Financial Literacy in Promoting Sustainable Finance

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ABSTRACT. In an era marked by heightened environmental awareness and concerns about the long-term health of our planet, sustainable finance has gained significant traction as a means to align financial activities with environmental, social, and governance (ESG) principles. At the heart of this transformation lies the pivotal role of financial literacy, empowering individuals and institutions to make responsible, ethical, and sustainable financial decisions. Drawing on a comprehensive review of existing literature and empirical evidence, we dissect the various ways in which financial literacy influences sustainable finance with its intricate symbiotic interplay between them, unravelling how financial literacy plays a vital role empowering individuals, institutions, and communities to advance sustainable, responsible, and ethical financial decisions. The findings of this research reveal that a straight correlation exists amid financial literacy and adoption of sustainable financial practices basis the historical literature review in the subject of study. Persons with advanced levels of financial literacy are more likely to capitalize in sustainable funds, make eco-conscious consumption choices, and engage in responsible savings practices. Moreover, we also propose, a linear regression equation, a mathematical model called as ***FLaSE Model*** that determines the efficacy of financial literacy in promoting sustainable finance. Finally, we discuss as how this synergy amongst the financial literacy and sustainable finance serves as a linchpin that empowers individuals to become active participants in battle against climate change & promotion of sustainable practices that respects and supports the principles of ESG.

Keywords: FLaSE Model**,** Financial Literacy, Sustainable Finance, Determinants of financial literacy.

1 Introduction

Financial literacy (FL) is a skill with competence to understand, practice financial concepts & products to make informed decisions and achieve individual financial well-being. Sustainable finance (SF) is an exercise of adding environmental, social and governance factors into the financial decisions to support Sustainable Development Goals

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(SDGs). Financial literacy in promoting sustainable finance means having the knowledge and skills to choose and use sustainable financial products & services, like green bonds, social impact investing, carbon trading, etc. In this paper we would study both these concepts individually and then it's interplay amongst them and the significance of FL in promoting SF.

1.1 Research Objective

This research paper's goal is to analyze the determinants of financial literacy that promotes the sustainable finance and establish the relationship between the two basis the existing review of available literature documents.

2 Literature Review

2.1 Financial Literacy

The Organization for Economic Cooperation and Development defines financial literacy as "A combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial well-being" [10].

2.2 Determinants of Financial Literacy

Douissa [11] scrutinized the core socio-economic & demographic factors of FL based on the outcome of a multidimensional financial literacy survey showed that, UAE nationals majoring in non-science subjects at the undergraduate level, have lower family incomes, with lower CGPAs, who did not take the university elective personal finance, and females are the most vulnerable students. Kadoya [15] investigated the factors affecting financial literacy and found, the degree of financial literacy is heavily influenced by the demographic factors such as gender, age & education, the psychological factor of future perceptions, the socioeconomic factors such as income & occupation. It also underlined how social interaction and a person's outlook on the future can raise financial literacy.

Garg [7] distinguished various socio-demographic factors such as gender, age, marital status, income & educational attainment influences the youth's FL level. Mancebón [8] concluded that the young consumers' progression of financial abilities is mediated by their mathematical skills, followed by the importance of the family. Herrero [10] focused on the family to elucidate the acquisition of finance, concluded that the understanding the importance of saving money and having financial conversations with parents were found to be the main indicators of students' financial literacy. Furthermore, the utilisation and exposure to financial products, specifically bank accounts, have enhanced students' financial literacy. Hassan [9] gave in the experimental study that the occupation activity, education level, and income level have an impact on FL. Respondents with high incomes, advanced degrees, and those employed in banking, investments, or the finance industry naturally have greater FL than the general population. However, there is a general lack of FL among the respondents of all ages, with women having a lower level of FL than men.

Cumulatively we also find the following studies with various other determinants of financial literacy, the summary of these details is given following table [Table 2.1].

Table 1. Determinants of Financial Literacy – Summary

Determinant Factor - FL	Literature Citation (Financial Literacy)
Education	(Mandell, L. 2008) (Hassan Al-Tamimi, H.A. and Anood Bin Kalli, A., 2009) (Mancebón , J.M, et al., 2018) (Garg, N. and Singh, S., 2018) (Kadoya Y, Khan MSR., 2020) (Douissa, I.B., 2020)
Income	(Van Rooij, M., Lusardi, A., & Alessie, R. 2011) (Hassan Al-Tamimi, H.A. and Anood Bin Kalli, A., 2009) (Garg, N. and Singh, S., 2018) (Kadoya Y, Khan MSR., 2020) (Douissa, I.B., 2020)
Age	(D., Lynch Jr, J. G., & Netemeyer, R. G. 2014) (Hassan Al-Tamimi, H.A. and Anood Bin Kalli, A., 2009) (Garg, N. and Singh, S., 2018) (Kadoya Y, Khan MSR., 2020)
Gender	(Robb, C. A., & Sharpe, D. L. 2009) (Hassan Al-Tamimi, H.A. and Anood Bin Kalli, A., 2009) (Garg, N. and Singh, S., 2018) (Kadoya Y, Khan MSR., 2020) (Douissa, I.B., 2020)
Access to Financial Resources & Information	(Lusardi, A., & Mitchell, O. S. 2008) (Hastings, J. S., & Mitchell, O. S. 2011) (Herrero, D.M., et al, 2018)
Parental Influence	(Behrman, J. R., Mitchell, O. S., Soo, C., & Bravo, D. 2012) (Herrero, D.M., et al, 2018) (Mancebón , J.M, et al., 2018)
Cultural and Social Factors	(Kusaka, D., & Manchester, C. F. 2011) (Kadoya Y, Khan MSR., 2020)
Occupation	(Hassan Al-Tamimi, H.A. and Anood Bin Kalli, A., 2009) (Kadoya Y, Khan MSR., 2020)
Marital Status	(Garg, N. and Singh, S., 2018)

2.3 Components of Financial Literacy

Garg [7] summarised the inter-relationship amongst financial knowledge, financial attitude and financial behaviour and termed them as the three major components of FL. Beata [14] has listed 4 parameters as the components of FL as given in below diagram.

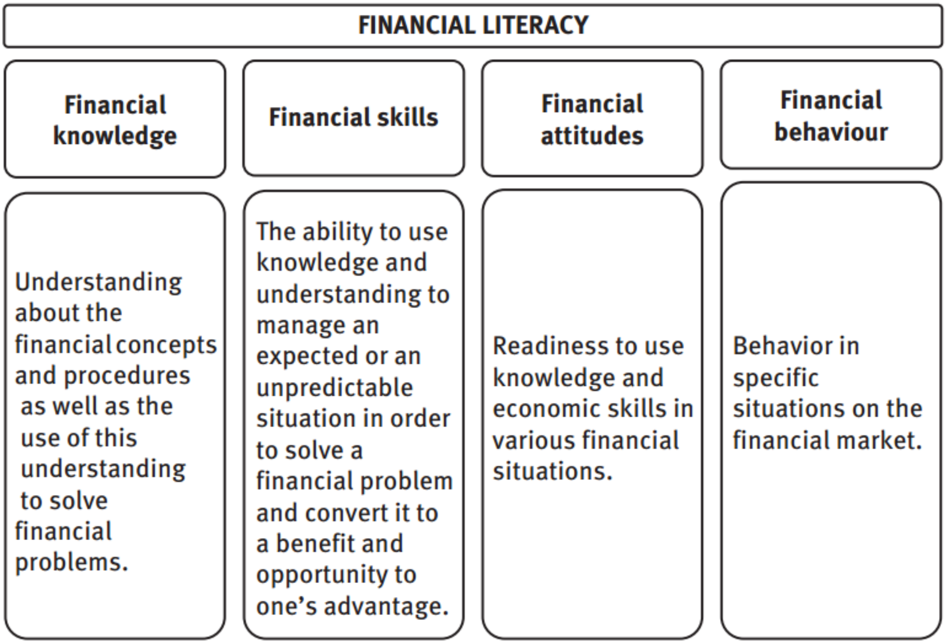

Fig. 1. Components of Financial literacy

2.4 Sustainable Finance (SF)

The concept of sustainability is historically derived from the awareness movement towards global warming and its impact on the environment and humanity. As the movement was formally institutionalised through various introduced environmental policies (including protocol and convention) at the global stage through the United Nations, later the concept of sustainability was expanded to other business-related practices and now particularly in finance.

Based on the recent study published in August 2023 [20] SF refers to a variety of financing services provided in consideration of factors transcending financial return objectives by integrating relevant, ESG criteria into financing decisions to generate unwavering benefits for stakeholders, including but not limited to financing clients and society at large (Haigh, 2012; OECD, 2020; Nirino et al., 2021). SF is more coherently referred to as "finance for sustainability" which encompasses all the activities and factors that promote financial sustainability & contribute to achieving sustainability objectives (Kumar et al., 2022; Migliorelli, 2021). These literatures further indicates that SF is directly connected to what is commonly known today as 'Environmental Finance' in which similar other concepts include 'green', 'climate', 'social', 'micro' and 'ethical', which are all fall under the sustainability domain (Akomea–Frimpong et al., 2021; Muganyi et al., 2021; Sarma & Roy, 2021).

2.5 Significance of SF

According to Globalcapital report's [4] Refinitiv data, the volume of Sustainable Finance bond issuance the highest ever, totalled $1.05 Trillion in 2021 and as per the latest Deloitte's report on Global Sustainable Investment Review, by 2025, such of these assets are expected to amount for more than 50% of all global assets under management. Further, Ariadna [3] examining the trend of allocating capital for ESG assets and goals, concluded that, given this momentum, SF what we call it today—will soon become the norm in the financial industry. Therefore, it is crucial for all market participants to comprehend the sustainable financial instruments operations, utility to align the financial performance with their positive change goals and to know, as how to use them in capital allocation and risk management.

2.6 Promoters of Sustainable Finance

Bhatnagar [6] attempted to identify the enablers of "Green Finance" GF based on the bibliometric analysis and gave ten enablers namely, capacity building, financial instruments, macroeconomic enablers, well-developed capital market, supportive political environment, financial policies and regulations, development of regulatory structure, making investment environment conducive, technology and technological advancements and increase in the levels & forms institutional engagement.

2.7 Financial Literacy and Sustainable Finance

Kandpal [2] discussed on the issues faced in the area of sustainable finance acknowledged the gulf between the myriad strata of society that are excluded financially in the domain of the recognized financial system and stressed the need to provide FL and strengthen the credit delivery mechanisms to improve a country's socio-economic development. They also cited the Indian example wherein, The National Centre for Financial Education (NCFE) in India has launched a National Strategy for Financial Education (NSFE) 2020-2025, aiming to create a financially conscious and empowered India by the provision of financial education to various segments of the population through various channels and platforms. One of the key themes of the NSFE is to promote awareness on green finance and ESG investing.

Dumitrescu [3] quoted the World Bank Group's Global Program on Sustainability that aims to support countries in advancing their sustainability agendas by providing technical assistance, financial knowledge products, capacity building, and financing solutions via the themes' natural capital; environmental health; and green growth. Chaulagain [17] The study among the people from urban and rural areas, explored the value of FL, as one of the ways to increase individual's entrée to finance and its sustainability and recommended that financial services and financial literacy are to be promoted simultaneously by the Govt for the Sustainability.

Bethlendi [1] investigated regarding the green demand based on finance (capital and banking markets) clustering and observed a constructive relationship amid Green versus Financial knowledge & financial versus personal green attitude. Individuals with a strong attitude towards sustainability in their day-to-day life's consumer choices also possess a robust attitude towards GF. Further, the research analytically supported that funding policy, promoting financial & eco-literacy together will strengthen the call for GF products. Burchi [16] investigated the financial literacy's effects on sustainable entrepreneurship and the results revealed a positive & statistically significant relationship between FL versus sustainable entrepreneurial activity. Purnamawati [19] study indicates that the independent variable Green Banking has positively affected dependent variable inclusive growth. The collaboration of various elements like fiscal policy, financial literacy had benefited inclusive and equitable economic growth and adds that green banking is projected to expand its repute in the customers' eye for its sustainability.

Jianmu [18] discussed on the role of the knowledge-based resources in promoting sustainability in small and medium enterprises and concluded in the debate that financial literacy has been recognized as a critical knowledge resource affecting SMEs' sustainability. Moreover, the fractional mediators between financial literacy and SMEs' sustainability were found to be, access to finance and financial risk attitude. Vieira [5] elucidated financial literacy's essential part in permitting & enabling individuals to make responsible decisions, striving to attain financial well-being specifically in the SF instruments. It adds that, the financial knowledge has more positive impacts on sustainable financial behaviour.

Some of the other initiatives that have been taken to enhance financial literacy in promoting sustainable finance are, Jayshree [12] cites a framework for measuring and assessing the level of FL & financial inclusion across countries. The OECD's framework includes questions on sustainable finance literacy, such as awareness of ESG factors, familiarity with sustainable financial products, etc. The European Commission has adopted an action plan on financing sustainable growth which sets out a comprehensive strategy to further connect finance with sustainability. The action plan includes measures to improve financial literacy on sustainability issues among end-investors and financial intermediaries.

In summary, other minutiae between FL and SF, based on the existing literature review are a) Informed Investment Decisions: FL equips investors with the knowledge & skills to understand the implications of ESG factors in investment choices. It enables them to assess the risks and opportunities associated with sustainable investments, such as green bonds or socially responsible mutual funds (Chen, 2018). b) Risk Management: Financially literate people and institutions are well prepared to recognize the financial risks associated with climate change, social inequality, and governance issues. This understanding allows for the incorporation of risk mitigation strategies into investment portfolios (Gounopoulos et al., 2020). c) Advocacy and Engagement: Financial literacy enables investors to engage with companies and financial institutions to advocate for sustainable practices. Shareholder activism and advocacy for ESG initiatives can lead to positive changes in corporate behavior and investment strategies (Bauer et al., 2005). d) Responsible Borrowing and Lending: Financial literacy extends to responsible borrowing and lending practices, where borrowers and lenders understand the importance of directing funds toward sustainable initiatives (Christensen & Fritz, 2020). e) Government and Regulatory Advocacy: Financially literate individuals and organizations can advocate for government policies and regulations that promote sustainable finance. They can participate in discussions and provide input to shape the regulatory landscape favourably (Foerster et al., 2019). f) Community and Education: Financial literacy initiatives can extend to educating communities and future generations about sustainable finance principles in creating a culture of responsible financial decision-making and investment in sustainable projects (Doxey et al., 2018). g) Measurement and Reporting: Understanding financial concepts related to sustainability reporting and performance metrics is crucial. Financial literacy allows stakeholders to interpret and utilize ESG data effectively, which is essential for assessing the impact of investments and encouraging transparency (Hajiheydari et al., 2019) and h) Fostering a Sustainable Mindset: Financial literacy fosters a sustainable mindset, where individuals and organizations prioritize ethical, environmentally friendly, and socially responsible financial decisions in their everyday lives (Mitchell & Lusardi, 2015).

3 Analysis and Discussion

Based on the literature review and other studies on the determinants of financial literacy, we postulate a new theoretical model for calculating the efficacy of financial literacy in promoting the sustainable finance. As, financial literacy is a multidimensional concept influenced by various factors, a linear regression mathematical model called as FLaSE Model (Financial Literacy and Sustainable-finance Equation), encompassing all parameters is given below,

$$\textbf{Financial Literacy} = \beta 0 + \beta 1 * X1 + \beta 2 * X2 + \beta 3 * X3 + \ldots + \beta n * Xn + \varepsilon$$

where,

- Financial Literacy represents the dependent variable, the level of financial literacy in promoting sustainable finance.

- β0 is the intercept, representing the baseline level of financial literacy when all independent variables are zero.

- β1, β2, β3, ..., βn are the coefficients for the independent variables X1, X2, . . ., Xn. These coefficients indicate the impact or contribution of each independent variable to the level of financial literacy.

- (ε) represents the error term, which accounts for unexplained variance or factors not included in the model.

The independent variables (X1, X2, . . ., Xn)) represent the factors that we believe influence financial literacy. These variables can include, but are not limited to (based on our lit review so far) Education level, Income, Age, Gender, Access to financial resources, etc.

The coefficients β1, β2, β3, ..., βn are estimated using statistical techniques such as multiple regression analysis. These coefficients tell us the strength and direction (positive or negative) of the relationships between the independent variables and financial literacy. A positive coefficient indicates that as the independent variable increases, financial literacy tends to increase, and vice versa for a negative coefficient.

Financial Literacy = β0 + β1 * *Education* + β2 * *Income* + β3 * *Age* + β4 * *Gender* + β5 * *Mathematical Skills* + β6 * *Occupation* + β7 * *Marital Status* + β8 * *Access to Financial Resources and Information* + β9 * *Parental Influence* + β10 * *Cultural and Social Factors* + β11 * *Prior Financial Education Programs* + β12 * *Perceptions of the Future* + ε.

As briefed and discussed so far, this equation is a framework and can be customised based on our scope of study, confining or expanding the number of variables. This will thus always predict the exact measure of financial literacy in promoting sustainable finance.

4 Recommendations

The first step in achieving FL in promoting SF is forming the awareness. Although the financial segment is forward-moving at a great speed in participating ESG factors in financial policymaking, on the other hand, teaching SF lags behind. Teaching SF courses is therefore indispensable. Hence, we need more than specialized courses, to create this awareness. We must integrate SF topics in all courses to all students, if they select to work in sustainable finance or otherwise. This is supported by Burchi's [16] empirical study's proof that the inculcation of financial education in the national curriculum had strengthened entrepreneurial skills and accelerated the Green financial growth process across Europe; supporting the hike of financial education initiatives and the addition of topics connected with economic and financial culture, in school education systems.

SF has become a progressively popular among Gen Z people. Hence the ask now to the financial literacy promotors is to accommodate these new gen student's demand on the one hand and on the other hand get them involved with the industry. Academicians and Industrial practitioners must synchronize to create and share knowledge and finally Integrating this sustainability into their financial decisions, such as, showing how to imbibe ESG benefits across a traditional valuation model; how green bonds are valued; and how the inferences of negative screening in portfolio allocation etc.… are assessed are imperative.

Suitably, Kandpal [2] on determining sustainability factor quoted that considering the new comers to financial system ares to be more susceptible for furthering sustainable financial inclusion. Some of the measures that could be counted in are, enhanced coordination amongst the supervisors overseeing the financial sector, heightened market monitoring, and the establishment of robust enforcement mechanisms to address customer complaints.

5 Conclusion

In essence, financial literacy in promoting sustainable finance has various benefits for individuals, businesses, society and the planet. For individuals, it helps them align their personal values and goals with their financial choices, diversify their portfolio, reduce their environmental footprint, and contribute to positive social change. For businesses, it helps them access new sources of funding, enhance their reputation, improve their risk management, and create long-term value. For society, it helps foster social inclusion, reduce poverty and inequality, and support human rights and democracy. For the planet, it helps mitigate climate change, conserve natural resources, and protect biodiversity and ecosystems.

However, financial literacy in promoting sustainable finance also faces many challenges and barriers, such as lack of awareness, information asymmetry, complexity of products, high costs, low returns, regulatory uncertainty, etc. Therefore, there is a need for more education and awareness campaigns, better disclosure and reporting standards, more innovation and product development, more incentives and subsidies, more collaboration and coordination among stakeholders, etc. Therefore, in order to make advances in sustainability we all must commit ourselves to leverage the financial literacy as a tool in all walks of our life, to harness the benefits of sustainable Finance.

6 Limitations and Directions for Future Research

The existing literature focussed only on the 12 significant variables in the FLaSE Model, whereas we can look for the actual weightage of these variables in the equation and further study can be made in exploring such of these other variables, if any. This might also envisage the inter-disciplinary study of financial literacy with other components to evaluate their efficacy by validating the proposed mathematical equation in other social sciences' researches.

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