26	1.030

Source: Adopted from Van Dalen *et al* 2010 and modified to suit the study Research Data, 2022

Results showed that public universities employees agreed that they expect to have a good retirement income (mean response of 4.11 and standard deviation =.928). Public university staff also think to have enough money to retire comfortably (mean = 3.99. standard deviation = 1.378). Further, public university employees expect to live in retirement and given that they do not adjust your current saving behavior, they expect that have adequate resources to retire comfortably (mean = 4.26, standard deviation = 1.030). When someone stops working entirely and can sustain themselves through investments, pension plans, and other sources, they are said to be in retirement (Luccarella, 2016). Retirement, as defined by Petkoska & Earl (2009), is the point at which a person stops working at their primary position and starts receiving a pension from either public or private sources. For many workers, it is a significant adjustment in their lives (Denton & Spencer, 2009).

Descriptive Statistics for Financial Literacy

Financial literacy was measured using eight items each rated on the Likert scale; 5 = Strongly Agree, 4 = Agree, 3 = undecided, 2 = Disagree, 1=Strongly Disagree.

Table 4 presents descriptive results that public university employees in Kenya have better understanding of how to manage my credit use (mean = 3.83 and standard deviation = 1.294), have the ability to maintain financial records for my income and expenditure (mean = 3.68 and standard deviation =1.490), have little or no difficulty in managing my money (mean =3.92 standard deviation =1.235), and have the ability to prepare my own weekly (monthly) budget (mean =3.76 standard deviation = 1.301). The significance of having small standard deviations implies the responses are around their means.

Due to the complexity of the global economy's financial structures and the fact that Africa is a part of the global village, financial education is booming in the western world (Monyoncho, 2010). Along with lowering debt loads, building wealth, and managing it well, financial literacy is essential for influencing member participation in pension plans and savings behavior (Lusardi *et al.*, 2010). On a systemic level, financial education is crucial to the health of the economy. For instance, clients that are financially literate are more inclined to save and to save more than their less literate counterparts

Table 4: Descriptive Statistics for Financial Literacy

Descriptive Statistics

	N	Min	Max	Mean	Std. Dev
I have better understanding of how to invest my money	382	1	5	3.46	1.515
I have better understanding of how to manage my credit use	382	1	5	3.83	1.294
I have a very clear idea of my financial needs	382	1	5	3.71	1.407
I have the ability to maintain financial records for my income and expenditure.	382	1	5	3.68	1.490
I have little or no difficulty in managing my money	382	1	5	3.92	1.235
I have the ability to prepare my own weekly (monthly) budget	382	1	5	3.76	1.301

Source: Adopted from Bucher-Koenen (2011) and Stromback(2017) and modified to suit the study Research Data, 2022

Descriptive Statistics for Financial Sophistication

This variable is used in this study as the mediating variable measured using the eight items rated on five Likert scale.

Table 2: Descriptive Statistics for Financial Sophistication

Descriptive Statistics

	N	Min	Max	Mean	Std. Dev
I consult financial professionals before investing	382	2	5	4.20	1.147
I have been spending beyond my means	382	1	5	4.03	1.184
I have been saving for my retirement	382	1	5	3.43	1.449
I usually consider ATM fees when doing bank withdrawals	382	1	5	3.77	1.204
I usually use the same bank/insurance company despite poor customer service	382	1	5	3.61	1.413
I hardly understand the terms for pension schemes	382	1	5	3.76	1.386
I understand financial obligations associated with financial matters	382	1	5	3.87	1.155

Source: Adopted from Estalami(2014) and modifies to suit the study Research Data, 2022

Table 5 indicates the results of the analysis which confirms that, most respondents had the same opinion that they consult financial professionals before investing (mean =4.20, standard deviation =1.147), have been spending beyond my means (mean = 4.03, standard deviation =1.184), usually consider ATM fees when doing bank withdrawals (mean =3.77, standard deviation =1.204) and also understand financial obligations associated with financial matters (mean = 3.87, standard deviation =1.155). According to Calvet *et al.*, (2009), in the domain of household finance, the requirement for financial sophistication has grown in importance. Household finance scholars are becoming more and more interested in the idea of financial sophistication since it is described as a household's capacity to avoid making financial blunders. Workers who are deemed financially smart have greater experience and tend to make fewer financial blunders than those who are labeled financially illiterate (Kim & Hanna, 2015).

Correlation Analysis

Table 6 shows a high positive significant correlation between perceived retirement savings adequacy and financial sophistication ($\rho = .747, p = .000$), also perceived retirement savings adequacy correlates with financial literacy with coefficients $\rho = .674\ (p = .000)$.It indicates that for an employee of public university in Kenya to have adequate savings during retirement, he/she must be financially literate and sophisticated in order to enhance their retirement savings. Financial sophistication highly correlates with financial literacy at $\rho = .852\ (p = .000)$.

Table 6: Pearson Correlation Coefficients

		PRSA	FS	FL
PRSA	Pearson Correlation	1		
	Sig. (2-tailed)			
FS	Pearson Correlation	.747**	1	
	Sig. (2-tailed)	.000		
FL	Pearson Correlation	.674**	.852**	1
	Sig. (2-tailed)	.000	.000	

Mediation Analysis (Hayes Model 4)

The study utilized Hayes model 4 in Process-Macro to examine the mediating effect of financial sophistication on the relationship between financial literacy and perceived retirement sufficiency. The hypothesis is that financial sophistication can transmit the causal effect of financial literacy to adequate retirement savings. That is, can a financially literate employee influence the company's financial sophistication, which in turn influences the retirement savings adequacy? By analyzing the collected data, the study addressed this query.

Table 7: Mediation Analysis (Hayes Model 4)

		M(Financial Sophistication)			Y(Retirement Savings Adequacy)	
Variables		Coef. (SE)	95% CI		Coef. (SE)	95% CI
Financial Literacy (X)	β_1	.806*** (.026)	.756, .857	β_2	.141**(.067)	.010, .272
Financial Sophistication (M)		-	-	β_3	.686***(.070)	.548, .825
Constant	α_1	.739***(.099)	.544, .935	α_2	.904***(.146)	.616, 1.191
		$R^2 = .7252$ F=1002.984 p=.000			$R^2 = .5638$ F=244.920 p< .000	
		Index	SE (Boot)		Boot 95% CI	
Mediation of FS		.556	.061		.436, .680	

Note: *Coef.. = coefficient, SE = standard error, CI = confidence interval.*
95% confidence interval for conditional direct and indirect effect using bootstrap.
**p <0.05; **p <0.01; ***p <0.001.*

According to Barron and Kenny (2012), in mediation analysis, the effect of the independent variable (FL) on the dependent variable (PRSA) is referred to as the total effect, which is then divided into a combination of a direct effect of independent variable on dependent and an indirect effect of independent variable on dependent variable via mediating variable (FS). Despite being widely used, mediation analysis has frequently been challenged for its effects on causal mediation. Researchers can often randomize only one of the three variables in the mediation hypothesis, making mediation a complete method. The independent and dependent variables' causal relationships are not supported by the randomization of the independent variable. By using recent statistical advancements in causal mediation research, MacKinnon and Pirlott (2015) solved these constraints. The same participant may typically take part in both the experimental and control conditions in within-subjects designs.

Table 7 demonstrates a positive and significant relationship between financial literacy and the mediator (=0.806, p=.000). This connection is known as path 'a'. Financial literacy (FL) and PRSA have a positive and statistically significant relationship (=.141, p=.035), as suggested by path c'in mediation analysis by Zhao *et al*. (2010). Barron and Kenney (2012) and Zhao *et al.* (2010) reported that the effect of FS on PRSA was positive and statistically significant (=.686,p=.000) along path 'b'. According to Zhao *et al.* (2010), the significance of the path ab indicates a mediation effect. In this study, the coefficient of.5536 was significant because the bootstrap confidence interval did not contain zero, i.e., the bootstrap lower limit confidence interval (bootLLCI) was positive (.4356) and the bootstrap upper limit confidence interval (bootULCI) was positive (.6795). Since the bootstrap standard error was.0610 and the coefficient is.5536, the t-statistic can be obtained by dividing the coefficient by the standard error:.5536/.0610 = 9.075>1.96. We conclude that FS acted as a mediator in the relationship between FL and the PRSA. The bootstrap method is a resampling technique used to estimate population statistics by replacing samples in a dataset. It can be utilized to estimate summary statistics like the mean and standard deviation (Hesterberg, 2011). Bootstrap methods can be significantly more precise than conventional inferences based on the Normal or t distribution.

Hypothesis testing

The objective was to assess the mediating effect of financial sophistication on the relationship between financial literacy and perceived retirement savings adequacy. In mediation analysis, Zhao *et al.* (2010) suggest certain stages. Path 'a' demonstrates the relationship between financial literacy (independent variable) and financial sophistication (mediator). In this case, the results indicate that there is a positive and significant relationship between financial literacy and financial sophistication (=.8064, p=.000). Path 'b' occurs when the mediator (financial sophistication) influences the dependent (perceived retirement saving adequacy).

The effects of mediator on the dependent variable were found to be positive and statistically significant (=.6864, p=.000). The final path is 'c', in which the independent variable influences the dependent variable in the presence of the mediator. With a coefficient of =.1412 and a p-value of.0349, financial literacy was found to have a positive and statistically significant effect on perceptions of adequate retirement savings. According to Barron and Kenneth (2012) and Zhao *et al.* (2010), the significance of the path a*b indicates the effect of mediation. In this investigation, the 0.5536 coefficient was significant because the bootstraps confidence interval was nonzero (did not contain zero). The lower limit was 0.4356, and the upper limit was positive (0.6795). The study concluded that financial sophistication mediated the relationship between financial literacy and perceived retirement savings adequacy.

Discussion

Financial literacy is one of the factors that influence retirement savings behavior and has been given prominence as a means of increasing voluntary retirement savings (Van Rooij *et al.,* 2011). This is because saving for retirement requires people to picture their retirement future. (Hilgert *et al.,* 2003; Lusardi *et al.,* 2010, Sang *et al.,* 2014) Research has shown that people who are financially illiterate tend to make decisions regarding their finances, investments, and retirement planning that has less favorable outcomes. Mwathi, (2017) conducted research on the influence of financial literacy on personal financial decisions among employees of Egerton university in Nakuru County, Kenya. The findings showed that financial knowledge and financial skills were significant in deciding personal financial decisions, however financial attitudes did not significantly influence personal financial decisions. In general, it was discovered that a positive statistically significant association exists between financial literacy and one's own personal decisions regarding one's own finances.

According to the data, there is a clear link between financial literacy and financial sophistication, and this link is both positive and substantial. Lusardi et al., (2014) studied financial literacy and financial sophistication in the older population in and found that many older respondents were not financially sophisticated: they fail to grasp essential aspects of risk diversification, asset valuation, portfolio choice, and investment fees. The results of this study contradict the findings of Lusardi *et al.,* (2014). Women, people of color, those with less education, and people beyond the age of 75 are examples of subgroups that are significantly underrepresented. Such insufficient levels of knowledge have the potential to have significant and unfavorable repercussions because retirees are increasingly required to assume responsibility for their own retirement security.

It was discovered that there is a positive and significant association between high levels of financial sophistication and enough amounts saved for retirement. The study contends that those with a greater understanding of personal finance have a greater propensity to save money and make plans for their retirement. Assuming that retirement planning is a powerful indicator of actual saving behavior (Clark & d'Ambrosio (2002), Lusardi and Mitchell (2011), Van Rooij, Lusardi, & Alessie (2011), and Fornero & Monticone (2011)), the findings lend support to the existing literature, which has primarily focused on the link between financial sophistication and a plan for retirement. For instance, Lusardi and Mitchell (2007) stated that respondents who they classed as "planners" reached retirement with substantially higher levels of wealth and demonstrated higher levels of financial literacy than non-planners. These findings were based on the findings of a study in which the participants were asked to rate their level of financial planning. In addition, Van Rooij *et al.* (2011) investigated the relationship between financial knowledge and retirement planning in the Netherlands. The findings agree with the findings of these authors since they arrived at conclusions that were comparable to those reached by Lusardi and Mitchell (2007) empirical data, which said that having a greater level of financial awareness was associated to having higher retirement wealth.

CONCLUSION AND RECOMMENDATION

Financial literacy and financial sophistication resulted in a positive and significant relationship with perceived retirement saving adequacy. Financial literacy is basic knowledge of financial matters while financial sophistication is one’s ability to make prudent financial decisions and also one’s ability to avoid financial blunders. The study confirms this position that financial literacy leads to financial sophistication. The more literate one is, the more sophisticated they are and the better the financial decisions will be.

Financial sophistication is also positively and significantly related with perceived retirement savings adequacy. Financial sophistication is defined as one's ability to make prudent and rational financial decisions. If one is able to make prudent financial decisions like savings and investment decisions then they are bound to feel better about the adequacy of retirement savings. Financial sophistication also reduces chances of financial mistakes which in turn improves overall financial wellbeing and the likelihood of engaging in good financial behaviors like savings, wealth accumulation and good investment practices.

The findings of the study suggest that financial literacy and sophistication should be intensified by both Government institutions and private investors to improve knowledge and skills on financial matters. The findings of the study will also help the government in transforming pension sector by making notable improvements in turn will improve savings culture.

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