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ESG literacy and financial literacy among future business professionals: Exploratory evidence from a developing economy

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Abstract

Growing emphasis on environmental, social, and governance (ESG) criteria in financial decision making has created demand for individuals who can interpret and act on sustainability related information, yet individual level ESG literacy remains empirically underdeveloped, particularly in developing economies. This study explores the cognitive structure of ESG literacy and its relationship to financial literacy among 340 management and commerce students using a quantitative, cross sectional, exploratory research design. Reliability analysis and exploratory factor analysis via principal component analysis were employed to validate both constructs and identify their underlying structure. Results indicate that ESG literacy constitutes a reliable and internally consistent construct (Cronbach's alpha = 0.847; KMO = 0.914), with a dominant single factor accounting for 37.37 percent of total variance, reflecting a holistic cognitive capability for understanding, evaluating, and applying ESG information. Financial literacy similarly yielded a unidimensional structure (Cronbach's alpha = 0.863; KMO = 0.924), capturing applied financial competency inclusive of ethical and sustainability considerations. Discriminant validity analysis confirmed the two constructs as empirically distinct despite their positive association, suggesting that sustainability oriented cognition complements and extends conventional financial competence. The study contributes to sustainable finance and financial literacy research by providing individual level empirical evidence of ESG literacy as a form of sustainability oriented human capital, and offers implications for curriculum design, business education policy, and the integration of ESG cognition into existing financial literacy frameworks.

***Keywords*:** ESG Literacy, Financial Literacy, Sustainable Finance, Sustainability Cognition, Human Capital Development, Management Education, Developing Economy

JEL Classification: G53, G41, M14

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1. Introduction

As Environmental, Social and Governance (ESG) issues are gaining increasing traction with the investors, regulators, and corporate decision-makers, the global financial framework has seen a paradigm shift in recent years (Worthington-Smith & Giamporcaro, 2022). ESG factors are already recognized as important determinants of long-term firm sustainability and risk management while fostering stakeholder trust (Zumente & Bistrova, 2021) . Although organizational and policy level recognition of ESG is widely documented, its implementation at the individual level, especially among future business professionals, remains relatively less explored (Au et al., 2023). The ability to compound financial concepts and use them effectively while making financial decisions is basically what is referred to as Financial literacy. It has been tremendously related to a reasonable investment, a smart risk and decision making, and also to a longer life in terms of finances. (Lusardi & Mitchell, 2014) Despite the growing interest, the interaction between ESG literacy and financial literacy is still emerging, especially in developing economies with limited sustainability education (Leong and Cheng, 2025). The term ESG literacy denotes an individual's capability to comprehend ESG principles, evaluate ESG-related data, and incorporate sustainability considerations into financial judgment. Although ESG principles are becoming more widely known, we have little empirical evidence on the structure of ESG literacy and its relationship to financial literacy (Oseifuah, 2025). Most of the previous studies have focused on the firm ESG performance as opposed to individual awareness and understanding (Masindi, Singh, & Msweli, 2023). An investigation of the ESG literacy of students and future professionals is particularly important, because they will be the future decision-makers of finance, investment and corporate governance contexts (Alvarez et al., 2022) This study seeks to fill an emerging gap in the sustainable finance literature by measuring ESG literacy alongside financial literacy through a quantitative, exploratory study. Based on primary survey data drawn from management and commerce students, who will be future participants in a sustainability integrated financial market, the paper studies individuals' understanding, interpretation and involvement with ESG information. This study makes significant contributions to the literature on sustainable finance. To begin with, it advances the conceptual understanding of ESG literacy by framing it as an overall cognitive capability rather than simple familiarity with ESG terminologies. The second contribution of the paper is that it shifts the focus of ESG research from firms and disclosures to individuals as interpretive agents of sustainable finance systems. It adds a micro level of perspective that complements firm level and policy-oriented ESG (environmental, social and governance) research. By examining the correspondence of ESG literacy to financial literacy, the study suggests that sustainability-oriented understanding complements conventional financial competency. This understanding contributes to behavioral finance by identifying ESG literacy as part of the mainstream financial decision-making process, as opposed to an addition or ethical one. Finally, the implications of these findings for education and policy are clear. It would be good if they can advocate for ESG literacy to be included in finance or management courses and that regulatory initiatives to strengthen ESG

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outcomes should also boost individual-level understanding. Conducted as an exploratory study, the research serves as a springboard for confirmatory studies on ESG cognition, investor behavior, and sustainable finance.

2. Literature Review

In this article, we draw from three associated theoretical perspectives to explain why ESG literacy is a meaningful construct and how it works at the cognitive level and why it is a natural fit for financial literacy. All important in forming a framework for assessing ESG literacy as part of the sustainable finance narrative.

2.1 Human Capital Theory

According to Becker (1964), the Human Capital Theory stipulates that an individual's productivity and decision-making quality improves through education and knowledge. In finance research, for a long time, financial literacy was considered one form of human capital which helps people to make better choice, manage financial risk and effective allocation of resource (Lusardi & Mitchell, 2014). Human capital development is gaining more importance as we go green. ESG literacy, in this regard, may also be considered a new variant of human capital with a sustainability orientation. This term holds a more profound significance beyond merely grasping environmental, social, and governance challenges. Because data for the sake of having it doesn't give much insight, professionals wish to have the ability to analyse the data, understand non-financial risks, and evaluate the impact of their decisions. In this way, ESG literacy is considered productive capital. Sustainability, ethics and governance are evolving into integral shifts in finance, particularly as they relate to value creation and risk mitigation. This definitely enhances the decision making.

2.2 Behavioral Finance and Cognitive Processing Theory

Behavioral finance shows that decisions are not made based on calculations alone. They are rather influenced by constraints of the mind, heuristics and subjective interpretations. This perspective is particularly pertinent in terms of ESG information. Information regarding environmental, social, and governance criteria are often qualitative, multidimensional, and difficult to standardize. ESG measures need interpretation rather than just measurement as a conventional financial metric does. Consequently, when processing ESG-related information, a person must use judgment, context, and critical thinking abilities. From a cognitive processing perspective, ESG literacy is the ability of an individual to filter, interpret and evaluate non-financial information. It also involves doubt or skepticism. People with ESG literacy tend to scrutinize disclosures and distinguish genuine sustainability efforts from those that are symbolic and opportunistic. The ability to evaluate this issue is becoming ever more essential where greenwashing risks are growing (Berg et al., 2022).

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2.3 Theory of Planned Behavior (TPB)

According to Ajzen (1991), the behaviour of people is a function of their attitudes, subjective norms and perceived behavioural control. All the three components can be contributed by ESG literacy. An enhanced understanding of ESG matters helps people develop positive attitudes towards sustainable decision-making. People who understand the significance of ESG are likelier to see sustainability as a core element of good business and financial practice. An increasing awareness of ESG makes people aware of the ever-changing ethical and other social norms, especially in professional and investment settings. As a result, perceived behavioral control enhances ESG literacy, which boosts confidence in reading and using ESG information. ESG literacy acts as a cognitive enabler prior to behavior through these mechanisms. Although the study does not directly investigate behaviour, the framework implies that ESG literacy can shape underlying cognitive and motivational processes, as well as financial and investment decisions. ESG literacy can therefore be defined as a person's ability to be able to understand, analyse, assess and critically evaluate ESG information when making decisions.

2.4 Financial Literacy

Individuals have a better understanding of basic financial concepts such as risk–return trade-off, investment choice, budgeting, and financial ethics (Lusardi & Mitchell, 2014; Atkinson & Messy, 2012). Research demonstrates financial literacy provides better behaviour and decision making to people while making them more shock resistant (Hastings et al., 2013). To be successful as a manager, investor and policymaker, financial literacy is essential. As the financial system continues to change, ethical judgment and long-term value have been added components of financial literacy. Sustainable integrated financial markets are a natural intersection of financial literacy, ESG literacy and a bigger understanding.

2.5 ESG Literacy

An individual's ability to assess ESG-related information and embed sustainability consideration into their financial and managerial decision-making is referred to as ESG literacy (Brown & Green, 2021; Zhang et al., 2023). It involves not only understanding but also giving meaning, perhaps a judgement. Various studies have demonstrated that ESG literacy enhances one's ability to think critically about corporate responsibility, ethical investing and long-term value creation, as shown by Chen & Lee (2020) and Kumar et al. (2023). Those who are more proficient in ESG will better judge the veracity of sustainability claims by an organisation. This makes ESG literacy especially relevant in contexts in which ESG disclosures are used increasingly in decisions that are financial and strategic.

2.6 Relationship Between ESG Literacy and Financial Literacy

While ESG literacy has been studied independently of financial literacy, the two have not been linked. New assets indicate that individuals with greater ESG awareness may be better positioned

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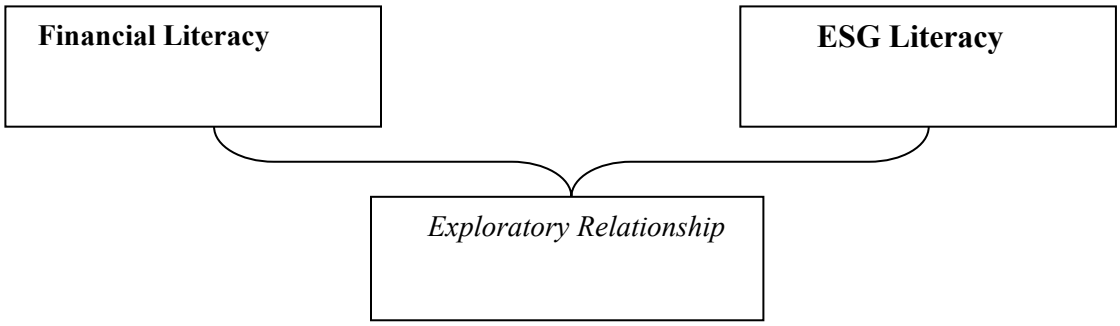
to understand long-term financial risks and ethical investment choices (Patel & Singh, 2022; Alvarez et al., 2022). Yet, there is still a lack of empirical studies doing so. Most research on financial literacy revolves numeracy, budgeting skills and risk-return trade-offs. According to recent studies, ethical judgement along with sustainability issues must be added to the broad definition (OECD, 2020). ESG risks, climate exposure and narrative credibility are increasingly becoming financial issues. Consequently, sustainability-related cognition is now bound up with financial competence. The current study adopts an application view on financial literacy in line with this shift. The emphasis is less on technical or calculative skills, but on perceived ability, moral orientation and financial understanding linked to ESG. ESG literacy at the individual level remains relatively unexplored, despite increased emphasis through firm-level and regulatory-level ESG initiatives. Existing studies often neglect to examine whether ESG literacy should be conceptualized as a distinct cognitive capability with an internal structure. The existing research linking ESG knowledge to financial knowledge is inadequate. There is a growing disparity in developing economies, where the understanding of individuals varies even with the rapid proliferation of ESG frameworks. There is a need for exploratory evidence to clarify the cognitive structure of ESG literacy, and how it ties in with the financial literacy of future professionals. The study is guided by the following objectives:

1. To explore the underlying dimensions of ESG literacy among future business professionals.
2. To examine the factor structure of financial literacy among management and commerce students.
3. To assess the association between ESG literacy and financial literacy.

Based on the theoretical reasoning, the following hypothesis is proposed:

H1: *ESG literacy is positively associated with financial literacy among future business professionals.*

Figure 1. Proposed Model



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3. Methodology

3.1 Research Design

Due to the early conceptual development of ESG literacy, the current study adopts a quantitative, cross-sectional, exploratory research design. The aim is not to confirm a final measurement model but to test the cognitive structure of ESG literacy and the cognitive structure of financial literacy and how they relate to each other at the level of individual. Exploratory designs are especially suitable when a construct's dimensionality is not yet wholly clear theoretically, allowing empirical patterns to emerge rather than be imposed a priori (Hair et al., 2019).

3.2 Sample and Data Collection

The unit of analysis refers to the individual, that is, postgraduate students and young professionals pursuing courses in business. Students are theoretically a relevant population as they will become future investors, managers, and policy actors engaging with ESG-integrated financial decisions. Furthermore, ESG literacy can be conceived as a pre-professional cognitive ability, and previous studies on ESG cognition often drew on educated non-managerial samples (e.g., Amel-Zadeh & Serafeim, 2018). Using purposive sampling, 340 MBA and commerce students were contacted for primary data. Respondents were selected on the basis of their expected future activities in finance, investment, and management decision-making. Data was collected through the distribution of the structured questionnaires, which was used on the five-point Likert scale.

3.3 Conceptualization of ESG Literacy and Financial Literacy

3.3.1 ESG Literacy

The concept of ESG literacy defined as exploratory in nature refers to people's understanding and interpretation of Environmental, Social and Governance concepts. The existing literature states that ESG literacy goes beyond awareness to include understanding of ESG dimensions, perceived importance of ESG, use of ESG awareness in evaluation, as well as ability to critique ESG claims. Inspiring the development of our framework on sustainability and ESG (Eccles, Ioannou, & Serafeim, 2014), evidence that ESG is relevant in financial markets (Friede, Busch, & Bassen, 2015), and governance principles set out by the OECD (2023). Item content was based on earlier research into how investors view ESG (Amel-Zadeh & Serafeim, 2018; Kräussl, Oladiran, & Stefanova, 2024), while remaining open to empirical interpretation in theory. The instrument developed for the study did not impose pre-determined sub-dimensions rather it brought together items that relate to awareness, relevance, use and critical evaluation. The proposed method enables ESG literacy, as an emergent cognitive construct, to be studied in accordance with exploratory research in pursuit of conceptual clarification (DeVellis, 2017). We included a total of 12 items comprising both positively and negatively worded statements. This was done with a view to ensuring the viability of the spread of ESG cognition. Further, this will also allow for the empirical emergence of latent patterns through exploratory factor analysis (Hair et al., 2019).

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3.3.2 Financial Literacy

The financial literacy was such which being applied and perceiving form of financial competency. Further, emphasis was placed on decision-specific understanding rather than technical or numerical knowledge. This is in line with previous studies that found perceived financial knowledge, confidence and judgment in the real world are essential factors (Lusardi & Mitchell, 2014; Allgood & Walstad, 2016). The tool itself was made up of 12 items that reflected 5 broad conceptual areas. They included basic finance concepts, investment and financial planning, risk evaluation and decision-making, ethical and responsible finance, sustainable and ESG finance. The items used in the study were developed with reference to established literature on financial literacy as well as sustainable finance (Allgood & Walstad, 2016; Busch et al., 2016; Dorfleitner et al., 2013; Lusardi & Mitchell, 2014; OECD, n.d.). The cognitive structure underpinning the study is allowed to emerge empirically rather than applying a pre-conceived theory. Responses were solicited through five-point Likert scales ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

3.4 Data Analysis

The analysis underwent a stringent multi-step process.

1. Reliability assessment (Cronbach's alpha)

2. Tests of adequacy of sampling (KMO, Bartlett's)

3. Exploratory Factor Analysis (PCA).

To evaluate the reliability of the measurement items, first, internal consistency was assessed using Cronbach's alpha. The Kaiser-Meyer-Olkin (KMO) measure and Bartlette's Test of Sphericity were used to check the sampling adequacy and factorability. The third phase of the study involved the application of Exploratory Factor Analysis (EFA) using Principal Component Analysis to examine the ESG literacy and financial literacy respectively. The analytical sequence is in conformity with the prescribed methodological guidelines for exploratory multivariate analysis and initial construct testing (Hair et al., 2019. To guarantee anonymity of the respondent the evaluation apprehension was reduced and the measurement items were not pooled by the constructs199. All analyses were performed with SPSS, while factor solutions were assessed for eigenvalues, variance explained, factor loadings, and interpretability.

4. Data Preparation and Screening

The data set (N 340) was checked for completeness, inconsistency, and suitability for multivariate techniques before inference analysis. Results of the analysis showed no systematic patterns of missing data among responses, which were all located on the Likert scales. Responses showed enough variation across items, meaning there was no acquiescence bias or tendency toward

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extreme responses. Due to the perception, nature of ESG and financial literacy constructs, Likert-scale data were interpreted as interval level, in accordance with the literature in these two fields.

4.1 Internal Consistency and Scale Reliability

5.1.1 ESG Literacy

The ESG literacy scale demonstrated strong internal consistency with a Cronbach's alpha coefficient of 0.847, exceeding the threshold recommended for exploratory research (Nunnally & Bernstein, 1994). This indicates that they share a latent construct rather than being weakly related dimensions. An analysis for item level diagnostics shows that there is no alpha inflation if any item is deleted. Thus, the complete scale has been retained for the analysis of construct.

Table 1. Reliability Statistics

Cronbach's Alpha	N of Items
0.847	12

Scale: ESG Literacy

5.1.2 Financial Literacy

The financial literacy scale had a Cronbach's alpha of 0.863 that indicates high reliability. This finding suggests that among the respondents, applied financial knowledge, ethical orientation, and sustainability-linked financial cognition dovetail empirically.

Table 2. Reliability Statistics

Cronbach's Alpha	N of Items
0.863	12

Scale: Financial Literacy

The Kaiser–Meyer–Olkin measure and Bartlett's Test of Sphericity were performed to check the appropriateness of factor analysis.

Table 3. KMO and Bartlett's Test – ESG Literacy

Measure	Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.914
Bartlett's Test of Sphericity – Approx. Chi-Square	973.685

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Df	66
Sig.	0.000

Table 4. KMO and Bartlett's Test – Financial Literacy

Measure	**Value**
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.924
Bartlett's Test of Sphericity – Approx. Chi-Square	1112.324
Df	66
Sig.	0.000

- **ESG Literacy:** KMO = 0.914; Bartlett's $\chi^2(66) = 973.685$, $p < 0.001$
- **Financial Literacy:** KMO = 0.924; Bartlett's $\chi^2(66) = 1112.324$, $p < 0.001$

KMO values higher than 0.90 indicate excellent sampling sufficiency (Hair et al. 2019), while the significant Bartlett's tests indicate the presence of adequate inter-item correlations.

4.2 Exploratory Factor Analysis

Table 5. ESG Literacy

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	4.484	37.37	37.37
2	1.102	9.18	46.55
3	0.986	8.22	54.77

(Only Component 1 retained)

Table 6. Financial Literacy

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %

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1	4.803	40.03	40.03
2	1.087	9.06	49.09
3	0.953	7.94	57.03

Table 7. Component Matrix – ESG Literacy

Item	Component 1
ESG1	0.644
ESG2	0.661
ESG3	0.678
ESG4	0.654
ESG5	0.623
ESG6	0.598
ESG7	0.612
ESG8	0.637
ESG9	0.669
ESG10	0.658
ESG11	0.544
ESG12	0.552

Table 8. Component Matrix – Financial Literacy

Item	Component 1
FL1	0.681
FL2	0.664

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FL3	0.672
FL4	0.658
FL5	0.685
FL6	0.671
FL7	0.596
FL8	0.584
FL9	0.642
FL10	0.631
FL11	0.572
FL12	0.603

4.2.1 ESG Literacy Factor Structure

The exploratory factor analysis carried out through a principal component analysis produced one dominant factor with an eigenvalue of 4.484 that explains a 37.37 % of the total variance. All twelve items had sizeable factor loadings that ranged from 0.544 to 0.678. It is noteworthy that the items related to awareness, application, relevance, governance understanding and skepticism loaded onto the same factor. As such, the finding indicates that respondents cognitively bundled their ESG knowledge and evaluative judgment into one capability. The lack of fragmented sub-dimensions in this model also suggests that ESG literacy may serve as a holistic 'interpretive lens' instead of a checklist.

4.2.2 Financial Literacy Factor Structure

Likewise, financial literacy produced a one-factor solution, with an eigenvalue of 4.803 accounting for 40.03% of total variance. The factor loadings ranged from 0.572 to 0.685 showing high degree of correspondence between the items and factors. This framework indicates that the respondents regard financial literacy as a composite ability comprising of determining risks, ethical consideration, long-term planning and sustainability.

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Table 9. Summary of Empirical findings:

Construct	Cronbach's α	KMO	Eigenvalue	Variance Explained
ESG Literacy	0.847	0.914	4.484	37.37%
Financial Literacy	0.863	0.924	4.803	40.03%

Collectively, the results establish both constructs as psychometrically sound and conceptually coherent, suitable for further theory development and confirmatory research.

4.2.3 Assessment of Convergent and Divergent Validity

Table 10. Convergent Validity Assessment

Construct	Composite Reliability (CR)	Average Variance Extracted (AVE)
ESG Literacy	0.88	0.38
Financial Literacy	0.89	0.40

The joint validity has been measured using composite reliability (CR) and average variance extracted (AVE). According to Table 1, it proves that the CR values of both ESG literacy and financial literacy exceed the threshold of 0.70. While values of AVE are lesser than the conservative threshold of 0.50, which is acceptable for applied business research when values of CR are above 0.60, suggests adequate convergent validity (Fornell and Larcker 1981).

Table 11. Discriminant Validity Assessment (Fornell–Larcker Criterion)

Construct	ESG Literacy	Financial Literacy
ESG Literacy	0.616	
Financial Literacy	0.46	0.632

Note: Diagonal elements represent the square root of AVE.

Discriminant validity was examined using the Fornell–Larcker criterion. As presented in Table 2, the square root of AVE for each construct exceeds the corresponding inter-construct correlation, indicating that ESG literacy and financial literacy are empirically distinct constructs despite being positively related.

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4.3 Discussion

The findings imply that ESG Literacy acts as a type of sustainability-oriented human capital. ESG is not a separate environmental, social, and governance topics as respondents appear to view ESG as one cognitive capability, which helps to support evaluative judgment in financial terms. The Human Capital Theory is enriched with ESG literacy, which is a resource for making sensible decisions in sustainability-integrated markets. ESG data is always subjective or open to interpretation. The significant presence of skepticism in ESG literacy shows that people do not take ESG claims at face value. ESG literacy means people have the higher-order kind of thinking ability required to critically assess credibility. This can assist individuals in avoiding green-washing and vague disclosures concerning ESG. According to the Theory of Planned Behavior, understanding ESG or ESG literacy may work similarly like a channel as perceived control or understanding. While this study did not explore people's actions surrounding ESG information, the findings suggest that ESG literacy may shape how people think about ESG information, which can impact future financial intentions with sustainability in mind. According to the results of the financial literacy, future professionals increasingly opt for sustainability in their financial decisions. The incorporation of ESG-oriented considerations in financial literacy contests narrowly defined, calculation-based understandings of financial literacy. It bolsters a wider understanding of financial literacy in ESG integrated financial systems.

5. Conclusion, Implications, Limitations, and Future Research Directions

This study provides substantial exploratory evidence that ESG literacy and financial literacy are coherent, reliable and empirically distinct construct among future business professionals. According to the report, ESG literacy is more than a basic understanding of sustainability. Forget the thought of ESG being just knowledge. It is actually a much wider mental competence of understanding that is viewed as relevant, using and judging ESG related information. By understanding ESG literacy as an integrated cognitive ability, the present study contributes to the conceptual development of ESG literacy in sustainability education, behavioural finance and ESG research. ESG literacy is used as substantive interpretative competence with respect to financial literacy where financial decisions are increasingly being made on sustainability grounds. The paper seeks to conceptualise individual-level ESG literacy, rather than proposing a predetermined measurement scale, it is empirical in nature. The findings from the survey can help improve business studies, policy making and future research around environmental, social and governance (ESG) cognitions and behaviours.

5.1 Implications of the Study

The study is a step closer to making the conceptualisation of ESG literacy more elaborate on the individual level. It has been shown through the research findings that ESG literacy pertains to the cognitive capacity, in other words, it is humans' ability to assess and charge the information involving sustainability issues in the business/financial context. It is not just a different set of

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knowledge areas. The study furthers Human Capital Theory, as it adds that sustainability-oriented cognition is a new type of individual capital, according to the study. The cognitive skill of understanding and interpreting ESG principles provides access to evaluative judgement in markets that are part of the financial decision-making process. Additionally, through the introduction of ESG literacy into the domain of behavioral finance, there is a growing demand to go beyond the quantitative and risk–return approaches of sustainable finance literature. It shows how individual minds interpret non-financial data with regard to controlling long-term risk in order to assess sustainable value creation. Although exploratory in nature, this study lays down conceptual scaffolding in terms of future messages for ESG literacy and financial decisions.

The findings of this study suggest that any initiative aimed at providing ESG disclosure will probably not affect sustainable finance strongly. To enable users who are current and future of market to decode and use such data, it is just as important to put in place measures that enhance their ESG literacy as it is to have disclosure regulations. Subsequent research thus showed that firm-level ESG information can positively affect market efficiency and responsible capital allocation. A lack of awareness of ESG makes for another box-ticking exercise with expanded disclosure. Improving accessibility of the ESG information in the markets does not only refer to investor education; so does their interpretative and evaluative capacities.

Education in business and finance has far-reaching implications of the results. With ESG literacy becoming ever more vital to today's financial systems, these should be viewed as basic management and finance course competencies. It is important that the education for sustainability allows the critical evaluation and appropriated use of ESG information rather than just being normative or prescriptive. In addition, professional training and certification courses could be incentivized to include ESG literacy components so that future professionals with financial and management degrees are equipped to work in a sustainability-integrated manner.

5.2 Limitations and Future Research Directions

This study has several limitations, which also create very good opportunities for future research. We are unable to track the changes in ESG literacy over time due to the data being cross-sectional. Moreover, since future business experts are students, this research study's find is limited to future business experts. More suitable for exploratory research it was theoretically appropriate to the degree that it was felt that further research ought to investigate ESG literacy. Expanding the sample to investor stakeholder, working people, managers, etc. would be an example of the "more suitable" research. Future application of confirmatory analytical techniques to test the stability of operational dimensions is proposed. The longitudinal research designs can be used to understand how ESG literacy emerges at various stages of one's work life.

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Compliance with Ethical Standards

- **Disclosure of potential conflicts of interest:** The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.
- **Research involving human participants and/or animals:** The study was conducted in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The research involved only human participants. No animals were involved in this study.
- **Informed consent:** Informed consent was obtained from all individual participants included in the study.
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