

Does Financial Literacy Impact Retirement Readiness and Living Standards of Farmers? An Empirical Study based on Selected Farmers in Sri Lanka.

E.A.I.N. Ediriweera¹ and S.C. Herath²

^{1,2}Department of Accountancy, Faculty of Business Studies and Finance, Wayamba University of Sri Lanka

¹induniln@wyb.ac.lk, ²schathurikaherath@gmail.com

ABSTRACT

We studied how financial literacy impacts retirement readiness and living standards among farmers in Sri Lanka with a sample of 200 farmers by administering through a structured questionnaire. We selected the farmers on a convenience basis for the study from the Northwestern Province in Sri Lanka. We conducted a preliminary survey among farmers to understand their financial behaviors. By considering financial literacy as the independent variable, and retirement readiness and living standards as the dependent variables, we developed two ordinary least square regression models to test the hypotheses of the study. The findings of the preliminary survey revealed that most farmers maintain savings accounts, but they visit banks occasionally. Moreover, more than 50% of them are not aware of the benefits of retirement plans. However, the results confirmed that financial literacy has a strong positive impact on retirement readiness and living standards among farmers. Thereby, we concluded that improvements in farmers' financial literacy could uplift their living standards and retirement readiness. As an implication, authorities shall conduct more awareness programs for farmers on financial knowledge, behavior, and attitudes as assistance to enhance their retirement status and living standards.

Keywords: *Farmers, Financial Literacy, Living Standards, Retirement Readiness.*

1. Introduction

We identify financial literacy as a complex phenomenon and a determinant of other human behavioral factors such as compulsive buying behavior, the propensity to indebtedness, and materialism (Potrich & Vieira, 2018). However, lack of financial literacy is recognized as a significant element of global poverty, and thereby, financial literacy has become necessary for

sustained livelihood. Lack of financial literacy is a wide issue in the world that ultimately result in poor financial choices (Hussain & Sajjad, 2016). Interestingly, no gender disparity was found in East Germany regarding knowledge of basic financial literacy, while disparities exist in West Germany (Bucher-Koenen & Lusardi, 2011). Hence, as a determinant of human behavior, financial literacy could vary from a personal or regional perspective.

Financial literacy can be considered a critical life skill to ensure the well-being of individuals (Hussain & Sajjad, 2016). Besides, financial literacy has been identified as an influential factor for household health investments (Ling, Wang, Pan, & Feng, 2023). People with relatively high financial literacy tend to have a few things in common, regardless of where they live. It would help households with day-to-day financial tasks, deal with financial emergencies, and even pull them out of the clutches of poverty (Garg & Singh, 2017). Further, there is evidence that the least financial literates are the least likely to save for retirement (Lusardi & Mitchell, 2017). There is a general belief that financial literates are successful in enhancing their living standards. Vice-versa, we observed stagnated living standards among farming households. Parallely, there is a general acceptance that the level of financial literacy among Sri Lankan farmers are to be low. However, a study highlighted that Sri Lanka is having a higher financial literacy compared to other South Asian countries. Albeit, they found a gap between print literacy and financial literacy (Senevirathne, Jayendrika, & Kuruppuarachchi, 2017).

Framing is an informal occupation in Sri Lanka and there is no fixed retirement age for farmers. Thus, it has been observed that the farmers continue working beyond the age of 60 years. Parallely, there is a social concern that farmers may not generate the same level of income when they become old and disabled as they did at an early age in their life. Recently, the national decisions on organic farming also have abruptly impacted the level of crops and farmers' household income. The Sri Lankan poverty profile indicates that nearly one-fifth of the population falls below the poverty line (Sanderatne, 2004). He highlighted the incidence of poverty among farm households is higher and in the regional analysis, he stated that North Western province is one of a province with the highest incidence of poverty. He concluded that the farmers cultivating smaller paddy holdings are poorer and poverty has led to a decrease in the level of education and literacy.

With the existing evidence, we observed that farming households are suffering from poverty, lack of education, and risk in retirement benefits. However, our observations confirmed that the farmers have banking and saving habits. Thereby, a concern was raised about whether *financial literacy could help the farmers to uplift their living standards and retirement readiness*. A study stated that the lack of retirement planning, poor borrowing behavior, and lack of stock market participation could be impacted by the ignorance of basic financial concepts (Lusardi, 2008). Therefore, we conceptualized this study to identify the impact of basic financial literacy on farmers' retirement readiness and living standards.

According to the Central Bank report 2019, 25.3% of the labor force in Sri Lanka carries on their jobs connected with the agricultural sector. The Kurunegala district has the highest number of agricultural households in Sri Lanka which is 269,415. The Sri Lankan economy considers agriculture crops, fisheries, livestock, and forestry as agricultural sectors in national accounting (Gunawardana, 2018). Accordingly, we narrowed down our study to the farming households who engaged in paddy agriculture crops.

As a rational thought, we accept the fact that farmers need both farming advice (Bachhav, 2012) and guidance to maintain their lives smoothly even for day-to-day living standards and tomorrow's retirement stage. Thus, helping people to make sound financial plans and to manage their financial affairs can make an important contribution to facilitating communities and households to improve their standards of living (Engelbrecht, Lambert, & Ornellas, 2019). Since, Sri Lanka has a major focus on developing National Agricultural Policy (The Island Online, 2020), this study timely delivers the findings for the attention of the policymakers. Further, the Central Bank of Sri Lanka and some public and private organizations conduct financial educational programs for communities. We expect that the findings of this paper will be a guide for such authorities to plan their programs that are expected to uplift the living standards and/or retirement status of farming households. Finally, this study empirically contributes to improving the knowledge in the area of financial literacy, retirement readiness, and living standards with special reference to Sri Lanka while filling the evidence gap of Sri Lankan farming households.

2. Literature Review

Theoretical Review

The study focused on three key concepts: financial literacy, retirement planning, and living standards. Financial literacy provides the basic idea about financial concepts and choices such as saving, investing, paying, and borrowing (Klapper, Lusardi, & Oudheusden, 2015). We identify financial literacy as the ability to collect relevant and important information, differentiate between diverse financial options, discuss monetary and financial issues, and plan and proficiently answer the events affecting daily financial decision-making. The scope of financial literacy has been categorized into two: basic and advanced (Lusardi, 2008).

To evaluate Americans' financial knowledge, three financial literacy questions have been developed using fundamental concepts of economics and finance with simple calculations about interest rates, inflation, and risk diversification and used by the American Health and Retirement Study in 2004 (Lusardi & Mitchell, 2017; Lusardi, 2008). Apart from these variables, others have used financial knowledge, behavior, and attitudes as measures of financial literacy revealing a positive relationship between financial behavior and financial literacy (Atkinson & Messy, 2012). The current study focused on the basic financial literacy concept introduced by Lusardi & Mitchell (2017) while focusing on interest rates, the inflation effect, and risk diversification.

Retirement planning is a key element of retirement readiness which is the cognitive preparedness of individuals for their retirement. The modern retirement theory states that the financial plan can be based on longevity and conditions within longevity (Branning & Grubbs, 2009). Yet, the life-cycle model proves that the increase in life expectancy and delays in disability could cause to increase in the consumption level and life spent in leisure (Bloom, Canning, & Moore, 2007). Through this study, we assess the retirement readiness of farmers considering the longevity (maintaining pension funds) and conditions within longevity (preference for borrowing at emergency).

Living standards have been considered as the utility of life (Pigou, 1952). In contrast, the same concept has been elaborated differently as the economic provision that measures the number of quality commodities available for individuals to consume freely (Deutsch & Silber, 1999). However, the concept

of living standards has been differently referred to as a type of freedom to do something and live well in a certain socio-economic class of a particular geographical area (Sen, 1984). A study by Ngo (2017) developed a theory-based living standards index for developing countries. The current study used the variables suggested by Ngo (2017): level of ownership, health, education, and leisure obtained through household income to measure the living standards of farming households.

Empirical Review

Financial Literacy and Retirement Readiness

The theory of work adjustments is a choice of some older workers' desire to continue working and remain engaged in a personally fulfilling career or to transition to a new career beyond retirement, but for other workers, this decision is driven by financial need (Foley & Lytle, 2015). These different desires give an important insight into the retirement readiness of a person. Thus, we observed that the retirement of Sri Lankan farmers is mostly driven by their financial needs.

American individuals and African-American millennials with more advanced financial knowledge have a higher possibility to be ready for their retirement (Lusardi & Mitchell, 2017; Young, Hudson, & Davis, 2017). Further, the American subgroups: Black and Hispanic with low levels of financial literacy indicated that being in debt has negatively linked to planning and saving for retirement (Hasler, Lusardi, & Mitchell, 2023). Further, American adults with greater financial literacy are more likely to have better financial well-being which includes retirement readiness that is related to longevity literacy (Yakoboski, Lusardi, & Hasler, 2022).

Financial literacy increases the probability of having a savings plan for retirement and if people save regularly in their childhood, they are more likely to develop a retirement plan when they become adults (Sekita, 2011). Thereby, many studies concluded a strong positive relationship between financial literacy and retirement planning in different contexts (Sekita, 2011; Klapper & Panos, 2011; van Rooij, Lusardi, & Alessie, 2012; Fernandes, Lynch, & Netemeyer, 2013; Kalmi & Ruuskanen, 2018; Niu & Zhou, 2018; Perera, 2019; Antoni, Saayman, & Vosloo, 2020; Tan & Singaravelloo, 2020).

In Sri Lankan context, it was found that there is no synergic effect between pension literacy and financial literacy for preparedness for retirement (Rodrigo & Kim, 2021). However, financial literacy was identified as a significant influencer for rural women's economic empowerment (Kumari, Azam, & Khalidah, 2020). A study further concluded that someone with good financial literacy is inclined to choose a retirement plan (Perera, 2018). Further, it was found a high occupancy of low financial-literate individuals in the public sector, and high financial-literate individuals are equally distributed between the public and private sectors in Sri Lanka. Despite this, it was found that public sector workers have higher retirement planning decisions than the private sector (Wewala & Ediriweera, 2021). Parallely, a study confirmed that the financial instruments and computation capability of private sector workers are significantly impacting retirement planning, yet knowledge of financial concepts is not influential (Yushan & Fernando, 2020). Since the existing findings in the Sri Lankan context are indifferent, we could not generalize the findings to overall society.

Financial Literacy and Living Standards

The amount of money and comfort people have in a particular society explains as a living standard. Noll (2007) interpreted household consumption and income as measures of living standards based on data from Household Budgeted Surveys.

The economic recession threatens financial well-being and causes economic concerns related to living standards like health, debts, income, and career advancement. However, having financial literacy skills can post an inverse effect on those concerns. Also, by having financial literacy one could influence the conditions of life and work, and it can be very helpful in anticipating the future and increasing individual income (Taft, Hosein, Mehrizi, & Roshan, 2013). Parallely, a study revealed that 2.4% of financially literate individuals are less possibly come into contact with financial distress (Karakara, Sebu, & Dasmani, 2022). Therefore, financial literacy has been identified as a critical and essential life skill to enhance the living standards and well-being of individuals (Hussain & Sajjad, 2016). However, individuals with less financial information may not realize their financial weaknesses whereas well-informed individuals may use financial aids to strengthen their living standards (Mugenda, Hira, & Fanslo, 1990).

Thus, both education or general knowledge and specialized knowledge such as financial literacy promote more informed financial decision-making (Lusardi & Mitchell, 2014).

A study revealed a positive significant relationship between financial literacy and living standards (Zerihun & Makgoo, 2019). Thus, financial literacy has been recognized as a theme that has to be integrated with the social development of a country to improve living standards (Notargiacomo & Marin, 2021). Although it was identified that women are good at finance activities (Ramesh & Umamaheswari, 2021), it was recommended to use financial literacy-related policies to improve the living standards of women in their retirement (Preston & Wright, 2022).

Empirical evidence on farming households

A study stated that the formal education level was extremely low among farmers and 61% of the farmers did not get any formal education beyond primary school. Thus, it was recognized a low level of financial literacy among the farmers (Serin, Bayyurt, & Civan, 2009). Inconsistently, Sri Lanka-based study revealed that approximately 65% of farmers have a moderate level of financial literacy, while 18% possess a low level (Gunawardhana & Silva, 2021). Parallely, the Asian country, Bangladesh confirmed that financial literacy is positively associated with their farmers' technical efficiency (Afrin, Haider, & Islam, 2017).

Solinge & Henkens (2007) highlighted that life transitions, such as retirement, are subject to social norms and appropriate timing. Also, the cultural and individual norms and expectations about the “right” time for a transition influence not only the individual's transition but also the meaning attached to the transaction by others. However, in developing countries, farmers tend to work beyond their retirement age to earn living for their families (Perera, 2019). Meanwhile, the findings have confirmed that there is a further need of developing the living standards of farming households (Serin, Bayyurt, & Civan, 2009). Moreover, financial literacy has been recognized for its significant capability for eliminating poverty globally and it has become more necessary for sustained livelihood (Engelbrecht & Ornellas, 2019).

Although there are common findings in the international empirical literature on the nexus between financial literacy and retirement readiness, the Sri

Lankan empirical evidence is found to be indifferent. Even though there are a few studies to discuss the advanced financial literacy impact on retirement planning, limited studies focused on basic financial literacy and its impact on retirement planning. Further, we observed an empirical evidence gap in revealing the association between basic financial literacy and living standards in Sri Lankan context. The focus group of the current study: farming households is also a less attentive area among existing literature. Thereby, this study is distinctly focused on the financial literacy, retirement readiness, and living standards of farmers.

3. Methodology

This study expects to identify whether basic financial literacy impact on the retirement readiness and living standards of farming households in Sri Lanka. We developed the research concept using positivism philosophy prioritizing the “factual” knowledge gained through observations. We applied a deductive research approach while focusing on the basic financial literacy concept (Lusardi & Mitchell, 2017), modern retirement planning (Branning & Grubbs, 2009), and the theory-based living standards index (Ngo, 2017). We applied an experimental research design to reach the objective of this paper. Therefore, we developed the hypotheses using the existing evidence and tested them using the collected data.

As per the Agricultural Household Survey 2016/17, Kurunegala district has a higher farmer population of 269,416 (Department of Census and Statistics Sri Lanka, 2019, p. 44). Since this study focuses more on understanding the financial behavior among farmers, we categorized this study as a prevalence study for sampling purposes; thus we decided on 7.5% of precision in determining the sample size (Conroy, 2018, pp. 8-9). Accordingly, we determined the sample size as 171 farmers and collected data using a convenient sampling method. Out of 250 questionnaires distributed among farmers, we received responses from 200 farmers in the Kurunegala district and we decided to consider all responses for the analysis. This decision supports reducing the precision of sample selection further. We collected primary data through a structured questionnaire which was developed based on the literature from various research papers on financial literacy, retirement readiness, and living standards.

The study used the mono-research method and collected cross-sectional data based on a Likert scale questionnaire to quantify the variables addressed in the study. Accordingly, we applied quantitative research methods to reach conclusions. As the initial step, we develop the conceptual framework with independent and dependent variables as follows:

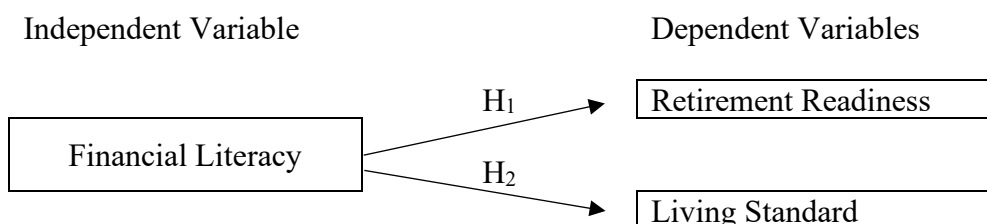


Figure 1: Conceptual Framework

To express the relationships of the conceptual framework, we developed two regression models as follows.

$$RR = \beta_0 + \beta_1 FL + \epsilon_0 \rightarrow (1)$$

$$LS = \beta_0 + \beta_2 FL + \epsilon_0 \rightarrow (2)$$

The first regression model reveals the relationship between Financial Literacy (FL) and Retirement Readiness (RR), and the second regression model finds the relationship between Financial Literacy (FL) and Living Standards (LS). β_0 represents the intercept of that sample regression line and the ϵ_0 represents the error term of the model. β_1 explains the relationship between FL and RR while β_2 explains the relationship between FL and LS.

Operationalization

Table 1: Operationalization of Latent Variables of the Conceptual Framework

Latent Variable	Theory	Observable Variables	Reference
Financial Literacy	Basic Financial Literacy Concept	1. Savings, loan Payments, and inflation effect 2. Knowledge of Interest Rates 3. Awareness on financial products and risk	(Lusardi & Mitchell, 2017)
Retirement Readiness	Theory of modern retirement planning	1. Longevity - maintaining pension funds	(Branning & Grubbs, 2009)

		2. Conditions within longevity - preference for borrowing at an emergency	
Living Standards	Theory-based living standards index	1. Level of ownership 2. Health 3. Education 4. Leisure 5. Household income	(Ngo, 2017)

Table 01 exhibits the observable variables that have been used to quantify the latent variables of the study. We conducted a preliminary survey among farmers to obtain an understanding of their living standards and banking habits. Then we collected the data on the considered variables by using the duly developed questionnaire.

The hypotheses of the study were developed based on the existing empirical evidence. Accordingly, the alternative hypotheses considered for the study are as follows.

H_{1a}: Basic financial literacy significantly and positively impacts on determining better retirement readiness among farmers in the Kurunegala district.

H_{1b}: Basic financial literacy significantly and positively impacts on determining better living standards among farmers in the Kurunegala district.

4. Findings of the Study

The demographics of the sample selected are as follows.

Table 2: Demographic Characteristics

	Explanatory variable	Numbers	Percentage (%)
Gender	Male	142	71
	Female	58	29
	Total	200	100
Age	18-29	10	5
	30-39	16	8
	40-49	52	26
	50-59	64	32
	Above 60	58	29
	Total	200	100
Educational level	Below O/L	57	28
	A/L	87	44
	A/L & above	56	28
	Total	200	100

Civil status	Single	13	6
	Married	187	94
	Total	200	100
No of dependents	1-3	97	48
	4-6	98	49
	Above 6	5	3
	Total	200	100

Table 2 highlights some demographic characteristics of the farmers sampled for the study. Accordingly, most of them (71%) are males. When considering their age levels, 64 farmers are in their 50's and 58 farmers are in their 60's. Thus, it highlights the aging character of the farmers in Sri Lanka. Further, it signals the severe need for a formal retirement plan for them to reduce potential social issues within Sri Lanka. Their education level is in a good position because more than 50% of farmers have got A/L and above education. However, there are 187 married farmers in the Kurunegala area and most of them have 1-6 dependents in a family. These demographics highlight the imbalance in living standards that they would experience when they are aging.

Table 3: Demographic Characteristics

	Explanatory variable	Numbers	Percentage (%)
Cultivation method	Paddy	78	39
	Coconut	47	23
	Livestock	17	9
	Other (vegetables, fruits, etc.)	58	29
	Total	200	100
Income gap	Monthly	69	34
	Quarterly	53	27
	Bi-annually	52	26
	Annually	0	0
	Randomly	26	13
	Total	200	100
Monthly income	Less than Rs 10,000	31	15
	Rs 10,000-30,000	120	60
	Rs 30,000-50,000	39	20
	Above Rs 50,000	10	5
	Total	200	100

As per table 3, the cultivation method portrays a clear picture of farmers in the Kurunegala area. Paddy becomes the leading cultivation among 39% of farmers. Approximately 1/4th of farmers from the sample are involved in coconut cultivation. Comparatively, there is a higher percentage of farmers involved in other cultivations such as vegetables, fruits, etc. than live stocks.

When assessing the income status of the farmers' the majority of them are focusing on monthly income. However, more than 50% of farmers stated that their income is quarterly, bi-annually, or randomly.

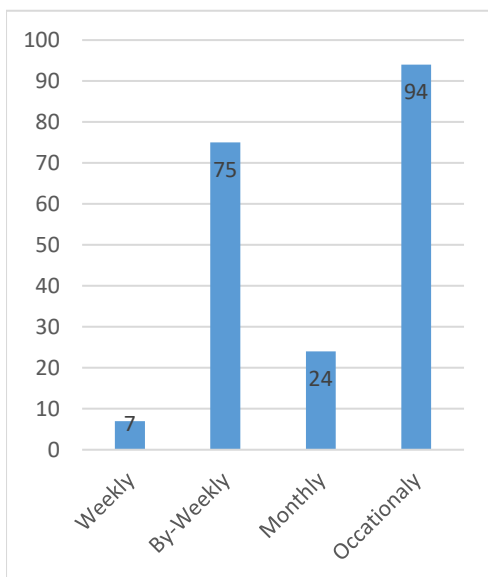
When we consider the monthly income of farmers, most of them (60%) stated that their monthly income is between Rs 10,000 to Rs 30,000 in a month. However, 15% of the sample stated that their income is below Rs. 10,000, and 20% of farmers earn between Rs 30,000 to Rs 50,000. Only 5% of farmers can earn above Rs 50,000.

The significance of financial literacy and the need for a retirement plan for farmers can be further emphasized by considering the aging character among farmers, no of dependents, and their level of income.

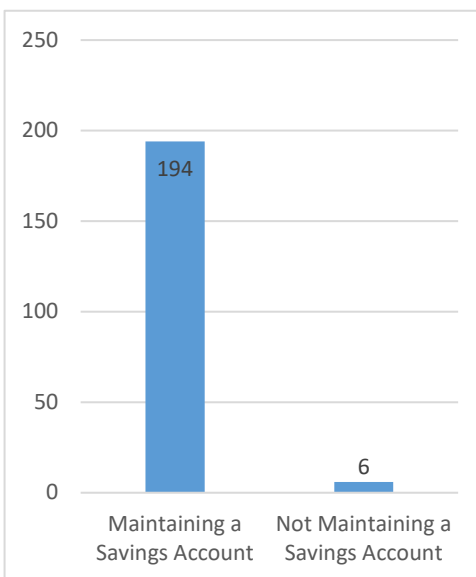
Survey on Banking Practices and Living Standards

A survey was conducted to understand the banking habits and savings behavior and living standards of the farmers. This provided a preliminary understanding of their living standards and banking behavior.

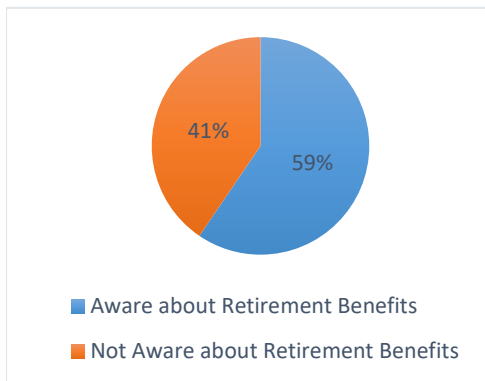
2.1 Frequency of Bank Visits



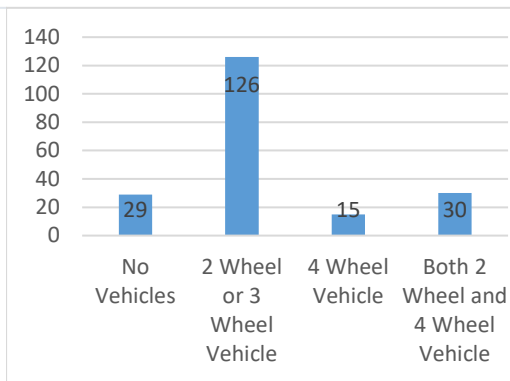
2.2 Saving Habit among Farmers



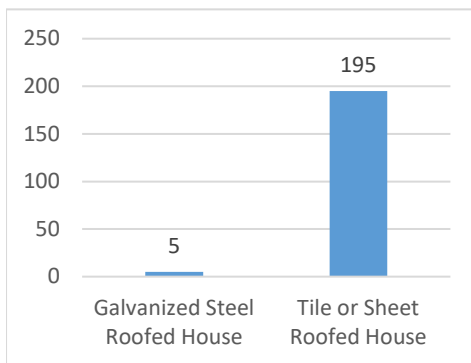
2.3 Awareness of Retirement Benefits



2.4 Ownership of Motor Vehicles



2.5 Nature of the House



2.6 Monthly Entertainment Expenditure

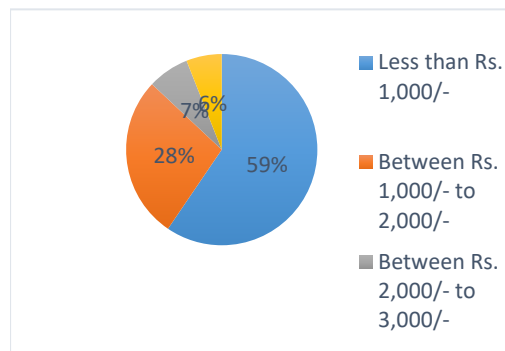


Figure 2: Survey on Banking Practices and Living Standards

As per Figure 2.1, many of the farmers visit banks bi-weekly or occasionally. However, 194 from 200 farmers maintain a savings account, thus there's 3% of farmers do not maintain savings accounts (Figure 2.2). Among the sample, 59% of farmers are not aware of their retirement plans which could make them highly vulnerable at their dotage (Figure 2.3).

When assessing the living standards of farmers more than 100 farmers have two or three-wheel however approximately 15% of the farmers stated that they aren't own any vehicle (Figure 2.4). 97.5% of farmers live in tile or sheet-roofed houses and others have galvanized steel-roofed houses (Figure 2.5). Figure 2.6 stands for the monthly entertainment expenditures of farmers. More

than half of them (59%) allocate less than Rs 1,000 for entertainment activities from their monthly income.

Since the preliminary survey provided background knowledge about their banking habits and living standards based on the conceptual framework, a questionnaire was developed to collect data on all independent and dependent variables of the study.

Assessing the Normality of the Variables

We used Jarque-Bera statistics to measure the normality of the data collected to define the variables.

Table 4: Data Distribution Analysis

Variable	FL	RR	LS
Skewness	0.235465	-0.164345	0.117353
Kurtosis	3.250108	2.958129	2.770892
Jarque-Bera	2.369407	0.914918	0.89648
Probability	0.305837	0.63289	0.638751
Observations	200	200	200

As per table 4, the P-value of the Jarque-Bera statistic of all the variables accepts the null hypothesis (FL: P-Value (0.305837) > 0.05, RR: P-Value (0.63289) > 0.05, LS: P-Value (0.638751) > 0.05), thus the data is normally distributed. Also, the skewness, which is closer to zero, and the kurtosis which is closer to three of each variable further confirmed the normal distribution of data collected.

Assessing the Reliability of the Questions

We used Cronbach's Alpha statistic to test the reliability of questions used to define the variables in the conceptual framework.

Table 5: Cronbach's Alpha Values

Reliability Statistics		
Variable	Cronbach's Alpha	N of Items
Financial Literacy "FL"	0.865	9
Retirement Readiness "RR"	0.863	6
Living standards "LS"	0.894	4

As per Table 5, Cronbach's Alpha value of FL, RR, and LS is 0.865, 0.863, and 0.894 respectively. Since all these values are beyond 0.8, we can confirm strong reliability within the questionnaire when defining the variables through the questions.

Assessing the Adequacy of the Sample and Multicollinearity of the Variables

Table 6: KMO & Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.716
Bartlett's Test of Sphericity	Approx. Chi-Square	235.795
	df	3
	Sig.	0.000

KMO statistics measures the sampling adequacy of the variables and Bartlett's test outlines the redundancy between those variables. The favorable KMO value is greater than 0.5 and Bartlett's Test value is lesser than 0.05.

The KMO statistics result (0.716) in Table 6, is greater than 0.5 which emphasizes the adequacy of the sample size to conduct the study. The P-value of the Chi-square statistic is $0.000 < 0.05$ rejects the null hypothesis of Bartlett's Test, thus it is concluded that the variances are not equal between the dependent variables. Hence, there is no redundancy between the dependent variables.

Correlation Matrix

Table 7: Correlation Matrix

		FL	RR	LS
FL	Pearson Correlation	1	0.662**	0.652**
	Sig. (2-tailed)		0.000	0.000
	N	200	200	200
RR	Pearson Correlation	0.662**	1	.575**
	Sig. (2-tailed)	0.000		0.000
	N	200	200	200
LS	Pearson Correlation	0.652**	.0575**	1
	Sig. (2-tailed)	0.000	0.000	
	N	200	200	200

****.** Correlation is significant at the 0.01 level (2-tailed).

As per Table 7, the correlation between FL and RR is 0.662 and the correlation between FL and LS is 0.652. Thereby, FL, RR, and LS are moderately and positively correlated together and the correlation between the independent and

dependent variables is significant. Thus, two ordinary least square regressions were developed to understand the impact between independent and dependent variables.

OLS Regression Results

Table 8: OLS Regression Model 01 and 02 results

Model	Dependent Variable		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
			B	Std. Error	Beta		
1	1: RR	(Constant)	0.719	0.196		3.662	0.000
		FL	0.743	0.060	0.662	12.438	0.000
2	2: LS	(Constant)	0.544	0.222		2.450	0.015
		FL	0.817	0.068	0.652	12.096	0.000

$$RR = 0.719 + 0.743FL + \epsilon \rightarrow (1)$$

$$LS = 0.544 + 0.817FL + \epsilon \rightarrow (2)$$

As per table 8, the first model shows the relationship between the independent FL and RR which explains a positive and significant impact (0.743, $P = 0.000 < 0.05$). The model explains that an increase in financial literacy among farmers can increase their retirement readiness from approximately 74.3%. The second model that explains the relationship between FL and LS also stated a significant and positive relationship between the two variables (0.817, $P = 0.000 < 0.05$). In addition, the model emphasizes that there is an 81.7% of likelihood increasing the living standards of farmers by increasing their financial literacy levels.

Residuals of the Regression Models

We tested the reliability of the regression models by testing the behavior of the residuals by using Breusch-Pagan-Godfrey Heteroskedasticity Test and the Breusch-Godfrey Serial Correlation LM Test.

Table 9 previews the heteroskedasticity test and serial correlation LM test results for both models. The P-values of F-statistics of the Breusch-Pagan-Godfrey Heteroskedasticity Test confirm that the error variances are equal for both the models (Model 01: $P = 0.2328 > 0.05$ and Model 02: $P = 0.4462 >$

0.05). On the other hand, Breusch-Godfrey Serial Correlation LM test results show a serial correlation among residuals of model 01, however no serial correlation among residuals of the regression model 02.

Table 9: Heteroskedasticity test and BG correlation LM test

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
Model 01	F-statistic	1.432327	Prob. F (1,198)	0.2328
	Obs*R-squared	1.436404	Prob. Chi-Square (1)	0.2307
	Scaled explained SS	1.646305	Prob. Chi-Square (1)	0.1995
Model 02	F-statistic	0.582606	Prob. F (1,198)	0.4462
	Obs*R-squared	0.586764	Prob. Chi-Square (1)	0.4437
	Scaled explained SS	0.60929	Prob. Chi-Square (1)	0.4351
Breusch-Godfrey Serial Correlation LM Test:				
Model 01	F-statistic	4.060995	Prob. F (2,196)	0.0187
	Obs*R-squared	7.957977	Prob. Chi-Square (2)	0.0187
Model 02	F-statistic	2.516035	Prob. F (2,196)	0.0834
	Obs*R-squared	5.006236	Prob. Chi-Square (2)	0.0818

Accordingly, we used these model results to test the hypothesis we developed within the study.

Table 10: Summary of Hypothesis Testing

Hypothesis	Co-efficient	Reported sign	P-value	Relationship	Results
H1	0.743	Positive	0.000	Significant	Accepted
H2	0.817	Positive	0.000	Significant	Accepted

H_{1a}: Financial Literacy is significantly and positively impacting to enhance the retirement readiness among farmers in the Kurunegala district.

The results of the first regression model accepted the alternative hypothesis developed with a 95% confidence level as the P-value < 0.05. Therefore, it is confirmed that there is a significant positive relationship between Financial Literacy and Retirement Readiness among farmers.

H_{1b}: Financial Literacy is significantly and positively impacting to enhance the living standards among farmers in the Kurunegala district.

Similarly, regression model 02 confirms that financial literacy has a positive and significant influence on the living standards of the farmers with a 95% confidence level as the P-value < 0.05.

5. Discussion

The literature stated that there is limited knowledge among farmers on financial literacy (Afrin, Haider, & Islam, 2017). Debatably, it was found that the majority of Sri Lankan farmers have a moderate level of financial literacy (Gunawardhana & Silva, 2021). Further, studies found that financial literacy can enhance the retirement readiness and living standards of individuals (Rooij, Lusardi, & Alessie, 2011). However, existing literature shows contradictory findings regarding financial literacy and retirement readiness in the Sri Lankan context (Wewala & Ediriweera, 2021; Yushan & Fernando, 2020). Further, limited research has been conducted to study the impact of financial literacy on living standards.

The preliminary survey revealed that farmers have occasional banking habits, low knowledge of retirement plans, and average living standards. Although the Central Bank Annual Report (2020) stated the mean household income as of 2016 is Rs. 62,237 per month the survey revealed that the majority has a low level of monthly income. Based on the data analysis it was confirmed that there is a significant positive relationship between basic financial literacy and retirement readiness among farmers. Complying with prior literature (Sekita, 2011; Klapper & Panos, 2011; van Rooij, Lusardi, & Alessie, 2012; Fernandes, Lynch, & Netemeyer, 2013; Kalmi & Ruuskanen, 2018; Niu & Zhou, 2018; Perera, 2019; Antoni, Saayman, & Vosloo, 2020; Tan & Singaravelloo, 2020) we can generalize the positive relationship between basic financial literacy and retirement readiness among farmers. In line with our findings, Alemenberg & Save-Soderbergh (2011) also confirmed that there is a positive and statistically significant relationship between financial literacy and planning for retirement among Swedish adults. Sekita (2011) further confirmed that financial literacy increases the probability of having a saving plan for retirement readiness in Japan. Parallely a study conducted by Perera

(2019) confirmed that there is a high possibility of one respondent having a retirement plan when he/she belongs to a higher financial literate category.

The regression model 02 concluded that basic financial literacy has a positive and significant influence on the living standards of the farmers. Consistent with these findings Taft, Hosein, Mehrizi, & Roshan (2013) also revealed that financial literacy is statistically linked with living standards and expressed that the financial management ability among individuals is also impacted by high financial literacy.

6. Conclusion

We directed the current study to understand whether basic financial literacy has any influence on living standards and retirement readiness among farmers. We conceptualized the study by considering basic financial literacy as the independent latent variable, and living standards and retirement readiness as the dependent latent variables. Using a deductive research approach we used related theories to obtain measuring variables and collected data for the duly developed questionnaire from 200 farmers in the Kurunegala District.

The findings of the study revealed that basic financial literacy is positively impacting on retirement readiness and the living standards of farmers. Thus, we can use basic financial literacy as a tool to improve the retirement readiness and living standards of the farmers. Although Sri Lankan farmers do not have a fixed retirement age, it is possible to improve their retirement readiness by improving their basic financial literacy skills (interest rate, inflation rate, and risk diversification). Such enhanced knowledge will be a motivator for the farmers to invest a proportion of their seasonal crop income in a retirement plan. Thus, these attempts will develop a concrete platform for their longevity and conditions in longevity.

Parallely, basic financial literacy skills are positively impacting on living standards of Sri Lankan farmers. Although prior studies found lesser formal education among farmers, it was confirmed that Sri Lankan farmers are possessing a moderate level of financial literacy. Thus, the preliminary survey also revealed that the majority of the farmers own a 2-wheel or 3-wheel family vehicle and live in tile or sheet-roofed houses. Yet, they spend less on entertainment. Further to the research findings, by attempting to improve basic financial literacy among farmers, it is possible to improve their household

income and direct them to level up their living standards further. This will be a step forward in elevating poverty in Sri Lankan farming households.

7. Implication

Based on the findings we expect to direct the attention of the government and the government authorities such as the Ministry of Agriculture, Agricultural Development Department, and Divisional Secretariat Office to introduce more awareness programs for farmers to uplift their knowledge in retirement planning and living standards.

Lusardi & Mitchell (2017) highlighted the need for a greater level of financial sophistication among youngers, despite the difficulties and costs related to the promotion of financial literacy. Since most farmers have no proper plan or idea about retirement planning, proper guidance and mechanism would help them to have a stable retirement age. The authorities can further enhance the awareness of the *Farmers' Pension and Social Security Benefit Scheme* in Sri Lanka which is the government pension plan established for Sri Lankan farmers. Thus, the authorities can organize the awareness programs at the committee level ("*Govi Samithiya*") which gathers all farmers into one place. Also, a structured follow-up process needs to be there to get a flashback of all these activities and thereby find the spaces and get the necessary re-corrections to fill the gap. That is a good innovative point to enhance the financial literacy level of farmers and to enlighten their retirement readiness and living standards.

References

- Abayarathna, Y. U., and Sandika, A. L. 2019. Knowledge and Adoption towards Good Agricultural Practices: A Special Reference to Leafy Vegetable Cultivation in Kalutara District. *Tropical Agricultural Research & Extension*, 22(3-4), 55-62. doi:<http://doi.org/10.4038/tare.v22i3-4.5488>
- Afrin, S., Haider, M., and Islam, M. S. 2017, November 06. Impact of Financial Inclusion on Technical Efficiency of Paddy Farmers in Bangladesh. *Agricultural Finance Review*, 77(4), 484-505. doi:<https://doi.org/10.1108/AFR-06-2016-0058>
- Antoni, X. L., Saayman, M., and Vosloo, N. 2020. The Relationship Between Financial Literacy and Retirement Planning, Nelson Mandela Bay. *International Journal of Business and Management Studies*, 12(2), 577-593. Retrieved from

https://www.sobiad.org/eJOURNALS/journal_IJBM/archives/IJBM_2020-2ek/xl-antoni.pdf

- Atkinson, A., and Messy, F. 2012. *Measuring Financial Literacy: Results of the OECD / International Network on Financial Education (INFE) Pilot Study*. The Organisation for Economic Co-operation and Development (OECD). Retrieved from <https://www.oecd-ilibrary.org/docserver/5k9csfs90fr4-en.pdf?expires=1678604407&id=id&accname=guest&checksum=C8341CBADCA253AA9F51FCC131625588>
- Bachhav, N. B. 2012. Information Needs of the Rural Farmers: A Study from Maharashtra, India: A Survey. *Library Philosophy and Practice (e-journal)*, 866, 1-12. Retrieved from <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=2043&context=libphilprac>
- Bloom, D., Canning, D., and Moore, M. 2007. A Theory of Retirement. *NBER Working Paper No. 13630*, 1-39. Retrieved from <https://www.researchgate.net/publication/5188581>
- Boisclair, D., Lusardi, A., and Michaud, P. 2014. Financial Literacy and Retirement Planning in Canada. *NBER Working Paper No. 20297*, 1-30. Retrieved from https://www.nber.org/system/files/working_papers/w20297/w20297.pdf
- Branning, J., and Grubbs, M. R. 2009. *Modern Retirement Theory: Reaching Client Goals in Every Market*. SSRN. doi:<http://dx.doi.org/10.2139/ssrn.3419038>
- Bucher-Koenen, T., and Lusardi, A. 2011. Financial Literacy and Retirement Planning in Germany. *Journal of Pension Economics & Finance*, 10(4), 565 - 584. doi:<https://doi.org/10.1017/S1474747211000485>
- Conroy, R. M. 2018. *The RCSI Sample Size Handbook: A Rough Guide*. Retrieved from https://www.researchgate.net/publication/324571619_The_RCSI_Sample_size_handbook
- Cvrlje, D., and Coric, T. 2010. *Macro & Micro Aspects of Standard of Living and Quality of Life in a Small Transition Economy: the Case of Croatia*. Faculty of Economics and Business, University of Zagreb., Croatia: Faculty of Economics and Business, University of Zagreb. Retrieved from <https://core.ac.uk/download/pdf/6397161.pdf>
- Department of Census and Statistics Sri Lanka. 2019. *Agricultural Household Survey 2016/17*. Battaramulla: Agriculture and Environment Statistics Division, Department of Census and Statistics.
- Deutsch, J., and Silber, J. 1999. Religion, Standard of Living, and the Quality of Life. *Contemporary Jewry*, 20(1), 119-137. Retrieved from <https://www.jstor.org/stable/23455282>
- Engelbrecht, Lambert, K., and Ornellas, A. 2019, September 06. Financial Capabilities Development: Essential Discourse in Social Work. *International Journal of Social Economics*, 46(10), 1234-1246. doi:<https://doi.org/10.1108/IJSE-02-2019-0076>

- Fernandes, D., Lynch, J., and Netemeyer, R. 2013. *Financial literacy, financial education, and downstream financial behaviors*. USA: National endowment for financial education.
- Foley, P., and Lytle, M. 2015, September 18. Social cognitive career theory, the theory of work adjustment, and work satisfaction of retirement-age adults. *Journal of career development*, 42(3), 199-214. doi:10.1177/0894845314553270
- Garg, N., and Singh, S. 2017, April 27. Financial literacy among youth. *International Journal of Social Economics*, 45(1), 173-186. doi:https://doi.org/10.1108/IJSE-11-2016-0303
- Gunawardana, A. 2018, June. *Agriculture sector performance in the Sri Lankan economy: A systematic review and a Metadata analysis from year 2012 to 2016*. doi:10.13140/RG.2.2.34177.92003
- Gunawardhana, R. S., and Silva, K. N. 2021. An Analysis of the Impact of Financial Literacy on Credit Utilisation Behaviour of the Farmers in Kamburupitiya DS division. *Proceedings of the 18th International Conference on Business Management*. 18. Nugegoda: University of Sri Jayewardenepura. doi:https://doi.org/10.31357/icbm.v18.5801
- Hasler, A., Lusardi, A., and Mitchell, O. S. 2023. How the Pandemic Altered Americans' Debt Burden and Retirement Readiness. *Financial Planning Review*. doi:https://onlinelibrary.wiley.com/doi/full/10.1002/cfp2.1156
- Hussain, I., and Sajjad, S. 2016. significance of Financial Literacy and its Implications: a Discussion. *Journal of Business Strategies*, 141-154.
- Kalmi, P., and Ruuskanen, O. 2018. Financial literacy and retirement planning in Finland. *Journal of Pension Economics and Finance*, 17(3), 335-362. doi:10.1017/S1474747217000270
- Karakara, A. W., Sebu, J., and Dasmani, I. 2022. Financial literacy, financial distress and socioeconomic characteristics of individuals in Ghana. *African Journal of Economic and Management Studies*, 13(1), 29-48.
- Klapper, L., and Panos, G. 2011, October 11. Financial literacy and retirement planning: the Russian case. *Journal of pension economics and finance*, 10(4), 599-618. doi:10.1017/S1474747211000503
- Klapper, L., Lusardi, A., and Oudheusden, P. 2015. *Financial literacy around the world*. USA: Standard & poor's ratings services global financial literacy survey.
- Kumari, D. A., Azam, S. F., and Khalidah, S. 2020. The Impact of Financial Literacy on Women's Economic Empowerment in Developing Countries: A Study Among the Rural Poor Women in Sri Lanka. *Asian Social Science*, 16(2), 31-44. doi:doi:10.5539/ass.v16n2p31

- Ling, X., Wang, L., Pan, Y., and Feng, Y. 2023. The Impact of Financial Literacy on Household Health Investment: Empirical Evidence from China. *International Journal of Environmental Research and Public Health*, 20(3), 2229.
- Luburić, R., and Fabris, N. 2018, December 5. Financial Literacy in Terms of Quality of Life. *20th National and 6th International Conference on Quality System Condition for Successful Business and Competitiveness* (pp. 45-52). Serbia: Faculty of economics, university of Belgrade, Belgrade, Republic of Serbia. Retrieved from https://www.researchgate.net/publication/329416661_FINANCIAL_LITERACY_IN_TERMS_OF_QUALITY_OF_LIFE
- Lusardi, A. 2008. Financial Literacy: An Essential Tool for Informed Consumer Choice? *Paolo Baffi Centre Research Paper No. 2009-35*, 1-30. doi:<http://dx.doi.org/10.2139/ssrn.1336389>
- Lusardi, A., and Mitchell, O. 2017. How Ordinary Consumers Make Complex Economic Decisions: Financial Literacy and Retirement Readiness. *Quarterly Journal of Finance*, 7(3), 1-31. doi:<https://doi.org/10.1142/S2010139217500082>
- Lusardi, A., and Mitchell, O. S. 2014. The Economic Importance of Financial Literacy: Theory and Evidence. *Journal of Economic Literature*, 52(1), 5-44. doi:<http://dx.doi.org/10.1257/jel.52.1.5>
- Mouna, A., and Jarboui, A. 2015, March 24. Financial Literacy and Portfolio Diversification: an Observation from the Tunisian Stock Market. *International Journal of Bank Marketing*, 33(6), 808-822. doi:<https://doi.org/10.1108/IJBM-03-2015-0032>
- Mugenda, O. M., Hira, T. K., and Fanslo, A. M. 1990. Assessing the Causal Relationship among Communication, Money Management Practices, Satisfaction with Financial Status, and Satisfaction with the Quality of Life. *Lifestyles*, 11, 343–360. doi:10.1007/BF00987345
- Ngo, D. K. 2017. A Theory-Based Living Standards Index for Measuring Poverty in Developing Countries. *Journal of Development Economics*, 130(C), 190-202. doi:DOI: 10.1016/j.jdeveco.2017.10.011
- Niu, G., and Zhou, Y. 2018. Financial Literacy and Retirement Planning: Evidence from China. *Applied Economics Letters*, 25(9), 619-623. doi:<https://doi.org/10.1080/13504851.2017.1352072>
- Noll, H. 2007. *Household Consumption, Household Incomes, and Living Standards*. Retrieved from https://www.gesis.org/https://www.gesis.org/fileadmin/upload/institut/wiss_arbeitsbereiche/soz_indikatoren/Publikationen/Household-Expenditures-Research-Report.pdf
- Notargiacomo, P., and Marin, R. 2021. Multiagent Intelligent Tutoring System for Financial Literacy. *International Journal of Web-Based Learning and Teaching Technologies*, 17(7), 1-13. doi:10.4018/IJWLTT.288035

- Perera, P. 2018. Financial Literacy and Retirement Planning; Based on Wewala West GN Division, Sri Lanka. *19th Conference on Postgraduate Research, International Postgraduate Research Conference 2018* (p. 135). Sri Lanka: Faculty of Graduate Studies, University of Kelaniya. Retrieved from <http://repository.kln.ac.lk/handle/123456789/19331>
- Pigou, A. C. 1952. *The Economics of Welfare* (4th ed.). London: Macmillan and Co., Limited.
- Potrich, A. G., and Vieira, K. M. 2018, March 14. Demystifying Financial Literacy: a Behavioral Perspective Analysis. *Management Research Review*, 41(9), 1047-1068. doi:10.1108/MRR-08-2017-0263
- Preston, A., and Wright, R. E. 2022. Gender, Financial Literacy, and Pension Savings. *Economic Record*, 1-26. doi:<https://doi.org/10.1111/1475-4932.12708>
- Ramesh, S., and Umamaheswari, S. 2021. A Study on Impact of Financial Literacy on Women in Bengaluru City. *Journal of Contemporary Issues in Business and Government*, 27(2), 4512-4522. doi:DOI: 10.47750/cibg.2021.27.02.477
- Rodrigo, T. L., and Kim, H. 2021. *Financial Literacy and Retirement Preparedness in Sri Lanka: Evidence from the Private Sector Employees*. Kentucky: University of Kentucky. doi:<https://doi.org/10.13023/etd.2021.104>
- Rooij, M., Lusardi, A., and Alessie, R. 2011. *Financial literacy, retirement planning, and household wealth*. USA: National bureau of economic research. Retrieved from <http://www.nber.org/papers/w17339>
- Sanderatne, N. 2004. *Livelihoods and Poverty in Sri Lanka*. Colombo: A Centre for Poverty Analysis (CEPA) Publication. Retrieved from <https://www.cepa.lk/wp-content/uploads/2020/08/Livelihoods-and-Poverty-02-combined.pdf>
- Sekita, S. 2011. *Financial Literacy and Retirement Planning in Japan*. Institute of social and economic research, Osaka University. Japan: Institute of Social and Economic Research, Osaka University.
- Selvadurai, V. 2018. *Financial Literacy and Retirement Planning of the Urban Elderly in Malaysia*. Kuala Lumpur: Faculty of education, university of Malaya. Retrieved from <https://core.ac.uk/download/268879758.pdf>
- Sen, A. 1984. The Living Standard. *Oxford Economic Papers*, 36(Supp November 1984), 74–90. doi:<https://doi.org/10.1093/oxfordjournals.oep.a041662>
- Senanayake, S. S., and Rathnayaka, R. S. 2015. Analysis of Factors Affecting for Adoption of Good Agricultural Practices in Potato Cultivation in Badulla District, Sri Lanka. *AGRIEAST-2015*, 01-05.
- Senevirathne, W. A., Jayendrika, W. D., and Kuruppuarachchi, Y. R. 2017. Investigation of Financial Literacy Conceptualization for Developing Country Specific Financial Literacy Index. *WUS Accounting Journal*, 1-9. Retrieved from Researchgate.

- Serin, V., Bayyurt, N., and Civan, A. 2009. Effects of Formal Education and Training on Farmers Income. *European journal of social sciences*, 7(3), 52-62.
- Solinge, H., and Henkens, K. 2007, March 09. Involuntary Retirement: the Role of Restrictive Circumstances, Timing, and Social Embeddedness. *Journal of Gerontology: Social Science*, 62-B(5), 295–303. Retrieved from <https://academic.oup.com/psychsocgerontology/article-abstract/62/5/S295/570915> by guest on 05 June 2020
- Taft, M., Hosein, Z., Mehrizi, S. T., and Roshan, A. 2013, May 16. The Relation between Financial Literacy, Financial Wellbeing, and Financial Concerns. *International journal of business and management*, 8(11), 63-75. doi:10.5539/ijbm.v8n11p63
- Tan, S., and Singaravelloo, K. 2020. Financial Literacy and Retirement Planning among Government Officers in Malaysia. *International Journal of Public Administration*, 43(6), 486-498. doi:<https://doi.org/10.1080/01900692.2019.1672078>
- The Island Online. 2020. *News: National Agriculture Policy to be formulated soon*. Retrieved 07 12, 2021, from <https://island.lk/national-agriculture-policy-to-be-formulated-soon/>
- Van Rooij, M. C., Lusardi, A., and Alessie, R. J. 2012. Financial Literacy, Retirement Planning, and Household Wealth. *The Economic Journal*, 122(560), 449–478. doi:<https://doi.org/10.1111/j.1468-0297.2012.02501.x>
- Wewala, W. N., and Ediriweera, E. I. 2021. Comparison of Financial Literacy Impact on Retirement Planning Decisions among Public and Private Sector Workers in Sri Lanka. *Journal of SCAFIRE*, 29-41.
- Yakoboski, P., Lusardi, A., and Hasler, A. 2022. *Financial Literacy, Longevity Literacy, and Retirement Readiness*. New York: Teachers Insurance and Annuity Association of America (TIAA) Institute. Retrieved 03 11, 2023, from https://gflec.org/wp-content/uploads/2023/01/TIAA-Institute-GFLEC_Longevity-literacy-financial-literacy-and-retirement-readiness-TI-January-2023.pdf
- Young, J. H., Hudson, C. R., and Davis, E. L. 2017. A Survey of Retirement Readiness Among African-Americans. *Journal of African American Studies*, 21, 551-566.
- Yushan, M. P., and Fernando, P. N. 2020. Impact of Financial Literacy on Retirement Planning of the Private Sector Employees in Colombo District. *9th Students' Research Symposium* (p. 3). Kelaniya: University of Kelaniya Sri Lanka.
- Zerihun, M. F., and Makgoo, D. M. 2019. Assessment of Financial Literacy on Financial Management Outcomes: Evidence from the South Africa Employed Youth. *Journal of Global Business & Technology*, 15(2), 48-63.

