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CORRELATION BETWEEN FINANCIAL LITERACY VARIABLES AND HOUSEHOLD SAVINGS BEHAVIOUR IN TWO SELECTED MUNICIPALITIES IN SOUTH AFRICA

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Abstract
This study was conducted to ascertain financial literacy variables that have a statistically significant impact on household savings behaviour. Thus, to achieve this objective, financial literacy micro-variables were used to obtain quantitative data from the employees of the City of Tshwane and Mahikeng Municipality in South Africa. Correlation statistical analysis and factor analysis were performed to identify financial literacy micro-variables that have a significant impact on household savings behaviour as well as a confirmatory factor analysis through structural equation modelling. Hence, the findings of this study reveal that financial literacy variables under the domain of financial control, planning and knowledge have a positive correlation with determinant variables of South African household savings behaviour and recommend that stakeholders in charge of financial literacy and savings campaigns in South Africa should adopt the study's contribution which identifies financial and savings literacy as core variables that can improve savings behaviour of South African households.

Keywords: *Financial literacy variables, Household savings behaviour, Structural Equation Model, South Africa*

JEL Classification: G530; D14; G510

1 Introduction

The significance of financial literacy in the lives of people has drawn the attention of several stakeholders from distinct areas of the globe in the search to provide households with the financial knowledge they need to handle their financial well-being. The challenge of short of disposable funds days after payday by most workers in South Africa has become a phenomenon that requires investigation in a critical way to ascertain the true causes. Past surveys have recognised a steady decrease in the savings rate among South African households, providing space for future imbalances in individual financial well-being (Cole et al., 2017; Precious & Asrat, 2014; Mahlo, 2011). Also, most analysts have categorised the South African economy as a consumption economy where most individuals consume a significant proportion of their incomes on immediate consumer products, causing a gap in their future financial well-being (Allais, 2017; Cole et al., 2017; Singh, 2015; Precious & Asrat, 2014).

The introduction of a credit system in South Africa where individuals are granted the privilege to spend above their disposable funds on products and services has added

significantly to the existing condition in the country, where individuals save less and live extremely on debt caused by credit purchases (Singh, 2015; Fatoki, 2014), hence the need for this study to identify and ascertain the variables of financial literacy that have a beneficial effect on the South African household's savings behaviour. This would go a positive way towards removing the fog around the low savings rate and defining what could be done logically to improve the savings behaviour of South African households as suggested by previous scholars. In essence, financial literacy has been ascertained to have a positive correlation with household savings behaviour as it boosts the rate of individual savings, thus contributing strongly to significant economic growth sustainability (Cole et al., 2017; Beckmann, 2013).

Problem Statement

Several emphases exist on the positive relationship between financial literacy and household savings behaviour by previous scholars. The studies conducted by Petrie et al. (2018), Lusardi et al. (2017), and Atkinson and Messy (2012) reveal that financial literacy variables have a positive impact on household savings behaviour. However, many of the preceding studies concentrated on the significance of financial literacy among households in financial performance, with less attention on establishing an empirical correlation between financial literacy variables and household savings behaviour. Thus, the objective of this study was to statistically ascertain the variables of financial literacy that have an impact on the South African household's savings behaviour by ascertaining the statistical correlation between financial literacy variables and the variables that measure savings behaviour of South African households. The relevant variables were, therefore, recommended to policy-makers and stakeholders to incorporate them into practical financial and savings literacy programmes in South Africa.

2 Literature Review

There are many differences among individuals in terms of what defines their savings rate in comparison to someone of comparatively lifetime income. Researchers also note that such differences cannot be readily explained by incidents or asset distribution decisions (Bernheim et al., 2000; Venti & Wise, 2000). However, the ability to save is believed to be a much more important determinant of these variations in the rate of individual savings (Ge et al., 2018; Cronqvist & Siegel, 2015). Consequently, the basic question emerges as to what area of financial knowledge households need to improve their saving habits.

Several factors of household savings behaviour exist, like wages, demographic variables and government policies among others (Precious & Asrat, 2014; Mongale et al., 2013; Van Rooij et al., 2012; Mahlo, 2011). Nevertheless, this research focuses on the identification of variables of financial literacy and the estimation of their degree of relationship with the individual savings behaviour, which suggests the individual savings rate. Financial literacy, among other variables, has been described as a primary determinant of household savings habits (Petrie et al., 2018; Refera et al., 2016; Lusardi & Mitchell, 2014; Roberts et al., 2014; Struwig & Plaatjes, 2013; Atkinson & Messy, 2012). Because of this, it should be agreed that, for policy-makers to tackle the challenge of low savings in South Africa, a study needs to be conducted to recognise and balance financial literacy variables with household savings literacy to supplement other determinants of savings motivators to increase household savings in South Africa. Thus, Refera et al. (2016) identify the significance of financial literacy as "not just convenience, but an essential survival tool because lack of financial knowledge leads to poor financial choice and decisions, which could result in undesired financial and economic consequences to the individual, financial system and entire

economy". To this end, it becomes inevitable to save without being equipped with various variables that inform savings.

Owing to recent developments in the global economy where credit facilities are made accessible by pressing a button, most South Africans are stuck in the system by spending their own money on consumption rather than savings (Refera et al., 2016; Mongale et al., 2013; Darley, 2011). This is contradictory to the old-fashioned conventional microeconomic approach to saving and spending decisions suggested by Friedman (1957) and by Modigliani and Brumberg (1954), which defines that every level-headed person should consume not as much as his pay amid high earnings and save to support use when salaries fall. This would render the individual less reliant on others or the government in the retirement period.

The principle of financial literacy thus strengthens the financial characteristics of households (awareness, expertise, abilities, behaviours and attitudes) that are needed to make effective financial choices to achieve future household financial goals (Petrie et al., 2018; Lusardi et al., 2017; Klapper et al., 2015). Indeed, the lack of sufficient financial awareness among citizens also leads them to spend their earnings on less-priority goods that do not help their families, thereby rendering their living expenses higher than their earnings and contributing to further household debts (Refera et al., 2016; Lusardi & Mitchell, 2014; Symanowitz, 2006). The debt situation does not provide room for savings, but instead results in a potential financial deficit for the household.

Nevertheless, the degree to which households can make sound choices about savings and investment accounts relies strongly upon their standard of financial literacy (Boisclair et al., 2017; Clark et al., 2017; Lusardi, 2008). There is also a growing need for financial awareness for individuals to make use of various facilities like Automated Teller Machines (ATMs) for payments, manage risks, credits, loans, savings and investments for old age (Refera et al., 2016; Lusardi & Mitchell, 2014; Demirguc-Kunt & Klapper, 2013). Recently, financial literacy has heightened national concern about increasing consciousness among well-equipped households with the right skills to match the dynamics with emerging markets in recent years (Petrie et al., 2018; Clark et al., 2017; Struwig & Plaatjes, 2013). Klapper et al. (2015) and Jonubi and Abad (2013) emphasise the need for governments to encourage financial literacy education across households through the introduction of key financial education programmes as this would further enhance the knowledge of individuals to save.

3 Research Method

A quantitative method was adopted in the study as it enhances better analysis and understanding of numeric data. A post-positivism philosophical and deductive approach, which mostly informs a quantitative research, underpins this study. Accordingly, a survey method was carried out in the study through a self-administered questionnaire. Thus, a sample size of #627 was drawn from the employees of Tshwane City and Mafikeng Municipality, using the sample size determination formula by Krejcie and Morgan (1970) from the targeted population consisting of 29,574 employees of the City of Tshwane and 695 employees for Mahikeng Municipality. Thus, a descriptive and inferential analytical method was used to analyse the quantitative data collected from the participants.

Model for Measurement of Variables

A concept that can be valued quantitatively is referred to as a variable (Shor, 2017; Terceño et al., 2017). As such, the main objective of this study was to identify financial literacy variables and to ascertain their statistical significant association with household savings behaviour. The measurement used in this study was adapted from established scales and the works of scholars in the area of financial literacy and personal savings behaviour.

Dependent Variable: Household Savings Behaviour

e dependent variable consisted of the determinants of household savings behaviour and was measured to ascertain the possible association with the independent variables. Thus, the respondents were asked questions concerning variables that determine household savings behaviour to ascertain if they correlate with the independent variables.

Independent Variables: Financial Literacy

The independent variables consisted of four core financial literacy domains as detailed below:

a. **Financial control:** This includes the financial control which individuals exercise such as household budgeting, money management and how they keep records of their spending;
b. **Financial planning:** This variable focuses on information on how respondents plan for their future financial well-being such as personal debt management, personal credit management and savings knowledge. It also includes financial provision for retirement and provision for unexpected expenses;
c. **Financial product choice:** The researcher used this variable to solicit responses from respondents concerning their ability to choose appropriate financial products such as savings and investment products and
d. **Financial knowledge and understanding:** This variable solicited information on the extent to which individuals are up-to-date with financial matters, and their level of understanding concerning key financial concepts such as risk diversification, inflation and interest rate.

The goal of this multi-dimensional analysis was, therefore, to shed light not only on individual knowledge and comprehension of financial principles and securities, but also on the degree of effect of financial literacy on individual savings conduct among South Africans. Accordingly, a proposed model was used in this study as a guide towards ascertaining the statistical relationship between variables. Thus, the proposed model, as specified in Figure 1, served as a guide towards ascertaining the statistical relationship between financial literacy and household savings behaviour.

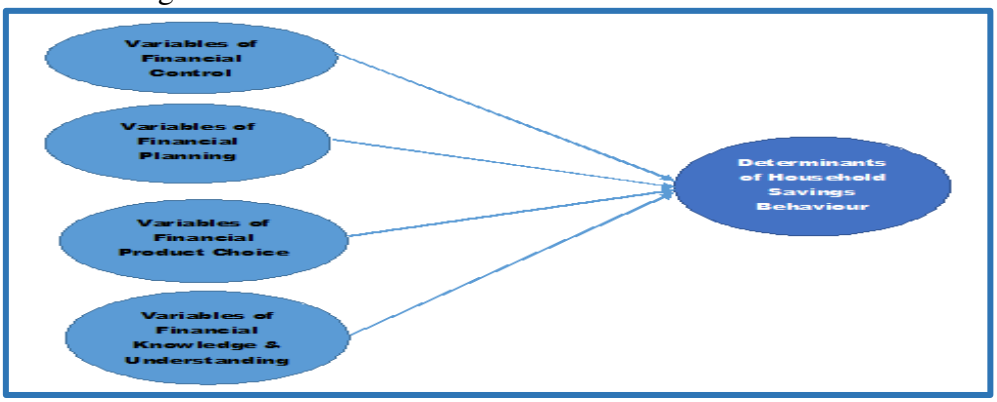

Figure 1: Model of relationship between financial literacy variables and variables of household savings behaviour

Figure 1 provides a comprehensive guide to measure the statistical relationship between the variables of the four core domains of financial literacy (financial control, financial planning, financial product choice and financial knowledge and understanding), which form the independent variables and variables that measure household savings behaviour (determinants of household savings behaviour), which also form the dependent variable. Thus, in line with the deductive approach adopted in this study, it was expected that the model above would be used to ascertain the statistical impact of financial literacy variables on household savings

behaviour as well as establishing the statistically significant relationship between these variables.

4 Data Analysis and Interpretation

Data analysis is the process of bringing together and giving meaning to the mass of data collected. It involves an ambiguous, time-consuming, creative and fascinating process to give meaning to the data collected (De Vos et al., 2005). Engaging in empirical research as proposed by Nishina et al. (2018) embodies detailed descriptive and inferential analysis and interpretations of responses from participants. Thus, the purpose of data analysis is to understand the various constitutive elements of data through investigating the relationship between concepts and variables to ascertain if there are any patterns or trends among the variables that can be identified or isolated or to establish themes in the data (Nishina et al., 2018; Shields et al., 2018). Accordingly, when the results of the analysis are taken, inference and conclusions on the meaning and implications of the findings are made (Andereck, 2017; Cranmer et al., 2017).

Accordingly, data interpretation demands that the researcher must give meaning to data and explain the relationship between the findings and theory in a manner that supports or disputes the researcher's expectations. Indeed, this study made use of Statistical Package for the Social Sciences and Microsoft Excel application software to achieve effective analysis and presentations. Most importantly, correlation analysis was used to ascertain the relationship between variables related to the overall objectives of the study. However, from the quantitative sample size of 379 respondents from the City of Tshwane, 252 copies of the questionnaire were duly completed and returned, while 176 were completed and returned by the employees of Mahikeng Municipality from a sample of 248. Thus, a total of 428 duly collected copies were returned. For the benefit of this study, the demographic section of the questionnaire was coded with A construct, while the independent variables: financial control, financial planning, financial products and financial knowledge were coded B, C, D and E constructs respectively. Perhaps, the variable that measures household savings behaviour was coded with F construct.

Correlation Analysis

Correlation analysis was applied in this study to measure the coefficient and display the strength, weakness or linear relationship between variables. Accordingly, the correlation coefficient is a statistical measure of the degree to which changes to the value of one variable predict change to the value of another (Zebende & Da Silva, Filho, 2018; Şahin & Liu, 2017). In other words, it helps to measure the direction and strength of a linear relationship between variables. As such, Table 1 illustrates the pre-selection of variables to fit in the SEM.

Table 1: Pre-selection of variables for the Structural Equation Model (SEM)

	F1	F2	F3	F4	F5	F6
B3			**.179****			
B6	**.136****					
B7		**.147****				
B8			**.108***			
C2		**.123***		**.163****		
C4		**.107***	**.139****		**-.115***	
C5			**.100***			
C8		**.140****				
C9		**.103***	**.181****			
D1		**-.100***				
D3	**-.116***					
D5			**-.129****	**-.114***		
D7			**-.134****			
E2		**.114***	**.122***		**-.103***	
E3	**.109***					
E4					**.170****	
E5				**.112***		**-.099***
E6	**.102***	**.097***	**.150****			
E7				**.099***		
E8				**.122***		

As indicated in Table 1, some of the items that measure the personal knowledge of financial control (B3, B6, B7 and B8), personal knowledge of financial planning (C2, C4, C5, C8 and C9), knowledge to choose financial products (D1, D3, D5 and D7), and financial knowledge and understanding (E2, E3, E4, E5, E6, E7 and E8) have significant correlations with the items that measure household savings behaviour (F1, F2, F3, F4, F5 and F6). As such, when the correlation is positive, the value indicates a relationship between two variables such that as the value of one of the variables increases, the value of the other also increases. Thus, when correlation has a negative value, it indicates that, when the value of one of the variables increases, the value of the other one decreases (Usuda et al., 2018; Sudha et al., 2017). Thus, these independent variables were included in the initial model to determine the validity of their relationship with items measuring household savings behaviour.

Structural Equation Modelling

Structural Equation Modelling (SEM) involves using models to describe the relationship between observed variables considered by the researcher to provide a quantitative test of a theoretical model (Ullman & Bentler, 2012; Crowley & Fan, 1997). More importantly, various theoretical models can be tested using SEM, which has been hypothesised by the researcher on a set of predictors under their constructs and how the constructs correlate with each other and the dependent variable (Henseler et al., 2015; Savalei & Bentler, 2006). Presently, SEM has been recognised as one of the techniques used by different researchers across disciplines (Howard et al., 2018). However, challenges exist on how to ascertain the best model fit concerning how much the model represents the sample data used in the study (Howard et al., 2018; Henseler et al., 2015). The main aim of SEM analysis is to ascertain the extent to which the theoretical model is supported by the sample data (Asparouhov et al., 2015; Crowley & Fan, 1997). Accordingly, if the theoretical model is supported by the sample data, then more theoretical models can be hypothesised. Otherwise, if the model is not

supported by the sample data, the model will have to be modified and tested or a new model should be developed (Kenny et al., 2015; Perry et al., 2015).

SEM can be used to test different theoretical models such as regression, path and confirmatory factor models. However, for this study, SEM was employed to help provide an understanding of the relationship among the variables used in the study. In essence, the variables used in this study are classified into independent and dependent variables. The independent variables are those that measure financial literacy and are not influenced by any other variables in the analysis, while the dependent variable is the variable that measures household savings behaviour and is influenced by the independent variables. Hence, this study adheres to the SEM statistical method that takes a confirmatory approach to analysing the structural model that best describes the equation of relationships within the variables in the study. Thus, correlation analysis was used as a defined yardstick in the study to measure the relationship among variables and is explained below.

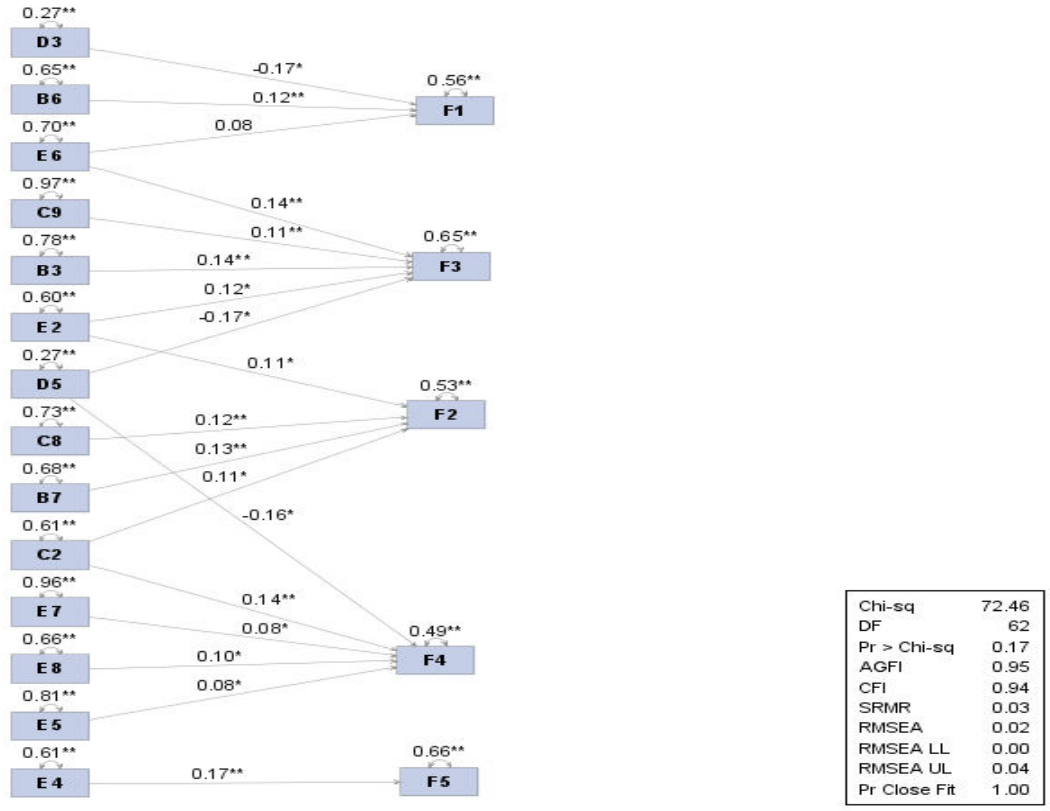

Figure 2: Path Diagram

The path diagram in Figure 2 presents the SEM, which typically conveys two important aspects of this study. Firstly, the use of series structure to present causal processes under investigation and, secondly, the presentation of the relationship in a structure which has provided a clearer conceptualisation of the solution to the problem under investigation. However, as earlier mentioned, two groups of variables (independent and dependent) were used in the modelling process. The independent variables were formed under financial literacy and further grouped into B, C, D and E construct variables, while the dependent variables were formed under determinants of household savings behaviour and grouped under F construct variable. Thus, the confirmatory factor analysis employed, helped in achieving the objectives of the study by ascertaining individual predictors that had a significant impact on the dependent variable (determinants of household savings behaviour). Thus, the correlation coefficients in Figure 2, which are discussed in the subsequent section of this study, were interpreted based on the guidelines described by Weinberg and Abramowitz

(2016) which based its interpretation on when $0.0 \leq r < 0.3$ indicates a weak correlation, $0.3 \leq r < 0.5$ indicates a moderate correlation and $0.5 \leq r \leq 1$ indicates a strong correlation.

According to Weinberg and Abramowitz (2016), and taking into consideration the context of this study, a negative correlation implies that the more the responses tend to the agreement side (agree to completely agree) with the independent variable, the more they tend to the disagreement side (disagree or completely disagree) with the dependent variable. In essence, Figure 2 shows that the lesser the number of investment or savings products that one has and heard of (D3), the more they are likely to increase their monthly savings if their monthly income is increased (F1). Thus, the lesser the number of insurance products that one makes use of (D5), the more one is likely to increase his or monthly savings if tax on savings is favourable (F3). Again, the lesser the number of insurance products that one makes use of (D5), the more one is likely to increase one's monthly savings if there are fewer uncertainties on savings and investment (F4).

On the contrary, according to Weinberg and Abramowitz (2016), and taking into consideration the context of this study, a positive correlation implies that the more the responses tend to the agreement side (agree to completely disagree) with the independent variable, the more they tend to the agreement side (agree or completely agree) with the dependent variable. Thus, Figure 2 shows that the more one believes that the ability to set long-term financial goals and working hard to achieve them helps one to meet future financial needs (B6), the more they are likely to increase their monthly savings if their monthly income is increased (F1). The more one believes that diversifying investments among different assets decreases the risk of losing money (E6), the more they are likely to increase their monthly savings if their monthly income is increased (F1). Again, the more one believes that diversifying investments among different assets decreases the risk of losing money (E6), the more they are likely to increase their monthly savings if tax on savings is favourable (F3).

Accordingly, Figure 2 also shows that the more one believes that knowledge about refusing to sell personal property can help one to cover for future household needs (C9), the more they are likely to increase their monthly savings if tax on savings is favourable (F3). In the same vein, the more one accepts that careful consideration whether one can afford something or not before one buys (B3), the more they are likely to increase their monthly savings if tax on savings is favourable (F3). Again, the more knowledgeable people are on investment during inflation (E2), the more they are likely to increase their monthly savings if the real interest rate on savings increases (F2) and when the tax on savings is favourable (F3). Thus, the more one believes that the knowledge of cutting down on spending can help meet future financial needs (C8), the more one is likely to increase one's monthly savings if the real interest rate on savings increases (F2).

Furthermore, within the same context of positive correlation, the more one believes that the knowledge of paying bills on time could save one from extra cost (B7), the more one is likely to increase monthly savings if the real interest rate on savings increases (F2). Accordingly, the more one accepts that the knowledge of saving money for a long term can help one cover for future household consumption (C2), the more one is likely to increase monthly savings if the real interest rate on savings increases (F2). Also, the more one believes that knowledge of saving money for a long term can help one cover for future household consumption (C2), the more one is likely to increase monthly savings if there are fewer uncertainties on savings and investment (F4). Again, the more knowledge one has on computing interest rate on savings (E7), the more one is likely to increase monthly savings if there is less uncertainty on savings and investment (F4).

Accordingly, the more one believes that investing in real estate can give a high rate of return in the long run (E8), the more one is likely to increase monthly savings if there is less uncertainty on savings and investment (F4). Besides, the more one believes that comparing

the available credit option when buying on instalments can enhance future household financial well-being (E5), the more one is likely to increase monthly savings if there is less uncertainty on savings and investment (F4). Finally, the more knowledge people have on investing in a mutual fund with a guaranteed interest rate per month (E4), the more they are likely to increase their monthly savings if they spend less money on immediate consumption to provide for savings against the future (F5).

5 Result Presentation

The research objective of this study sought to ascertain the financial literacy variables that have a statistical impact on household savings behaviour and establish a statistically significant relationship between financial literacy and savings behaviour of households in South Africa. The findings from previous studies reveal that financial literacy (independent variable) plays a positive role in enhancing household savings behaviour (dependent variable). However, it is ascertained in this study that some independent variables do not have any statistical relationship with the dependent variable. Thus, the independent variables (financial literacy) that had a statistically significant relationship with the dependent variable (household savings behaviour) have been identified in this study. Indeed, standardised result from the Path list clearly outlines the significant path coefficients (p-value < 0.05) with the dependent variable.

Thus, confirmatory factor analysis was employed to verify and confirm factors that were found to be significant with household savings behaviour. These variables were included in the SEM. Thus, the SEM reveals the statistical significant relationship where the variables under financial literacy positively correlated with those that measure household savings behaviour. Although the variables under the domain of financial products choice were found to have a negative statistical relationship with those that measure household savings behaviour, the logical interpretation of the negative relationship between financial product choice and household savings behaviour is an indication that the more individuals know about financial products and make use of them, the lesser they are likely to save. In essence, these financial products include but not limited to credit and loan products, savings and investment, banking and insurance products. Thus, Figure 3 presents a summary of the nature of the statistical relationship between financial literacy variables and the variables that measure household savings behaviour (household savings determinant).

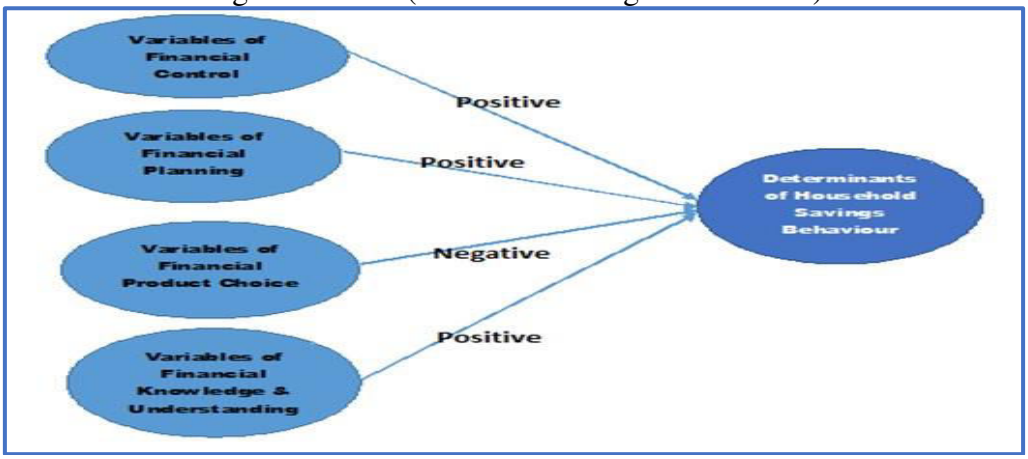

Figure 3: Nature of statistical relationship between financial literacy variables and variables of household savings behaviour

Accordingly, the statistical results of this study have succeeded in revealing empirically the logic regarding the impact of financial literacy on household savings behaviour. However, in testing the proposed model, the standard model fit indices (AGFI, CFI, SRMR and RMSEA) confirmed that the model fits the data well since all the mentioned indices fell within the

standard threshold. Hence, the results of this study empirically establish that financial literacy variables have more of a positive statistical significant impact on South African household savings behaviour.

6 Key Policy Implications

Policy implications help in outlining issues that will aid policy-makers to make informed decisions. As such, stakeholders involved in financial and savings literacy in South Africa should consider the following recommendations:

a. Financial literacy should be encouraged more in the working environment and in schools to equip people with the right financial knowledge for them to make informed financial decisions.
b. The results reveal that financial literacy variables influence household savings behaviour. As such, the identified variables in this study should be incorporated into savings campaign programmes and initiatives in South Africa.
c. Household savings contribute greatly to economic growth. Therefore, stakeholders should put more efforts into encouraging households to save.
d. The results of this study provide a structural equation model that confirms the patterns and the statistically significant relationship between financial literacy variables and household savings behaviour. Thus, this has provided guidelines for practical financial literacy education for concerned stakeholders in South Africa.

7 Conclusion and Recommendations

This study aimed to ascertain the relationship between financial literacy and household savings behaviour, using the City of Tshwane and Mahikeng Municipality in South Africa. The emphasis was on identifying financial literacy micro-variables that have a statistically significant impact on household savings behaviour. Thus, studies on the relationships between financial literacy and household savings behaviour by previous scholars were reviewed and evaluated, and financial literacy was identified as a core determinant of household savings behaviour. Accordingly, the variables of financial literacy were identified and used as independent variables to test their statistical impact on household savings behaviour. Financial literacy variables that were statistically identified to have a positive significant impact on household savings behaviour in this study were variables under the construct of financial control, financial planning, financial knowledge and understanding. On the contrary, the variable under the construct of knowledge of financial products and services was found to have negative correlation with the variables that measure South African household savings behaviour, meaning that the more knowledge South Africans have about financial products and services, the less they save. Hence, the variables that have a positive significant impact on the household savings behaviour are recommended to policy-makers and stakeholders to be incorporated into financial and savings literacy programmes in South Africa to improve the household savings behaviour.

References

Allais, S. (2017). Towards measuring the economic value of higher education: Lessons from South Africa. *Comparative Education, 53*(1), 147-163.

Andereck, K. L. (2017). *Inferential analysis of data. Research methods for leisure, recreation and tourism* (Ed. 2), 269-283.

Asparouhov, T., Muthén, B., & Morin, A. J. (2015). *Bayesian structural equation modelling with cross-loadings and residual covariances: Comments on Stromeyer et al.*

Atkinson, A., & Messy, F. (2012). *Measuring financial Literacy: Results of the OECD/International Network on Financial Education (INFE) Pilot Study*. OECD

Working Papers on Finance, Insurance and Private Pensions, No. 15, OECD Publishing.

Beckmann, E. (2013). Financial literacy and household savings in Romania. *Numeracy, 6*(2), 9.

Bernheim, B. D., Forni, L., Gokhale, J., & Kotlikoff, L. J. (2000). How much should Americans be saving for retirement? *American Economic Review 90*(2), 288–292.

Boisclair, D., Lusardi, A., & Michaud, P. C. (2017). Financial literacy and retirement planning in Canada. *Journal of Pension Economics & Finance, 16*(3), 277-296.

Clark, R., Lusardi, A., & Mitchell, O. S. (2017). Employee financial literacy and retirement plan behaviour: A case study. *Economic Inquiry, 55*(1), 248-259.

Cole, S., Iverson, B., & Tufano, P. (2017). *Can gambling increase savings? Empirical evidence on prize-linked savings accounts*.

Cranmer, S. J., Leifeld, P., McClurg, S. D., & Rolfe, M. (2017). Navigating the range of statistical tools for inferential network analysis. *American Journal of Political Science, 61*(1), 237-251.

Cronqvist, H., & Siegel, S. (2015). The origins of savings behaviour. *Journal of Political Economy, 123*(1), 123-169.

Crowley, S. L., & Fan, X. (1997). Structural equation modelling: Basic concepts and applications in personality assessment research. *Journal of Personality Assessment, 68*(3), 508-31.

Darley, W. (2011). *Measures to improve household savings in South Africa* (Doctoral dissertation, University of KwaZulu-Natal).

De Vos, A. S., Strydom, H., Fouché, C. B., & Delport, C. S. L. (2005). *Research at grassroots for the social sciences and human service professions*. Pretoria*:* Van Schaik.

Demirgüç-Kunt, A., & Klapper, L. 2013. Measuring financial inclusion: Explaining variation in the use of financial services across and within countries. *Brookings Papers on Economic Activity, 1*, 279-340.

Fatoki, O. (2014). The financial literacy of micro-entrepreneurs in South Africa. *Journal of Social Sciences, 40*(2), 151-158.

Friedman, M. (1957). *A theory of the consumption function*. Princeton, N.J. Princeton University Press.

Ge, S., Yang, D. T., & Zhang, J. (2018). Population policies, demographic structural changes, and the Chinese household saving puzzle. *European Economic Review, 101*, 181-209.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modelling. *Journal of the academy of marketing science, 43*(1), 115-135.

Howard, J. L., Gagné, M., Morin, A. J., & Forest, J. (2018). Using bifactor exploratory structural equation modelling to test for a continuum structure of motivation. *Journal of Management, 44*(7), 2638-2664.

Jonubi, A., & Abad, S. (2013). The impact of financial literacy on individual saving: An exploratory study in the Malaysian context. *Transformations in Business & Economics, 12*(1), 28.

Kenny, D. A., Kaniskan, B., & McCoach, D. B. (2015). The performance of RMSEA in models with small degrees of freedom. *Sociological Methods & Research, 44*(3), 486-507.

Klapper, L., Lusardi, A., & Van Oudheusden, P. (2015*). Financial literacy around the world. Standard & Poor's Ratings Services Global Financial Literacy Survey*. http://media. mhfi. com/documents/2015-Finlit_paper_17_F3_SINGLES. pdf.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement, 30*(3), 607-610.

Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature, 52*(1), 5-44.

Lusardi, A. (2008). *Household saving behaviour: The role of financial literacy, information, and financial education programs: National Bureau of Economic Research*. Working Paper No. 13824

Lusardi, A., Michaud, P. C., & Mitchell, O. S. (2017). Optimal financial knowledge and wealth inequality. *Journal of Political Economy, 125*(2), 431-477.

Mahlo, N. (2011). *Determinants of household savings in South Africa*. (Doctoral dissertation, University of Johannesburg).

Modigliani, F., & Brumberg, R. (1954). *Utility analysis and the consumption function: An interpretation of cross-section data*. Franco Modigliani, 1.

Mongale, I. P., Mukuddem-Petersen, J., Petersen, M. A., & Meniago, C. (2013). Household savings in South Africa: An econometric analysis. *Mediterranean Journal of Social Sciences, 4*(13), 519-530.

Nishina, K., Kawamura, H., Okamoto, K., & Takahashi, T. (2018). Monitoring and diagnosis of causal relationships among variables. *Frontiers in Statistical Quality Control, 12*, 175-184. Springer, Cham.

Perry, J. L., Nicholls, A. R., Clough, P. J., & Crust, L. (2015). Assessing model fit: Caveats and recommendations for confirmatory factor analysis and exploratory structural equation modelling. *Measurement in Physical Education and Exercise Science, 19*(1), 12-21.

Petrie, J., Jones, R., & Murrell, A. (2018, March). Measuring impact while making a difference: A financial literacy service learning project as participatory action research. In *Developments in Business Simulation and Experiential Learning: Proceedings of the Annual ABSEL Conference* (Vol. 45).

Precious, C., & Asrat, T. (2014). Determinants of household savings in South Africa: An econometric approach (1990-2011). *Mediterranean Journal of Social Sciences, 5*(15), 183-190.

Refera, M. K., Dhaliwal, N. K., & Kaur, J. (2016). Financial literacy for developing countries in Africa: A review of concept, significance and research opportunities. *Journal of African Studies and Development, 8*(1), 1-12.

Roberts, B., Struwig, J., & Gordon, S. (2014). *Financial literacy in South Africa: Results from the 2013 South African Social Attitudes Survey round*. A report prepared by the Human Sciences Research Council on behalf of the Financial Services Board. Pretoria: Financial Services Board.

Şahin, R., & Liu, P. (2017). Correlation coefficient of single-valued neutrosophic hesitant fuzzy sets and its applications in decision-making. *Neural Computing and Applications, 28*(6), 1387-1395.

Savalei, V., & Bentler, P. M. (2006). Structural equation modelling. The handbook of marketing research: Uses, misuses, and future advances, 330-364.

Shields, D. L., Funk, C. D. & Bredemeier, B. L. (2018). Relationships among moral and contesting variables and prosocial and antisocial behaviour in sport. *Journal of Moral Education, 47*(1), 17-33.

Shor, R. E. (2017). A phenomenological method for the measurement of variables important to an understanding of the nature of hypnosis. In *Hypnosis* (pp. 105-136). Routledge.

Singh, S. F. (2015). Social sorting as 'social transformation': Credit scoring and the reproduction of populations as risks in South Africa. *Security Dialogue, 46*(4), 365-383.

Struwig, M., & Plaatjes, W. (2013). Developing a framework to investigate the personal financial management knowledge of individuals. *South African Journal of Economic and Management Sciences, 10*(1), 21-32.

Sudha, R., Ragavi, V., & Thirumalai, C. (2017). May. Analysing correlation coefficient using software metrics. In *Trends in Electronics and Informatics (ICEI), 2017 International Conference* (pp. 1151-1153). IEEE.

Symanowitz, C. D. (2006). *The relationship between financial literacy, economic measures and delayed gratification in South African high school learners* (Doctoral dissertation, Institute of Business Science, University of Pretoria).

Terceño, J. R., Vallés, J. E. G., & Domínguez, D. C. (2017). Application of a measurement model and system of intangible variables in business environments. *Revista Latina de Comunicación Social, 72*, 560.

Ullman, J. B., & Bentler, P. M. (2012). *Structural equation modelling: Handbook of psychology* (2nd Edition), 2.

Usuda, K., Funasaki, A., Sekimura, A., Motono, N., Matoba, M., Doai, M., Uramoto, H. (2018). FDG-PET/CT and diffusion-weighted imaging for resected lung cancer: Correlation of maximum standardized uptake value and apparent diffusion coefficient value with prognostic factors. *Medical Oncology, 35*(5), 66.

Van Rooij, M. C., Lusardi, A., & Alessie, R. J. (2012). Financial literacy, retirement planning and household wealth. *The Economic Journal, 122*(560), 449-478.

Venti, S. F., & Wise, D. A. (2000). *Choice, chance, and wealth dispersion at retirement*. Working Paper, National Bureau of Economic Research.

Weinberg, S. L., & Abramowitz, S. K. (2016). *Statistics using IBM SPSS: An integrative approach*. Cambridge University Press.

Zebende, G. F., & Da Silva Filho, A. M. (2018). Detrended multiple cross-correlation coefficient. *Physica A: Statistical Mechanics and its Applications, 510*, 91-97.