

# Financial Literacy and Personal Retirement Planning among Public Sector Employees in Bukavu City, The Democratic Republic of Congo

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## Abstract

Many retirees are confronted with the problem of having an insufficient income to sustain their living costs. Pension plans are designed to help retirees to save a part of their income during the working years for future use during their retirement. In the Democratic Republic of Congo, pension's schemes are inexistent and many employees have been shifting to personal retirement plans. There are more than 50% of employees without access to pension schemes in the country. The general objective of this research was to determine the effect of financial literacy on personal retirement planning among public sector workers in the Democratic Republic of Congo especially the city of Bukavu, one of the populated cities in the country. The specific objectives were to measure the effect of financial knowledge, computation capability, financial education and risk attitudes toward financial products on retirement planning among public sector workers in Bukavu city. The population targeted in this study was constituted by public sector employees working for institutions under the provincial government control as well as those under the national government control. This study used purposive sampling and stratified sampling. The sample size for this study was 396 public sector employees. This study was supported by the life cycle theory, expected utility theory and the theory of planned behavior. Descriptive and causal research designs were used in the present research. This study used logistic regression to verify the research hypothesis. A questionnaire was used to collect primary data. The data collected were processed using SPSS 21. The presentation of data was done in form of tables. The results in the estimated model showed that Financial knowledge is statistically significant with a p-value of  $0.013 < 0.05$ , Computation capability is statistically significant with a p-value of  $0.001 < 0.05$ , Financial education is not statistically significant with a p-value of  $0.116 > 0.05$ , and Risk attitudes toward financial product is not statistically significant with a p-value of  $0.452 > 0.05$ . Thus, Financial knowledge and Computation capability influence significantly personal retirement planning. The findings from the study support therefore that retirement planning have been influenced by the level of financial literacy of public sector employees in the city of Bukavu. The study recommends to public sector employees to improve their level of financial literacy for better living conditions during their retirement period and to policy makers to organize financial literacy training for public sector employees in the Democratic Republic of Congo.

**Key words:** Financial literacy, retirement planning, public sector employees.

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## I. Introduction

Retirement is the period where the labor force exits the working life due to the old age, given the reason that old individuals are characterized by a reduced ability to perform the work assigned to them. After working for years, workers shift to the retirement period which is a critical stage of life that most of workers will go through (Zhan, Wang, & Daniel, 2019). The period of retirement is characterized by a dramatic decline of the income and this has a negative effect on the financial wellbeing of the retiree (Ackert, 2010).

Social security is a program which collects contributions from individuals during their working period and uses the money collected to make payments to them during their retirement years.

It aims to make sure people will be receiving a certain income once they retire and therefore it is one of the most important components of retirement planning. Nonetheless, social security does not give enough income to support living expenses of most individuals. Therefore, additional retirement planning is critical to make sure that people can leave in comfort during their retirement (Jeff, 2004).

In France, people who are more likely to make personal financial plans for the future are financially literate (Arrondel, 2013). A study conducted in America by Lusardi and Mitchell (2007), shows that Financial literacy is a key determinant of personal retirement planning and financially illiterate individuals do not have financial plans for their retirement period. Financially literate individuals are those who plan for their retirement

In Africa, the study of Agunga (2016) conducted in Kenya proves that components of financial literacy have a significant effect on retirement preparedness. The probability of not having a retirement plan is significantly high when a person is financially illiterate (Githui, 2014).

According to Burns (2019), there are several types of retirement planning that individuals can adopt, the main are the purchase of assets and saving plans. Retirement portfolios are primarily composed of cash, bonds, and stocks, but the way in which these assets are bought, sold, and rebalanced vary among investors. Every investor adopts his preferred method of investment and saving. Individuals purchase assets and constitute savings with expectations of income generation during the retirement period.

However personal retirement investments can also be constituted by employee to provide an income in retirement years because employee should be responsible for their personal finances in general and for their retirement planning in particular (Halilovic, Zaimovic, Berilo, & Zaimovic, 2019). Retirees are confronted to many problems when they decide about the distribution of their investing lives. They must first of all design a structure of their portfolio in order to make sure that it will provide sufficient fund for their lifestyle needs during the retirement period (Burns, 2019).

### **1.1 Statement of the Problem**

Retirement planning has become a high priority for individuals. The aim of planning for retirement is to have a portfolio that can ensure the person does not run out of income during the retirement period (Sigler, 2006). This helps the retiree to not depend financially on the government or his family during the retirement and ensure that he lives in comfort during his retirement.

According to a report from Imf (2014), in the DRC pensions are managed exclusively by the Caisse Nationale de Sécurité Sociale (CNSS). The CNSS is a state owned organization which collects contributions from employees in order to provide them pensions when they retire. Social security contributions are only mandatory for wage workers but the pensions offered are very low. A Congolese retiree receives the lowest income during the retirement in Sub Saharan Africa for the same earnings and years of contributions. In the DRC the social security coverage rate is low and retirement benefits that can come from alternative retirement plans are considered to be important to improve life conditions of retirees (Luzolo, 2016).

Pension's schemes are inexistent in the country and only the CNSS has the right to collect retirement contributions. Operating expenses of CNSS absorb a big part of the social security contributions. CNSS is the organization supposed to offer social security to retirees in the DRC but unfortunately it is in precarious financial situations (IMF, 2014). In the DRC, in 2012, the coverage of social insurance programs was estimated to 3.86%. This indicator measures the percentage of the population subscribing in plans that provide old age contributory pensions and health insurance benefits (World Bank, 2019). There is a need to assess how employees are making personal plans for their retirement.

The population in the world is growing and new concerns on retirement management are rising. The world population projections prove that in 2050 there will be more than two times as many older persons as children under five (United Nations, 2019). In the DRC the retirement age for women and men is 65 (Issa, 2017). Underdeveloped countries have the highest rate of population growth at the same time they have poor policies and social security system. The present study is based on the DRC with approximately 84 million people, the fourth most populous country in Africa after Nigeria, Ethiopia and Egypt; a country that raises many concerns on funding retirement (World Bank, 2019). These facts demonstrate the need for personal retirement plans in the country.

The present study intended to respond the question: What is the effect of financial literacy on personal retirement planning among employees of the public sector in Bukavu city in the DRC?

### **1.2 Objectives of the Study**

This study intended to fulfill the following objectives:

#### **1.2.1 General Objective**

This study aimed to investigate whether financial literacy has an impact on personal retirement planning among public sector employees in the Democratic Republic of Congo.

#### **1.2.2 Specific Objectives:**

1. To determine the effect of financial knowledge on personal retirement planning among public sector employees in Bukavu city, Democratic Republic of Congo.
2. To examine the effect of computation capability on personal retirement planning among public sector employees in Bukavu city, Democratic Republic of Congo.
3. To determine the effect of financial education on personal retirement planning among public sector workers in Bukavu city, Democratic Republic of Congo.

4. To determine the effect of risk attitudes toward financial products on personal retirement planning among public sector employees in Bukavu city, Democratic Republic of the Congo

### **1.3 Research Hypotheses**

H<sub>01</sub>: Financial knowledge has no significant effect on personal retirement planning of public sector employees in Bukavu city, Democratic Republic of Congo.

H<sub>02</sub>: Computation capability of retirement benefits has no significant effect on personal retirement planning of public sector employees in Bukavu city, Democratic Republic of Congo.

H<sub>03</sub>: Financial education has no significant effect on personal retirement planning among public sector employees in Bukavu city, Democratic Republic of Congo.

H<sub>04</sub>: Risk attitudes toward financial products have no significant impact on personal retirement planning among public sector employees in Bukavu city, Democratic Republic of Congo.

## **II. Literature Review**

### **2.1. Theoretical Review**

This section presents the theories and studies that this research is based on namely, the Life Cycle theory, the Expected Utility Theory and the Theory of Planned Behavior.

#### **2.1.1. Life Cycle Theory**

Life-cycle theory is a result of the findings of Modigliani published in two research papers in the early 1950s with his graduate student, Richard Brumberg. In 1950s, Franco Modigliani and his student Richard Brumberg came out with a theory on the spending behavior. This theory states that individuals make informed decisions about the amount they want to use for their expenses at each stage of their life.

In the present study life cycle theory would apply as it shows how individuals allocate their income for different expenses depending on their age. This study would like to understand how employees allocate a part of their income to prepare for their retirement. The preretirement include individuals who are close to their retirement and it is important to understand how they plan for their retirement. Based on the life cycle theory during the age before the retirement period individuals should change their financial behavior related to savings and investments and this study want to test whether it is the case for retirement planning in the DRC.

#### **2.1.2 Expected Utility Theory**

The concept of probabilities was introduced in the 17th century by Pierre de Fermat, Blaise Pascal and Christian Huygens. This resulted to the formulation of first mathematical theory about deciding with risky alternatives (Thorsten, Marc & Oliver, 2010). Expected utility theory was introduced by John von Neumann and Oskar Morgenstern with the purpose to give a definition to rational behavior when individuals are taking decisions on for an uncertain future. This theory shows that individuals should act in a particular manner when they are faced with decision-making under uncertainty. In this point of view, the theory is "normative," which means that it shows how people should rationally behave. This is in opposition with a "positive" theory, which demonstrates how people actually behave (Lucy, Ackert & Richard 2010).

This theory applies to the current study as when individuals decide for their retirement they are faced with uncertainties on the exact period and the income of retirement. When individuals decide for their retirement planning they have to take into consideration expected future losses and profits. They always behave in such a way that the plan adopted for their retirement will deliver the outcomes it was designed for. The aim is to offer a comfortable income to retiree during their retirement. The plan needs to include strategies to reduce future losses and maximize future profits such as diversification and this involves financial knowledge, computation capability, financial education and risk attitudes toward financial products.

#### **2.1.3 The Theory of Planned Behavior**

The theory of planned behavior was introduced by Ajzen Icek in 1991, as a process to understand what determine the behavior intention and actual behavior towards a financial decision or product. This theory shows that attitudes, subjective norms or social influence and perceived behavioral control or perceived ease or difficulty are the foundation of intention to perform a given behavior. Those are the main reasons that determine a behavior towards a financial product or decision (Ajzen, 1991). The theory of planned behavior and financial literacy are proved to be positively correlated. Behavioral intention in financial literacy have a significant positive impact on the intention to adopt a financial product or a financial decision (Kennedy, 2013).

The theory of planned behavior relate to the present study because financial literacy is proved to have an effect on financial decision making and when individuals are deciding on financial plans to adopt during their retirement, they adopt a specific behavior that can be determined by their perceptions on retirement plans and risk attitudes toward retirement financial plans. In case they perceive retirement plans as important for their

future they will be more likely to adopt them and if they do not perceive retirement plans as a way to maintain their life conditions or to improve them during their retirement, they will not be planning.

## **2.2. Empirical Review**

This section presents different studies from authors who previously investigated the factors affecting retirement planning as well as the relationship between financial literacy and retirement planning including retirement investments.

### **2.2.1. Financial Knowledge and Personal Retirement Planning**

Agunga (2016), studies the effect of financial literacy on financial planning for retirement among permanent and pensionable workers in state owned corporations in Nairobi, Kenya. The purpose of the study was to determine how the knowledge of financial instruments affects financial preparedness for retirement. Using a descriptive and inferential statistics of means, standard deviations and multiple regression analysis, the author find out that financial knowledge have a significant impact on financial preparedness for retirement. However, this study was centered Kenya and included only financial knowledge and computation capability to measure financial literacy. In addressing the gap, the current study was centered on the DRC and adds financial education as a measure of financial literacy.

Bongini et al. (2019), study university students involvement in retirement planning. The aim of the study is to explore the factors predicting university student to have intentions to invest in a pension funds. The theory of planned behavior and ordinary least square step-wise multiple regression analysis are used. The results reveal that theory of planned behavior predictors, pension knowledge and money management influence positively the intention to invest in a pension fund. However this research includes only youth in the sample, the current study included individuals who are close to the retirement period in the DRC.

### **2.2.2 Computation Capability and Personal Retirement Planning**

Klapper et al. (2011), examine the link between financial literacy and retirement planning in Russia. Using a Probit model, the results revealed that only 36% of respondents who have computational capability plans for their retirement. These individuals could understand interest compounding, and inflation. Financial literacy was proved to have a significant effect on retirement planning and pension funds participation. However this study is centered on retirement planning and pension funds participation in Russia. In addressing this gap the current study focuses on an underdeveloped country, the DRC and includes three main constructs of financial literacy: financial education, financial knowledge and computation capability.

Lusardi et al. (2011), studied the effect of financial literacy on retirement preparedness in the United States. The authors used a multivariate model, an Ordinary least squares regression and find out that individuals with high score of financial literacy are the ones who plans for retirement. In a set of measures of financial literacy, a good level of computation capability of inflation and interests are find to have a positive impact on retirement planning. However this study is centered on the United States of America, the present study fills that gap in carrying out an investigation on DRC.

### **2.2.3 Financial Education and Personal Retirement Planning**

Folk, Beh, and Baranovich (2012), investigates the impact of financial education on retirement financial planning. The author used a sample of 404 individuals in the preretirement period and hierarchical regression analysis. The results from the study reveal that financial education have a significant impact on financial retirement planning. Individuals who attend financial education programs are found to adopt a planning behavior and are more interested in preparing a future financial wellbeing. However, the study was based on Malaysia. In addressing the research gap, the current study is based on the DRC.

In the United states of America, Mitchell (2009) investigates the impact of financial literacy on retirement preparedness. Using the American life panel measures of financial literacy, the results prove that financial knowledge acquired in schools before entering the labor market has a positive effect on planning for the retirement. It is therefore important to design education programs for youths as a way to equip them with the necessary financial knowledge that will impact positively their financial wellbeing later in their retirement. However this study is centered on the United States of America. The present study aimed at filling this gap in studying the case of an under developed country, the DRC.

### **2.2.4 Risk attitudes toward financial products and personal retirement planning**

Dummann (2008), investigates the relationship between retirement saving and attitudes toward financial intermediaries in Germany. Using a life-cycle hypothesis, the findings from the study show that attitudes toward financial intermediaries and products have a significant effect on retirement saving. Subscribing to life insurance products is influenced by household risk attitudes toward financial products. Individuals avoid

risky investments because they expect to lose a significant amount of money. A low level of risk aversion is positively associated with old age savings behavior. However this study is limited to retirement savings. The present study addresses in the present study in verifying how attitudes toward financial products affect retirement investment.

Meir et al. (2016), analyze the effect of financial literacy and retirement planning in Israel. An online survey was conducted on 501 Israelis randomly and multiple ordinary least square regressions were applied. Results show that individuals with low risk aversion toward retirement products are more likely to plan for their retirement. An individual's risk aversion attitude is proved determine financial decisions such as retirement saving options and retirement investment options. This study did not show the differences of risk attitudes depending on the age of individuals. The present research addresses that gap in investigating retirement plans in the preretirement period.

### III. Methods

#### 3.1 Sampling Design

This research is based on stratified sampling and purposive sampling. Stratified sampling method is used to divide the population into subpopulations called strata using additional information (Neuman, 2014). Since the public sector has many institutions, in the present study two strata are considered, the first is constituted by public institutions controlled by the national government and the second by those controlled by the provincial government. Purposive sampling also known as judgmental sampling is a method that uses the judgment of an expert in selecting cases with a specific objective in the mind (Neuman, 2014). In the present study respondents are selected with the purpose of selecting those who are close to their retirement and who are more likely to be concerned by personal retirement planning. Referring to Chakraborty and Bhat (2017), Slovin's formula is used to determine the sample size.

$$n = N/[1 + (N * E^2)]$$

Where

n= sample size

N= Population size

E=Margin of error, this study use 5%.

In this study, the sample size is given as follow:

$$n = \frac{48320}{[1 + (48320 * 0.05^2)]} = 396 \text{ public sector employees}$$

This sample size is divided using stratified Sampling. Referring to Appendix 4, the half of respondents (198 individuals) was selected from the public institutions controlled by the national government and the other half from those controlled by the provincial government. 198 respondents were selected from each group of institutions, thus the repartition of our sample was done as detailed in the table 3.1. This study adopts purposive sampling to select employees who were surveyed. Hence, based on the studies of Olli-Pekka (2018), Lusardi et al. (2011), and Ntalianis and Wise (2011) the age bracket between 50 and 65 years is considered because it represent the period whereby individuals are mostly interested with retirement planning.

#### 3.2 Empirical Model

Referring to Gutsche and Ziegler, (2019); Gerrans, Moulang, Feng, and Strydom (2018); Hassan et al., (2016), the measurement of financial investments and savings chosen is binary and the logistic regression is therefore suitable for this study. This helped to distinguish the dimensions of financial literacy that can be attributed or not to people who have invested or saved for their retirement.

A logistic regression model is a model where the predicted variable is categorical. It is therefore a probability model. In the theoretical logistic regression, the probability  $p$  given the values of the explanatory variables  $X$  is as follow:  $P(Y = 1/X) = f(X)$  (Fabozzi, Focardi, Rachev, & Arshanapalli, 2014).

Where Y= Dependent variable

X=Independent variables

In the present study, the logistic regression is formulated as follow:

$$\ln\left(\frac{P_i}{1 - P_i}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where:

Pi= the probability to purchase assets or constitute savings for retirement purposes

$\beta_0$ = Constant

$\beta_1$  to  $\beta_4$ =Coefficients

X1=Financial knowledge

X2=Computation capability

X3= Financial education  
 X4=Risk attitudes toward financial products  
 ε= Error term

### 3.5.1 Operationalization and Measurement of Variables

The table 3.2 describes the different variables selected for this study. The category of variables, the type of variables, their indicators as well as the type of measurement are described.

**Table 3.2: Operationalization and Measurement of Variables**

Variable	Type	Operationalization	Measurement
Retirement planning	Dependent variable	Purchase of assets or saving for retirement purposes.	The variable takes the value 1 if the person is investing or saving and 0 otherwise.
Financial literacy	Independent variable	Financial knowledge constructs	Likert scale 1 to 5
	Independent variable	Computation capability constructs	Likert scale 1 to 5
	Independent variable	Financial education constructs	Likert scale 1 to 5
	Independent variable	Risk attitudes toward financial products constructs	Likert scale 1 to 5

Source: Author, (2020)

### 3.3 Reliability Test

Referring to Neuman (2014), to test the reliability of our measurements, Cronbach’s alpha was used. It helped to estimate the internal consistency of the questionnaire that includes Likert scale questions. It helped to ensure all the variables included in the model are reliable. The Cronbach alpha coefficient cut off of 0.7 and above is recommended as a strong indicator of reliability (Taherdoost, 2017).

### 3.4 Validity Tests

Referring to Hu, Shao, and Palta (2006), before interpreting results from the logistic regression, the goodness of fit assessment has to be performed to validate the estimated model. Hosmer and Lemeshow chi-squared and Pseudo R square tests are well fitted to test the overall validity of a logistic regression. The Hosmer-Lemeshow test analyzes whether the observed proportions of events are the same with the predicted probabilities of occurrence in subgroups of the model population. The P-value for the Hosmer-Lemeshow test should be below 5% to validate the model. Pseudo-R2 statistics is used for assessing the predictive strength of the logistic Regression model in percentage (Ae, 2013). It is important to test the individual contribution of each independent variable in the overall model. Wald test is used to test the significance of individual regression coefficients. Variables with a p-value below 5% are considered as significant (Rodriguez, 2007).

### 3.5 Diagnostic Tests

Multicollinearity test was used to measure the level of correlation between research variables. Specifically Spearman’s correlation was used for its suitability for ordinal variables. Multicollinearity is a high intercorrelation between independent variables. It can alter the quality of a regression, therefore it has to be tested prior to regression analysis and remove highly correlated variables. In the present study a correlation matrix was used to measure the level of multicollinearity (Maddala, 2002). A correlation coefficient above 0.8 or -0.8 indicates the presence of high multicollinearity. In such a situation, the affected variables were removed in the regression analysis (Greene, 2008).

## IV. Research Findings

### 4.1 Descriptive Statistics

This section presents the descriptive results as well as the related discussions in line with the study objectives. The description is done using measures of central tendencies (Mean) and measures of dispersion (Standard deviation). The items were coded using a five-point Likert scale 1. Disagree to a very little extent 2. Disagree to a little extent 3. Agree to some extent 4. Agree to a great extent 5. Agree to a very great extent.

#### 4.1.1 Age of Respondents

**Table 4.1 Age of Respondents**

	Frequency	Percent	Cumulative Percent
50-60	218	60.4	60.4
61-65	143	39.6	100.0
Total	361	100.0	

Source: Research data (2020)

The results in Table 4.1 above show that the majority of our respondents in the preretirement period were aged between 50 and 60 years (77.5%). The preretirement period being the period where individuals are more likely to take financial decisions for retirement purposes, the sample of this study included only individuals who are aged between 50 and 65 years and who are employed by the public sector in the city of Bukavu in DRC. Quartey et al. (2016) pointed out that the level of financial literacy is higher for older men and they are stronger in computation.

#### 4.1.2 Gender of Respondents

**Table 4.2 Gender of Respondents**

	Frequency	Percent	Cumulative Percent
Female	58	16.1	16.1
Male	303	83.9	100.0
Total	361	100.0	

*Source: Research data (2020)*

The results in Table 4.2 above depicts that most of the study respondents were male (70%), Females represented 16.1% of respondents. This result shows that there is a predominance of males among public sector employees in Bukavu city in the DRC. The study of Dvorak & Hanley (2010) demonstrated that Females have the lowest level of financial literacy.

#### 4.1.3 Marital Status of Respondents

**Table 4.3 Marital Status of Respondents**

	Frequency	Percent	Cumulative Percent
Divorced	11	3.0	3.0
Married	326	90.3	93.4
Separated	12	3.3	96.7
Single	12	3.3	100.0
Total	361	100.0	

*Source: Research data 2020*

The results in Table 4.3 above shows that the majorities of our respondents were married (70%) and are more likely to have families. Divorced represent the lowest percentage of or respondents (3%). The study of Vivel-búa & Fernández-lópez (2019) showed that marital status is a driving force for retirement savings. Married individuals have a high probability of saving for retirement since they are living in a commitment relationship (Vivel-búa & Fernández-lópez, 2019).

#### 4.1.4 Education Level of Respondents

**Table 4.4 Education Level of Respondents**

	Frequency	Percent	Cumulative Percent
Bachelor	249	69.0	69.0
Cerificate	3	.8	69.8
High school	77	21.3	91.1
Masters	12	3.3	94.5
Never been to formal school	4	1.1	95.6
Phd	8	2.2	97.8
Primary school	8	2.2	100.0
Total	361	100.0	

*Source: Research data 2020*

The results in Table 4.4 above shows that most of the study respondents have a bachelor degree (69.0%) and 21% have a high school level. Dvorak & Hanley (2010), found out that financial literacy is low among low educated employees. The study of Atkinson (2008), demonstrated that there is a significant relationship between high levels of education and high level of financial literacy. Adami, Carosi, Sharma, and Adami, (2018), demonstrated that the low level of education is among the factors explaining the high level of poverty in retirement years.

#### 4.1.5 Income of Respondents

**Table 4.5 Monthly Salaries of Respondents**

	Frequency	Percent	Cumulative Percent
Below 360000	219	60.7	60.7
Between 1800001 and 3600000	8	2.2	62.9
Between 360000 and 900000	103	28.5	91.4
Between 900001 and 1800000	27	7.5	98.9
More than 3600000	4	1.1	100.0

Total	361	100.0
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Source: Research data (2020)

The result in Table 4.5 above shows that the majority of this study’s respondents have a salary comprised below 360000 Congolese Francs, and few have a salary above 3600000 Congolese Francs. Dvorak & Hanley (2010), showed that low income and low financial literacy are associated. However, (Atkinson, 2008.), demonstrated that it is possible to have a high level of financial literacy in any income group. He showed that the capacity for someone to acquire knowledge, to adopt attitudes towards his financial comfort or to adopt positive behaviors is not associated with his income. Income plays a key role in retirement planning, empirical evidence showed that higher income earners are more likely to make financial plans for their retirement (Vivelbúa & Fernández-lópez, 2019).

#### 4.1.6 Financial Knowledge Level of Respondents

Table 4.6 Financial Knowledge

	N	Disagree to a very little extent	Disagree to a little extent	Agree to some extent	Agree to a great extent	Agree to a very great extent	Total
Item1	361	11.1	18.3	27.4	22.4	20.8	100
Item2	361	7.8	21.6	24.1	28.0	18.5	100
Item3	361	12.2	19.4	23.5	25.2	19.7	100
Item4	361	10.0	19.4	24.1	21.3	25.2	100
Item5	361	10.0	18.6	23.5	24.7	23.2	100
fn	361	10.22	19.46	24.52	24.32	21.48	100
Valid N	361						

Source: Research data (2020)

The Table 4.6 above shows that the majority of public sector employees (24.52%) in Bukavu city, DRC have an average level of financial knowledge. The highest average of frequencies for all the items related to financial knowledge is on the third Likert scale (Agree to some extent). Financial knowledge is proved to be key in making retirement plans (Rooij et al., 2011). This should be increased by participating in financial education programs.

#### 4.1.7 Computation Capability Level of Respondents

Table 4.7 Computation Capability

	N	Disagree to a very little extent	Disagree to a little extent	Agree to some extent	Agree to a great extent	Agree to a very great extent	Total
Item6	361	19.9	30.5	15.0	13.9	20.7	100
Item7	361	26.6	35.7	11.6	8.6	17.5	100
Item8	361	22.2	31.6	18.0	11.9	16.3	100
Item9	361	24.4	35.7	13.9	12.7	13.3	100
Item10	361	29.9	31.3	15.0	8.6	15.2	100
cc	361	24.6	32.96	14.7	11.14	16.6	100
Valid N (listwise)	361						

Source: Research data (2020)

The results in table 4.7 above depicted that the majority of respondents (32.96%) disagreed to a little extent on questions related to computation capability, this shows that the level of computation capability of public sector employees in Bukavu city, DRC is low. Computation capability is proved to be an important factor for retirement planning (Lusardi & Mitchell, 2011). Therefore, there is a need to improve the computation capability of retirement benefits among public sector employees in Bukavu city, DRC.

#### 4.1.8 Financial Education Level of Respondents

Table 4.8 Financial Education

	N	Disagree to a very little extent	Disagree to a little extent	Agree to some extent	Agree to a great extent	Agree to a very great extent	Total
Item11	361	28.5	24.9	5.5	15.2	25.9	100
Item12	361	36.8	23.3	11.9	10.8	17.2	100
item13	361	27.1	18.8	10.8	13.0	30.3	100
fe	361	30.8	22.3	9.4	13.0	24.4	100
Valid N (listwise)	361						100

Source: Research data (2020)

The results in Table 4.8 above shows that most of respondents (30.8%) disagreed to a very little extent on questions related to financial education showing that the level of financial education of public sector employees is low among public sector employees in Bukavu city, DRC. There is a need to enhance financial education programs for the profit of all the citizens of DRC as it has been proved that financial education improve financial decision making among individuals (Meir et al., 2016).

#### 4.1.9 Risk Attitudes Toward Financial Products

**Table 4.9 Risk Attitudes Toward Financial Products**

	N	Disagree to a very little extent	Disagree to a little extent	Agree to some extent	Agree to a great extent	Agree to a very great extent	Total
Item14	361	23.0	19.9	26.9	13.0	17.2	100
Item15	361	31.9	23.8	20.8	7.5	16	100
Item16	361	20.8	23.0	19.4	18.6	18.2	100
Item17	361	13.3	15.2	24.9	12.2	34.4	100
atfp	361	22.25	20.47	23	12.82	21.45	100
Valid N (listwise)	361						

Source: Research data (2020)

The table 4.9 above depicts that the majority of respondents (22.25%) Disagreed to a very little extent on items related to risk attitudes toward financial products, therefore, the level of risk taking on financial products is low among public sector employees in Bukavu city, DRC. This situation should be improved by financial education programs in order to enable individuals to make sound financial decisions, for instance to make financial plans for retirement purposes as it has been proved that individuals with positive attitudes toward financial products are more likely to plan for their retirement (Meir et al., 2016) (Satria & Hutabarat, 2020).

#### 4.1.10 Retirement Planning

**Table 4.10 Retirement planning**

	Frequency	Percent	Valid Percent	Cumulative Percent
0	172	47.6	47.6	47.6
1	189	52.4	52.4	100.0
Total	361	100.0	100.0	

Source: Research data (2020)

The variable retirement planning takes 1 if the respondent has invested or saved for his retirement and 0 if not. The results in Table 4.10 above depicts that the majority of respondents (52.4%) has been investing or has been saving for retirement purposes. 47.6 % of public sector employees interviewed do not have financial plans for their retirement, this implies that there is still a large part of employees without financial plans for their retirement and this can result in financial problems during the retirement period.

#### 4.2 Reliability Test

**Table 4.13 Cronbach Alpha Test**

Variable	Number of Items	Cronbach's Alpha
Financial knowledge	5	0.815
Computation capability	5	0.853
Financial education	3	0.782
Risk attitudes toward financial products	4	0.712

Source: Research data (2020)

The present study used a questionnaire with Likert scale questions, thus Cronbach alpha was used for reliability test. The results in Table 4.11 above shows that all the study constructs have a Cronbach alpha above 0.7. Based on the threshold given by Taherdoost (2017), we concluded that all the constructs used in this study are reliable.

#### 4.3 Multicollinearity Test

**Table 4.14 Multicollinearity Test**

		Financial knowledge	Computation capability	Financial education	Risk attitudes toward financial products
Financial knowledge	Pearson Correlation	1	.290**	.336**	-.065
	Sig. (2-tailed)		.000	.000	.226
	N	361	357	339	346
Computation capability	Pearson Correlation	.290**	1	.417**	.010
	Sig. (2-tailed)	.000		.000	.849

	N	357	357	339	346
Financial education	Pearson Correlation	.336**	.417**	1	.133*
	Sig. (2-tailed)	.000	.000		.014
	N	339	339	339	339
Risk attitudes toward financial products	Pearson Correlation	-.065	.010	.133*	1
	Sig. (2-tailed)	.226	.849	.014	
	N	346	346	339	346
**. Correlation is significant at the 0.01 level (2-tailed).					
*. Correlation is significant at the 0.05 level (2-tailed).					

Source: Research data (2020)

The results from Table 4.12 above shows that the pairs of variables were significantly correlated. Computation capability and Financial knowledge were positively correlated; Financial education and Financial knowledge were positively correlated; Financial knowledge and Computation Capability were positively correlated; Risk attitudes toward financial products and financial education were positively correlated as well. All the significant coefficients of correlation in Table 4.12 above were below 0.8 or -0.8; referring to Greene (2008), this implies that there is no risk of multicollinearity in the regression analysis, therefore all the independent variables are retained for the regression analysis.

#### 4.4 Regression Analysis

Table 4.15 Predictive power of the model

-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
428.092 <sup>a</sup>	.111	.149

Source: Research data (2020)

The result in Table 4.13 above show that the Pseudo R square de Nagelkerke is 14.9%. This test is recommended by Ae (2013) to verify the predictive power of the estimated model. In the present study, the results implies that the estimated model have a predictive power of 14.9% of personal retirement planning decisions among public sector employees in Bukavu city in the DRC. This test shows the overall predictive power of the estimated model; however it is important to assess the individual contribution of independent variables in predicting the dependent variable. This assessment is presented in Table 4.13.

Table 4.16 Goodness of Fit Test: Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	47.093	8	.000

Source: Research data (2020)

The results in table 4.14 above present the result from the test of Hosmer and Lemeshow chi-squared. This test assess the goodness of fit of the estimated model ( Hu, Shao, and Palta, 2006). The results from this study showed that the Hosmer and Lemeshow chi-squared test is significant at the level of 5% with a P-value below 0.000. This implies that the observed proportions of events are the same with the predicted probabilities of occurrence in subgroups of the model population.

Table 4.17 Variables in the logistic regression equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Financial knowledge	.315	.127	6.193	1	.013	1.371
Computation capability	.422	.122	11.932	1	.001	1.525
Financial education	.171	.109	2.465	1	.116	1.186
Risk attitudes toward financial products	-.093	.124	.565	1	.452	.911
Constant	-2.084	.569	13.417	1	.000	.124

Source: Research data (2020)

The results in Table 4.15 above show the result from Wald test. Referring to Rodriguez (2007), Wald test was used to test the significance of individual regression coefficients. Variables with a p-value below 5% were considered as significant. In the present study, two variables out of four included in the model are significant; these are Financial knowledge and Computation capability. Their coefficient (B) are positive and have a P-value below the significance level of 5%. When the level of financial knowledge increases, the probability to have a personal financial plan for retirement increases as well. When the level of computation capability increases; the probability to make personal financial plans for retirement purposes increases as well. This implies that personal retirement planning among public sector employees in the city of Bukavu in DRC is explained by the level of financial literacy especially the level of financial knowledge and the computation capability of individuals.

The findings from the study proved that Financial knowledge has a significant effect on personal retirement planning of public sector employees in Bukavu city, DRC, thus the first hypothesis was rejected. This result is in line with the study of Agunga (2016), conducted in Kenya that showed that financial knowledge has a significant impact on financial preparedness for retirement. In a study conducted in Netherlands, Van Rooij et al. (2011) assessed the impact of financial knowledge on retirement preparedness. The study found a similar result with the present study, showing that individuals with high financial knowledge have a high probability to plan for retirement. The study of Arrondel (2013) conducted in France, showed that financial knowledge impact significantly retirement planning decisions.

The results from this study showed that Computation capability of retirement benefits has a significant effect on personal retirement planning of public sector employees in Bukavu city, DRC. This finding concurs with the study of Klapper et al. (2011) who examine the link between computation capability and retirement planning in Russia. The results revealed that respondents who have computational capability plan for their retirement. Sekita (2015), explored the impact of computation capability on retirement planning in Japan. The results showed that individuals who possess a good computation capability are more likely to have a saving plan for retirement. Lusardi et al. (2011), studied the effect of financial literacy on retirement preparedness in the United States. The study supported that a good level of computation capability has a positive impact on retirement planning.

The findings from this study revealed that Financial education has no significant effect on personal retirement planning among public sector employees in Bukavu city, DRC, thus the third hypothesis was accepted. This result is similar to the finding from the study of Folk, Beh, and Baranovich (2012), investigates the impact of financial education on retirement financial planning. Individuals who attended financial education programs were found to adopt a planning behavior. The finding from the study of Clark, Ambrosio and Mcdermed (2003), revealed that after attending a financial education event, individuals are more likely to change their retirement saving plans. In the United States of America, the study of Mitchell (2009) supported that that financial knowledge has a positive effect on planning for the retirement.

The results from this study showed that Attitudes toward financial products have no significant impact on personal retirement planning among public sector employees in Bukavu city, DRC; thus the fourth hypothesis was accepted. This result contradicts the study of Dummann (2008), in Germany that showed that attitudes toward financial intermediaries and products have a significant effect on retirement saving. Satria and Hutabarat (2020), in a study conducted in Indonesia showed that individuals with positive attitudes towards retirement products are more likely to make pension financial plans. Meir et al. (2016), in a study conducted in Israel showed that an individual's risk aversion attitude was proved to determine financial decisions such as retirement saving options and retirement investment options.

## **V. Conclusion**

The results from the study proved that financial knowledge contributes to increase the probability to invest for retirement purposes and to save for retirement purposes for public sector employees in Bukavu city, DRC. The more financially knowledgeable an individual is the higher the probability to make personal retirement plan is. This result was in line with several empirical studies reviewed. The finding from the present study showed that individuals with high level of computation capability have a high probability to be involved in personal retirement planning activities. This result was in line with several empirical studies reviewed that supported the impact of individuals' computation capability on personal retirement planning. The results from the study showed that financial education is a key element in personal retirement planning among public sector employees in Bukavu city, DRC. Attending financial education programs do not increase the probability to make personal financial plans for retirement. This result concurred with several empirical studies conducted in various countries around the world. The results from the study supported that positive risk attitudes toward financial products do not increase the probability to make personal retirement plans among public sector employees in Bukavu City, DRC. In opposition to what has been proved by the empirical studies reviewed, in Bukavu city; individuals with positive attitudes toward financial products are not more likely to make personal financial plans for retirement purposes.

The government of DRC should set up awareness programs on personal retirement planning and encourage initiatives that aim at increasing personal retirement plans. Given the low level of financial literacy identified among respondents, there is a need to take actions that can increase the level of financial literacy among the Congolese population in general and public sector employees in particular. Investors should take this opportunity to create products that are likely to attract the group of employees in the preretirement period who are potential investors. Given the low retirement benefits received from the CNSS, public sector employees are advised to make personal retirement plans to cope with financial needs in their retirement period. Public sector employers and employees syndicates are advised to educate employees on the importance of personal retirement planning.

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