

Empirical Analysis on Investor Behaviour and Sustainability Preference in Green Bond Adoption in Urban Bengaluru

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Abstract

This research investigates the determinants of investor behaviour and sustainability preferences on the adoption of green bonds in the burgeoning Indian financial sector, specifically in Bengaluru Urban. This examines the interplay of financial literacy, risk perception, investor trust, and environmental values in influencing investors' willingness to utilise sustainable financial products. Primary data were collected from 312 individual investors using a purposive sampling strategy using a structured questionnaire. The analysis was conducted using SmartPLS 4.0's Structural Equation Modelling (SEM). The bootstrap resampling technique was employed to assess the reliability and significance of the path correlations among constructs. The findings indicate that financial literacy and knowledge of green finance are the two paramount factors facilitating the purchase of green bonds. Investors with greater financial knowledge exhibit increased confidence and trust, hence enhancing their propensity to adopt. Risk perception and investor confidence emerged as critical factors, as risk-averse investors are disinclined to participate without assurances of the openness and credibility of green bond issuers. Preferences for sustainability, characterised by environmental concern and a commitment to social responsibility, are strong predictors of investment willingness, suggesting that ethical reasons might mitigate modest financial anxieties. The study identifies many barriers, including insufficient market knowledge, concerns regarding market immaturity, and the potential for green washing, despite the researcher's commendable aims. The findings indicate that India requires targeted legislative modifications, enhanced investor education, and standardised reporting mechanisms to boost investor trust and accelerate the development of its green bond market, hence facilitating the attainment of overarching sustainability objectives.

Keywords: Investor Behaviour, Sustainability Preference, Financial Literacy, Risk Perception, Trust in Green Investment, Green Bond Adoption

1. Introduction

The increasing attention and awareness of the investors to the significance of sustainable finance as a potential solution to environmental and climate issues manifest through investor behaviour and sustainability preference in adopting green bonds. (Sukumar, n.d.) The green bonds are financial instruments that are specifically created to fund the projects that have positive environmental effects, that is, renewable energy, energy efficiency, pollution prevention, sustainable land use, and climate change adaptation (Roskov & Idema, 2023). Sustainability preference and investor behaviour are key to the use of green bonds, financial instruments that are aimed at environmentally friendly projects. Due to ethical factors and long-term climate risk reduction (Verma & Bansal, 2023). The search of competitive financial performance indicative of sustainability pledges, investors are engaging more of environmental, social, and governance (ESG) criteria in their portfolios (Sreelakshmi, 2025) The existing empirical studies indicate that

the announcement of green bond issues usually results in a positive abnormal stock market returns of the issuing firms, particularly in cases where the bonds have been certified by reputed third parties (Idema, 2023). This represents corporate commitment to sustainability to the market and improves the valuation of firms (Bhatnagar et al., 2022). The transparency in reporting of the utilization of bond proceeds, as well as certification, are essential in ensuring that investors trust it and that their qualms about greenwashing are reduced (Fu et al., 2023). Long-term horizons of investment also tend to investor choices of green bonds in the markets and institutional investors (Maltais & Nykvist, 2020) like insurance companies and pension funds are also actively involved in the markets as a way of achieving sustainability (Gao et al., 2022). Although green bonds are used to finance projects that otherwise would have been financed, their benefit is more significant in terms of enhancing integration of corporate sustainability, bettering stakeholder dialogue, and a mechanism to the larger markets (Nanayakkara 2019). Both meta-analysis and other studies in finance reveal that investor sentiment, including media-based sentiment can affect the returns on green bonds, but the results are inconclusive. Furthermore (Emerging Market Green Bonds, n.d.) it is important to highlight that the macroeconomic and geopolitical uncertainties influence investor behaviours and the dynamics of the green bond markets, which is why the financial and non-financial factors are complicated (Tolliver et al., 2020).

The theoretical construct in studying investor behaviour in adoption of green bonds are multi-dimensional; they include financial incentives, business-case incentives and legitimacy or institutional incentives. Among the financial reasons, there are hopes of competitive gains, mitigation of risk, and diversification benefits of a portfolio without accepting lower yields to conventional bonds (Prajapati et al., 2021), (Maltais & Nykvist, 2020). Investors want green bonds with comparable returns to non-green bonds with a value of sustainability. Nonetheless, empirical studies present contradictory findings on the yield premium of green bonds, and some of them appear to show small yield discounts on the high demand (Fu et al., 2023).

2. Literature Review

Green bonds are the new trend that has shown high effectiveness in directing the world capital in the direction of the sustainable development process as well as in mitigating climate change (Sreelakshmi, 2025). Green bonds are distinguished by their use-of-proceeds requirements and third-party certification, such as the Green Bond Principles (GBP) established by (Sukumar, n.d.). The International Capital Market Association are defined as debt instruments that are specifically allocated to environmentally beneficial projects, such as renewable energy, clean transportation, sustainable water management. There is a substantial body of research on the drivers of growth of green bond markets. Using a structural equation model in 49 countries, (Tolliver et al., 2020). show that macroeconomic variables have the most significant impact on the issuance of green bonds, followed by institutional ones (regulatory quality, rule of law), but country-level climate policies, namely, strong commitments within the Paris Agreement, has a singularly positive effect in promoting market growth (Bhatnagar et al., 2022). Policy-led frameworks and in particular Nationally Determined Contributions (NDCs) are therefore of primary importance in keeping the green finance momentum going. Parallel literature brings out opportunities and challenges that are still present. The various empirical studies indicate that green bonds are usually well-received by financial markets. (Fu et al., 2023) discovers a substantially strong stock market response to the announcement of green bonds, as well as long-term enhancements in the environmental performance of issuers, especially in the case when the bonds are certified by third parties (Gupta & Goswami, 2024). The issues of green washing, irregular certification, and asymmetry of information remain, though, a reminder on the significance of good governance and transparency (Nanayakkara 2019). Empirical studies record a small yet statistically significant which is a negative yield premium that signals the readiness of investors to receive lower returns on green bonds than on similar standard bonds (García-Lamarca 2022) this is a sign of over demand by the sustainability focused investors and further intensified by external verification and increased environmental standards of issuance.

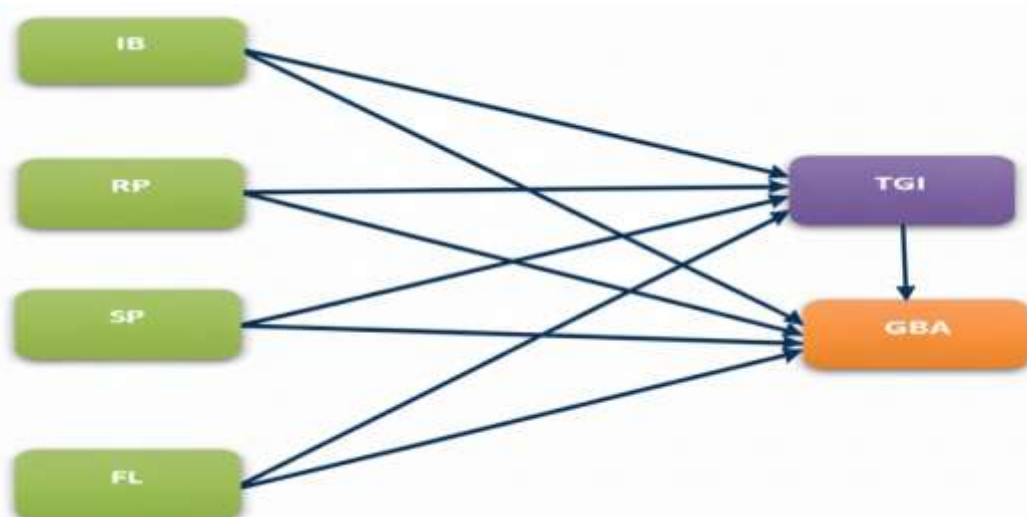
In conclusion, the literature underscores that the financial advantages of green bonds, including enhanced reputation and improved environmental ratings, are long-term results rather than immediate benefits. To make these benefits happen, we need strong national policies and good regulatory frameworks that make sure the market is open and trustworthy (The Role of Institutional Investors in Financing Clean Energy, 2012). Current research underscores the necessity for additional empirical investigation to rectify

measurement discrepancies and assess long-term financial consequences. Subsequent research ought to concentrate on evaluating the efficacy of green bond standards in fostering authentic sustainability and mitigating green washing (Prajapati et al., 2021). The review confirms that investor confidence, regulatory support, and market maturity are essential facilitators of green bond adoption in emerging economies such as India, establishing the basis for the subsequent empirical analysis.

3. Conceptual Model and Hypothesis Development

3.1 Conceptual Model

A conceptual model is a systematic model, which shows the relationship between various variables of a study as they are likely to be. The conceptual model that will be mostly used in relation to green bond adoption will involve the use of variables like; investor behaviour, risk perception, sustainability preference, and financial literacy as the most important independent variables. It is supposed that these factors affect the trust of an investor on green bonds that could serve as a mediating variable, which will eventually affect the probability of a green bond being adopted (the dependent variable). Indicatively, trust in green bonds can be enhanced by greater financial literacy and a sustained desire to purchase the bonds, whereas reduced risk tolerance can be used to promote the purchase of the same. The conceptual model can be used to map out such relationships and explain the paths in which investor characteristics and attitudes influence their readiness to invest in green bonds. On the one hand, such a framework also directs the research process.



Dependent and Independent Variables

Dependent Variable (DV) in this research is the Green Bond Adoption (GBA), which is the willingness as well as intention and actual behaviour of the investors to invest in financial instruments that are environmentally sustainable like in case of green bonds. GBA is the level of readiness of the investors to invest in the projects that will foster the environmental protection, renewable energy, and sustainable development. It measures behavioural devotion to responsible finance and is the end result variable of this research.

This study involves four important Independent Variables (IVs):

Investor Behaviour (IB): Refers to the psychological and emotional tendencies of investors with respect to how they make decisions. Logical, diligent, and pro-active behavioural pattern is also found to increase the probability of embracing sustainable investment choices.

Risk Perception (RP): Refers to the subjective measure of risk of losses or uncertainty of green bond investments used by investors. A decrease in perceived risk leads to the boost of confidence and a positive impact on adoption.

Sustainability Preference (SP): Measures how investors give priority to the values of environmental, social, and governance (ESG) when making financial decisions. High sustainability orientation will encourage investors to finance environmentally friendly financial instruments such as green bonds.

Financial Literacy (FL): There is a financial level of knowledge, awareness, and skill of the investors to make informed investment choices. Increased literacy will allow the investors to assess risks of green bonds, returns, and long-term advantages more objectively.

3.2. Hypotheses Development

Theoretical framework of this study lies in the Behavioural Finance Theory and Sustainable Investment Perspectives, which is combined present an idea of how the cognitive, psychological, and value driven orientations of investors predetermine their choice of the green financial instrument (green bonds). The hypothesized model considers a direct relationship and indirect relationship between Financial Literacy (FL), Investor Behaviour (IB), Risk Perception (RP), Sustainability Preference (SP), Trust in Green Investments (TGI), and Green Bond Adoption (GBA).

Financial Literacy (FL)

Financial Literacy means the capacity of the individual to comprehend and use financial abilities, such as investment analysis, risk management, and a portfolio diversification. Investors have a better understanding of the advantages of green bonds, can decipher sustainability reports, and can assess the trade-offs of the returns and risk (Lusardi & Mitchell, 2023).

Increased literacy increases the level of trust in green financial products because of a higher degree of transparency and wise decision-making (Yoshino et al., 2022). Thus, both trust and the adoption behaviour are likely to be affected positively by financial literacy.

H1: There is a strong positive Green Bond Adoption (GBA) impact by Financial Literacy (FL). H2: There is a positive and meaningful impact of Financial Literacy (FL) on Trust in Green Investments (TGI).

Investor Behaviour (IB)

The cognitive and emotional biases that inform financial decisions are encompassed in Investor Behaviour (Kumar & Goyal, 2015). Attitudes or behavioural aspects like overconfidence, risk-taking, and rational judgments are the factors that affect the reaction of a financial product of sustainability to investors. When investors act in a proactive and responsible manner in investments, they will have more confidence in green instruments and implement them in the long term to gain benefits and satisfy their moral emotions (H. H. Nguyen et al., 2022).

H3: The Investor Behaviour (IB) positively impacts the Green Bond Adoption (GBA) significantly.

H4: Investor Behaviour (IB) positively and significantly affects Trust in Green Investments (TGI).

Risk Perception (RP)

Risk Perception is a subjective rating of investors to uncertainty and possible loss of the investment (Slovic, 1987) When it comes to green bonds, the perceived risk can be a lack of knowledge of the green certification, trustworthiness of projects, or unpredictability of the policy (H. H. Nguyen et al., 2022).

Investors are likely to postpone the adoption of green bonds when they feel that they are risky. On the other hand, the perception of risk upon realizing that it is manageable may encourage trust as transparency and reliability of the investment will be improved (T. N. Nguyen & Truong, 2025).

H5: There is a strong negative impact of Risk Perception (RP) on Green Bond Adoption (GBA). H6: There is a positive significant impact of Risk Perception (RP) on Trust in Green Investments (TGI).

Sustainability Preference (SP)

Sustainability Preference is defined as the extent to which investors focus on the environment, social, and governance (ESG) issues when making financial decisions (Riedl & Smeets, 2017a) Highly sustainable investors are also more likely to prefer the green investments irrespective of the cost.

These investors, in particular, relate green bonds and ethical satisfaction and environmental responsibility, thus, illustrating a more intensive adoption tendency. Sustainability preference is however not always equated to trust as it is based more on individual values as opposed to institutional guarantee.

H7: Sustainability Preference (SP) is positively significant with respect to Green Bond Adoption (GBA).

H8: The sustainability preference (SP) has a significant positive influence on Trust in Green Investments (TGI).

Trust in Green Investments (TGI) is another indicator in the corporate governance system. TGI is the confidence of investors in the transparency, authenticity and the long-term dependability of the green financial products. Trust would act as a psychological linkage that would translate the favourable perceptions and attitudes into actual adoption (Riedl & Smeets, 2017b) Investors who find a high institutional credibility and reliability in green bonds tend to invest more greatly because uncertainty is reduced by the trust and increasing the perceived utility of sustainable products.

H9: There is a strong positive significant influence of Trust in Green Investments (TGI) on Green Bond Adoption (GBA).

Mediator Effect of Trust in Green Investments (TGI).

Trust is a mediating variable that interconnects a combination of cognitive (FL), behavioural (IB), and perception (RP, SP) and sustainable investment outcomes (Briedenhann & Makhitha, 2024) In this research, TGI will be an intervening factor between the antecedent variables and GBA because trust reinforces intention-behaviour association by increasing credibility and lessening the perceived uncertainty.

H10: TGI facilitates the interaction between FL and GBA.

H11: TGI is the mediator between the relationship between IB and GBA.

H12: TGI is an intermediation to the relationship between RP and GBA.

H13: TGI is an intermediary between SP and GBA.

Such systematic hypothesis testing creates the multi-dimensional behavioural model, in which the financial literacy, behavioural characteristics, the perceived risk, and sustainability preferences are the main independent variables that mediate the influence of trust, as the main mediating factor, towards the adoption of green bonds.

The structure is in line with the previous works of behavioural finance and justifies PLS-SEM analysis to test direct and indirect correlations of the sustainability of investment environment.

4. Research Methodology

4.1. Data Collection and Sampling Techniques

Data were gathered via structured online questionnaires disseminated to investors in Bengaluru Urban, facilitating extensive participation and quick data collection. Data screening and purification yielded 312 valid responses for analysis. Purposive sampling, a non-probability method, was used to choose respondents with relevant financial expertise and experience, such as green bond adopters. This method allowed the researcher to focus on a subgroup of investors who could provide informed insights into green bond investment behaviour. The purposeful technique ensured that the data represented active investors rather than the broader population, improving relevance and contextual validity (Savaliya, 2024).

4.2. Demographic Analysis

Table 4.2 presents the demographic characteristics of the 312 respondents who participated in the study on Green Bond Adoption in Bangalore Urban. The sample comprises a diverse group of investors differing in gender, age, education, and income, providing a comprehensive representation of urban investment behaviour.

Demographic Characteristic	Category	No of Responses	Percent %
Gender Distribution	Male	180	57.70%
	Female	132	42.30%
Age Distribution	Below 25	149	47.75%
	35-44 years	132	42.30%
	45-54 years	26	8.33%
	55 and above	5	1.62%
Education	High school or below	65	20.83%
	Diploma	44	14.10%
	Bachelor's degree	138	42.30%
	Master's degree	54	17.30%
	Other's	11	5.47.%

Income Distribution	Below ₹25,000	100	32.06%
	₹25,000–₹35,000	96	30.76%
	₹35,000–₹55,000	86	27.57%
	55,000 above	30	9.61%

It will be analysed on the principles of the structured questionnaire and will describe the primary characteristics of the sample. A large majority of the sample is male (58.3%), and only 41.7% of the sample is female. The majority of the respondents are of younger age, with almost half being under 25 years old, and rest are in the age bracket of between 35-44 years. The number of people aged 45 and above is very small. The group is moderately well-educated in terms of education, 44.2% of them have a bachelor's degree, 17.3% a master's degree, and less of them have a diploma or high school education.

4.3. Data Analysis

The descriptive statistics were initially conducted to verify means and dispersion of every financial literacy. That was followed by the calculation of the alpha of Cronbach to test the reliability and validity. The validity of clusters was taken care of by the use of exploratory and confirmatory factor analysis. To determine the effect of the independent variables on the independent variable that is investment diversification, Smart PLS software was employed to obtain the structural equation modelling (PLS-SEM). The check of the model fit was made through the values of SRMR and NFI, and the percentage of the variance explained by the model was analysed with the help of R-squared value (Dabade & Sowmya D.S, 2025).

5. Results

Financial literacy, investor behaviour, risk perception, sustainability preference, and trust in green bonds are key factors that drive the adoption of green bonds. All factors were extremely reliable as confirmed by the results of the measurement model with loadings of more than 0.7. The test of hypothesis also shows that the majority of relationships are statistically significant, with the exception of the sustainability preference that influenced trust that was not supported. Green bonding is associated with cut down corporate emissions especially in sectors that have heavy emissions.

Measurement Model Evaluation

The assessment of the measuring model verified that all constructs financial literacy, green bond adoption, investor behaviour, risk perception, sustainability preference, and faith in green instruments exhibited robust reliability and validity. All survey items accurately reflected their corresponding latent variables, demonstrating superior measurement quality. The model demonstrated robust internal consistency, validating the precision of construct measurement. The results confirm the appropriateness of the measurement methodology and establish a robust basis for examining the structural linkages in the study.

5.1. PLS-SEM MODEL

Table 1. Outer Loadings

Variable	FL	GBA	IB	RP	SP	TGI
FL 6.2	0.75					
FL 6.3	0.74					
FL 6.5	0.719					
FL 6.6	0.751					
FL 6.7	0.818					
GBA 1.2		0.769				
GBA 1.3		0.755				
GBA 1.4		0.751				
GBA 1.6		0.751				
GBA 1.7		0.774				
IB 3.2			0.828			
IB 3.3			0.822			
IB 3.6			0.794			

RB 4.1				0.734		
RB 4.2				0.799		
RB 4.3				0.753		
RB 4.4				0.771		
RB 4.5				0.776		
RB 4.6				0.765		
RB 4.7				0.723		
SP 5.1					0.714	
SP 5.2					0.738	
SP 5.3					0.706	
SP 5.4					0.753	
SP 5.5					0.742	
SP 5.6					0.77	
SP 5.7					0.723	
TGI 2.2						0.785
TGI 2.5						0.733
TGI 2.6						0.767
TGI 2.7						0.797

Financial Literacy (FL), Green Bond Adoption (GBA), Investor Behaviour (IB), Risk Perception (RB), Sustainability Preference (SP) and Trust in Green Instruments (TGI). Factor loading is a statistic, which demonstrates the extent to which each of the observed variables is correlated with its latent factor. Value above 0.7 is usually used to signify close relationship and is a sign that the item is a good measure of the required construct. (Hair et al., 2017)

- The Financial Literacy (FL) items score between 0.719-0.818, which indicates a high level of measurement and indicates that each one of them has a good track of a financial literacy aspect.
- There are also high loadings on Green Bond Adoption (GBA), Investor Behaviour (IB), and Risk Perception (RB) items (0.723 or higher), all of which are strong representations of each of the factors.
- These items are consistently measured using Sustainability Preference (SP) loadings which are structured between 0.706 and 0.77 and always verify the sustainability priorities of investors. The loadings of the
- Trust in Green Instruments (TGI) range between 0.733 and 0.797 which demonstrates that the trust indicators reflect the essence of this construct appropriately. On the whole, these values prove that the measurement model is valid.(Hair et al., 2017)

Table 2. Path coefficient

Variable	GBA	TGI
FL	0.171	0.165
GBA		
IB	0.271	0.358
RP	-0.143	0.173
SP	0.196	0.131
TGI	0.234	

It will be a table of the direct relationships (path coefficients) between important constructs in green bond adoption model. Financial Literacy (FL): Positive impact (0.171) on Green Bond Adoption (GBA), a moderate impact (0.165) on Trust in Green Bonds (TGI). Investor Behaviour (IB): Good positive influence on both GBA (0.271) and TGI (0.358). This implies that the active and informed investors will embrace and believe in green bonds. Risk Perception (RP): Negative effect on the GBA (-0.143), meaning that the more perceived risk, the lower the adoption, however, positive impact on TGI (0.173). Sustainability Preference (SP 5.): Direct impact on GBA (0.196) and lesser impact on TGI (0.131) are positive. Trust in Green Bonds (TGI): It

has a positive impact on adoption (GBA) (0.234), which indicates that trust is an important mediator (Hayee, 2025a).

Table 3. Total effects

Variable	GBA	TGI
FL	0.210	0.165
GBA		
IB	0.355	0.358
RP	-0.102	0.173
SP	0.226	0.131
TGI	0.234	

Financial Literacy (FL): It has a positive direct impact on Green Bond Adoption (GBA, 0.210) and Trust in Green Bonds (TGI, 0.165). This shows that the more financial literate people are the more they will trust green bonds and the more they will adopt the bonds. Investor Behaviour (IB): It has the greatest impact on GBA (0.355) and also has a significant impact on TGI (0.358). Active and interested investors create confidence and real implementation of green bonds. Risk Perception (RP): Has a small negative impact on GBA (-0.102) which means that perceived risks will have a decreased adoption, but has a positive impact on TGI (0.173) which indicates that risk awareness but controlled has the potential to increase trust. Regarding Sustainability Preference (SP 5.): Has a positive direct impact on GBA that is not only significant (0.226) but the impact on TGI is smaller (0.131). Green bonds will have a higher chance of being adopted and trusted by investors who have high levels of sustainability. Trust in Green Bonds (TGI) has a positive impact on adoption (GBA, 0.234), which proves the critical role of trust as a mediator in the model. (Hayee, 2025a).

Table 4. R-square

Variable	R – square	R – square adjusted
GBA	0.438	0.429
TGI	0.550	0.544

GBA (Green Bond Adoption): R-square: 0.438, R-square adjusted: 0.429. About 44% of the variation in green bond adoption is explained by the independent variables indicating that moderate explanatory power for the behaviour, risk, and sustainability factors included. TGI (Trust in Green Bonds): R-square: 0.550, R-square adjusted: 0.544 About 55% of the variation in trust in green bonds is explained by the model's predictors, suggesting that key behaviour and risk-related factors effectively predict trust levels among investors (Hayee, 2025b).

Table 5. F-square

Variable	GBA	TGI
FL	0.028	0.021
GBA		
IB	0.080	0.227
RP	0.024	0.038
SP	0.034	0.023
TGI	0.031	

The largest effect is from Investor Behaviour (IB) on Trust in Green Bonds (TGI), with an f-square value of 0.227. This is considered a medium-to-large effect, showing that improvements in investor behaviour substantially increase trust in green bonds. IB also has a noticeable effect on GBA with f-square = 0.080. This is a small effect, meaning investor behaviour does positively influence green bond adoption, but the impact is notably stronger on trust. All other predictors Financial Literacy (FL), Risk Perception (RB), Sustainability Preference (SP 5.), and Trust (TGI) have relatively small f-square values across outcomes (mostly 0.02–0.04), suggesting that while they contribute, their individual impact is more modest (Hayee, 2025b).

Table 6. Construct Reliability and Validity

Variable	Cronbach's alpha	Composite reliability	Composite reliability	Average variance extracted (AVE)
FL	0.813	0.816	0.870	0.572
GBA	0.818	0.820	0.872	0.578
IB	0.747	0.747	0.856	0.664
RP	0.878	0.880	0.906	0.578
SP	0.859	0.860	0.892	0.541
TGI	0.772	0.776	0.854	0.594

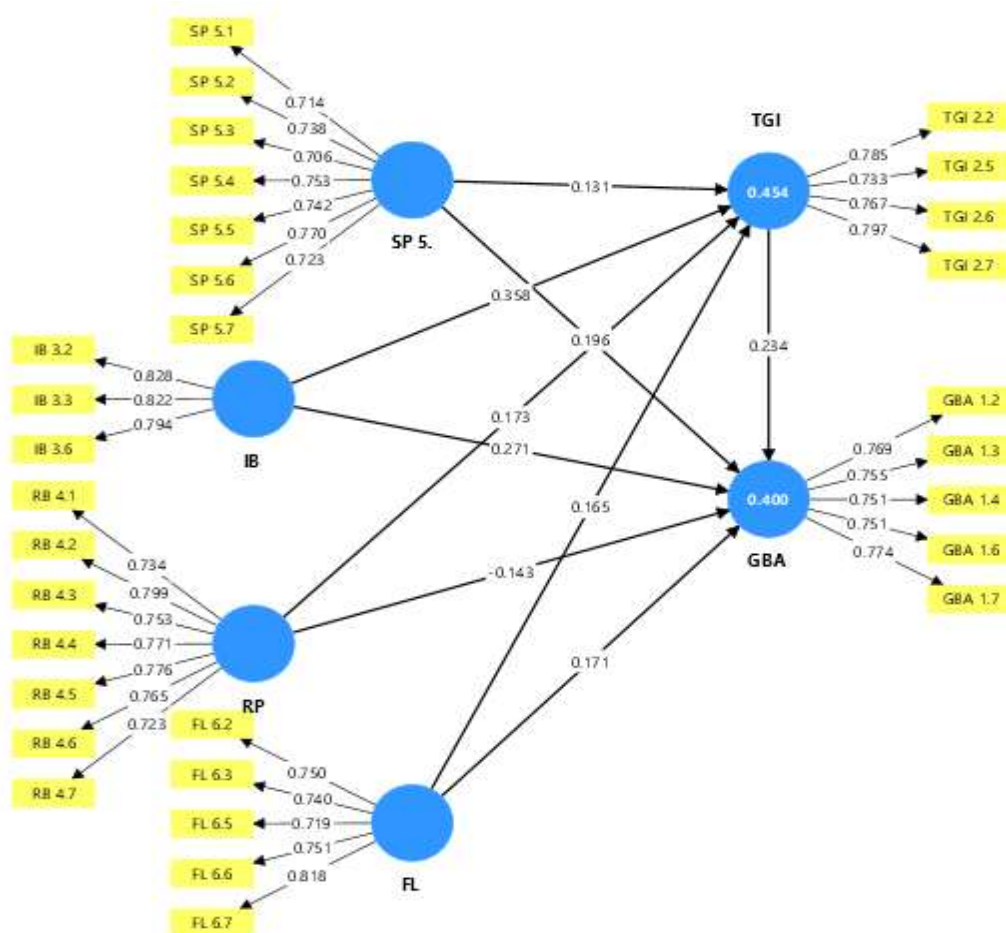
In the Table 6 show: All constructs (e.g. FL, GBA, IB, RP, SP, TGI) have a Cronbach alpha and Composite reliability of more than 0.7 indicating a high level of internal consistency and reliability of the measurement items in each of the latent variables. Average Variance Extracted (AVE): The values of all the AVE are more than 0.5, which states that each construct explains more than half of all the indicators, which is an assurance of convergent validity (Hayee, 2025b).

Table 7. Discriminant Validity

	FL	GBA	IB	RP	SP	TGI
FL						
GBA	0.578					
IB	0.648	0.677				
RP	0.550	0.351	0.628			
SP	0.702	0.580	0.691	0.635		
TGI	0.631	0.637	0.790	0.603	0.636	

The correlation coefficients between the major latent variables of green bond adoption model would appear as follows table: The author (Hayee, 2025b) the numbers in the table give the extent of linear relationship between any two constructs. The more the values are large (the closer to 1), the more the association. Investor Behaviour (IB) and Trust in Green Bonds (TGI) positively relate with each other by 0.790. It implies that the more active the behaviour of investors, the more the degree of trust on green bonds. Financial Literacy (FL) and Sustainability Preference (SP 5.) also show a high level of correlation (0.702) and the latter means that financially literate individuals would like to appreciate sustainability more. Green Bond Adoption (GBA) is positively related with all the other constructs: it is strongly with IB (0.677) and moderately with FL (0.578), SP 5. (0.580), and TGI (0.637). The smallest correlation of the Risk Perception (RP) and GBA (0.351) is the least correlated with other constructs, that is, perceived risk is not strongly related with adoption as in the case of other constructs, but at least it is positive in this model.

Figure 2 Measurement Model



The relationships between the adoption of green bonds (GBA) and trust in green bonds (TGI) are illustrated in this diagram. Investor Behaviour (IB): Positive effect on TGI (0.358) and GBA (0.271) are the most significant, thus proactive investors tend to trust and invest in green bonds. Risk Perception (RP): Raises trust (0.173) and reduces adoption (-0.143)- the greater the perceived risk, the less adoption. Financial Literacy (FL): has a positive relationship with TGI (0.165), and GBA (0.171) more financially literate investors tend to trust and adopt green bonds. Sustainability Preference (SP): Increases adoptions (0.196) although to a smaller degree, trust (0.131). Trust in Green Bonds (TGI): It is a powerful mediator (0.234) that directly leads to adoption. (Wang, 2025)

Table 8. Model Fit

Variable	Saturated model	Estimated model
SRMR	0.059	0.059
D_ULS	1.707	1.707
D_G	0.578	0.578
Chi-square	1042.577	1042.577
NFI	0.775	0.775

SRMR (Standardized root mean square Residual): Both models have a value of 0.059. A value under 0.08 indicates an excellent model fit which implies that model is a rich enough description of the observed data. D_ULS (Squared Euclidean Distance): Value 1.707 is a supplementary fit index; smaller values imply a more successful fit, although there are no absolute cutoffs - it is only used to compare to each other. D_G (Geodesic Distance): This gets 0.578, which is analogous to d ULS in meaning, but smaller values would denote better approximation of model when compared to a saturated model. Chi-square: Value is 1042.577. In SEM, the chi-square/degrees of freedom ratio is a desirable representation of fit, although large samples

give high chi-square values, so it should be used with other measures of fit. NFI (Normed Fit Index): The value of both models is 0.775. The range of NFI is between 0 and 1 where a NFI of above 0.7-0.8 is generally accepted as showing adequate.(Henseler et al., 2016).

5.2. BOOTSTRAPING (PATH COEFFICIENTS)

Table 9. Direct Path Coefficients

Variable	Hypothesis	Original sample	Sample mean	Standard deviation	T statistics	P values	Decision
FL -> GBA	H1	0.171	0.179	0.081	2.114	0.035	Accepted
FL -> TGI	H2	0.165	0.166	0.062	2.652	0.008	Accepted
IB -> GBA	H3	0.271	0.268	0.073	3.700	0.000	Accepted
IB ->TGI	H4	0.358	0.357	0.065	5.510	0.000	Accepted
RP -> GBA	H5	-0.143	-0.145	0.067	2.117	0.034	Accepted
RP -> TGI	H6	0.173	0.177	0.054	3.176	0.002	Accepted
SP -> GBA	H7	0.196	0.199	0.076	2.575	0.010	Accepted
SP -> TGI	H8	0.131	0.132	0.072	1.824	0.068	Rejected
TGI -> GBA	H9	0.234	0.232	0.070	3.353	0.001	Accepted

H1: Financial literacy (FL) Green Bond Adoption (GBA) Financial Literacy (FL). Supported ($\beta = 0.171$, $T = 2.114$, $p = 0.035$). Green bond adoption is enhanced greatly through financial literacy. This implies that those that have more financial literacy will invest more in green bonds.

H2: Financial literacy (FL) Trust in Green Bonds (TGI). Supported ($\beta = 0.165$, $T = 2.652$, $p = 0.008$). Financial literacy has a high role in enhancing trust in green bonds; more financially literate investors trust green bonds more.

H3: Investor Behaviour (IB) Green Bond Adoption (GBA): Investor Behaviour (IB). Supported ($\beta = 0.271$, $T = 3.700$, $p = 0.000$). Positive impact of investor behaviour on adoption of green bonds is very high. Green bonds are more attracted by active and involved investors.

H4: Investor Behaviour (IB) Green Bonds Trust (TGI). Supported ($\beta = 0.358$, $T = 5.510$, $p = 0.000$). The greatest driver of the trust in the green bonds is the investor behaviour; proactive investors demonstrate more trust.

H5: Risk Perception (RP) Green Bond Adoption (GBA). Supported ($\beta = -0.143$, $T = 2.117$, $p = 0.034$). Perception of risk has a negative influence on adoption; the perceptions of high risks decrease the chances of green bond being adopted.

H6: Risk Perception (RP) Trust in Green Bonds (TGI). Supported ($\beta = 0.173$, $T = 3.176$, $p = 0.002$). The perception of risk has a positive influence on the trust in green bonds perhaps because of improved risk communication or transparency.

H7: Sustainability Preference (SP) Green Bond Adoption (GBA) Sustainability Preference (SP) Supported ($\beta = 0.196$, $T = 2.575$, $p = 0.010$). Preference to sustainability leads to higher adoption since investors who attach emphasis to sustainability will invest.

H8: Sustainability Preference (SP) Green Bonds Sustainability Preference (SP) - Trust. Not supported ($\beta = 0.131$, $T = 1.824$, $p = 0.068$). The statistical results also do not show any statistically significant impact of sustainability preference on the trust in green bonds.

H9: Green Bonds. Supported ($\beta = 0.234$, $T = 3.353$, $p = 0.001$). The confidence in green bonds is strong and direct which raises the chances of green bonds adoption significantly.

Table 9. Specific Indirect Effect

Variable	Hypothesis	Original sample	Sample mean	Standard deviation	T statistics	P values	Decision
FL ->TGI -> GBA	H10	0.039	0.039	0.020	1.953	0.051	Rejected
IB -> TGI -> GBA	H11	0.084	0.082	0.028	3.043	0.002	Accepted
RP -> TGI -> GBA	H12	0.041	0.041	0.018	2.207	0.027	Accepted
SP -> TGI -> GBA	H13	0.031	0.031	0.021	1.497	0.134	Rejected

H10: financial literacy (FL), Trust in Green Instruments (TGI) and Green Bond Adoption (GBA) is Rejected ($\beta = 0.039$, $T = 1.953$, $p = 0.051$). The financial literacy mediation of the relationship between trust in green instruments and the adoption of green bonds is statistically insignificant and it is rejected.

H11: Investor Behaviour (IB), Trust in Green Instruments (TGI) and Green Bond Adoption (GBA) is Accepted ($\beta = 0.084$, $T = 3.043$, $p = 0.002$). The mediation role of investor behaviour via trust in green instruments on adoption of green bonds is statistically significant, and it is accepted.

H12: Trust in Green Instruments (TGI), Risk Perception (RP) and Green Bond Adoption (GBA) is Accepted ($\beta = 0.041$, $T = 2.207$, $p = 0.027$). It is statistically significant and accepted that the mediation impact of the risk perception using the trust in green instruments on the adoption of green bonds is a significant effect.

H13: Sustainability Preference (SP), Trust in Green Instruments (TGI) and Green Bond Adoption (GBA) is Rejected ($\beta = 0.031$, $T = 1.497$, $p = 0.134$). The sustainability preference mediation effect of trust in green instruments on green bond adoption does not have a significant value hence this hypothesis is rejected.

The direct path analysis revealed that Investor Behaviour (IB), Financial Literacy (FL), Risk Perception (RP), and Trust in Green Investments (TGI) significantly influenced Green Bond Adoption (GBA), confirming the behavioural and cognitive foundations of sustainable investment. Among these, Investor Behaviour and TGI emerged as the strongest predictors, highlighting the critical role of behavioural confidence and trust. The indirect effects further demonstrated that TGI partially mediates the relationship between IB and RP with GBA, indicating that trust acts as a psychological bridge transforming perception into adoption. However, the mediating effects of TGI between FL and SP with GBA were not significant, suggesting these factors exert direct influence rather than through trust. Overall, the findings affirm that strengthening investor trust and behavioural engagement is essential for enhancing green bond adoption in sustainable financial markets (Balu & Rathnasabapathy, 2025).

6. Discussion and Implications

6.1. Discussion

The adoption of green bonds, investor behaviour, and sustainability preferences constitute a complex and interrelated framework shaped by financial, psychological, and societal incentives (Flammer, n.d.). Empirical evidence demonstrates that investor behaviour, sustainability preference, and financial literacy are the primary positive predictors of both the intention and actual adoption of green bonds (Khan & Vismara, 2025a). Proactive and financially literate investors, especially those with robust environmental and social responsibility principles, exhibit a greater propensity to invest in green financial instruments. Financial literacy is crucial, as understanding and confidence in financial concepts correlate with increased trust in green products and a heightened propensity for sustainable investment (Reddy et al., 2024).

These findings underscore the imperative for focused educational campaigns and investor awareness programs to expedite the adoption of sustainable financing. Investor behavior particularly the propensity to undertake independent research and tolerate comparatively lower returns for environmental advantages emerges as the predominant component, bolstering the foundation of trust and long-term commitment within the model (Khan & Vismara, 2025b). Likewise, sustainability preference is a vital factor, as investors who prioritise environmental, social, and governance (ESG) criteria demonstrate increased involvement with green bonds, indicating a significant shift in financial markets towards the integration of purpose and profit (*Emerging Market Green Bonds*, n.d.). While risk perception continues to affect investment decisions, its adverse effects are alleviated by clear reporting, certification processes, and stable regulatory frameworks. Efficient risk management and reliable disclosures bolster investor confidence, converting risk-averse individuals into active participants in the green bond market (Ahmed et al., 2024).

6.2. Implications

Educators

The role of the context of green bonds and sustainable finance is important to raise awareness, knowledge and skills regarding green bond markets among investors, policymakers, and financial professionals. They create and conduct educational programs, workshops, and training on green bonds that focus on its environmental, financial, and regulatory faces. They contribute to the development of investor literacy, elimination of misperceptions regarding risks, and enhancement of confidence in the green finance

instruments. Besides, teachers work with schools, professional associations, and government to educate sustainability issues in curricula and professional testing. Through knowledge and practical tools, educators can empower the stakeholders with the current information and resources to make informed choices and speed up the adoption and evolution of green bonds in emerging markets such as India.

Policymakers

Green bond regulation bodies in India entail the securities and exchange board of India (SEBI) which has come up with the detailed structure of the ESG debt securities such as; green bonds, social bonds and sustainability-linked bonds. The regulations of SEBI seek to increase the transparency, credibility, and internationalization of the sustainable finance instruments in India. The government has also a great role in its sovereign green bonds structure that makes the process of choosing and monitoring projects easier. Such policymakers are preoccupied with the establishment of a favourable environment of green finance through setting disclosure standards, standardization, and incentives that will spur the market growth and investor trust on sustainable bonds.

Financial Institutions

The financial institutions of India have a central role in the expansion and advancement of the green bond market as they will supply the capital, encourage the issuance of bonds, and stimulate investment in clean projects. Large banks like Axis Bank, IDBI Bank and State Bank of India have been proactive issuing green bonds to fund renewable energy, clean transportation and infrastructure projects. The Indian Renewable Energy Development Agency plus the Export-Import bank of India have also played a major role as issuers in terms of mobilizing long term capital. These financial institutions can solve financial problems such as mismatch of asset and liability by issuing green bonds where they are able to fund projects which are friendly to the environment and keep afloat financially at the same time. Besides, the institutions of the public and the commercial sector help in increasing the diversity and maturity of the sustainable debt market of India through green, social and based bonds, thereby creating a credible and transparent ecosystem of green finance

Researchers

Green bonds in India have greatly researched different issues including the demographics of the investors, the driving forces of the market growth, regulatory issues and the sustainability implications. The major researchers have looked at the factors affecting the retail and institutional investor engagement, they identify variables such as environmental conscious, income, education and experience in the investment as determinants of the green bond investment behaviour. Other studies have been made concerning the role of the private sector, the efficacy of the policies, and the market impediments to the growth of issuing green bonds. These researchers offer valuable information on the development of the Indian green finance system and give policy suggestions and strategic guidelines to increase sustainable investment and facilitate Indian climate targets. Their undertaking contributes to developing the academic knowledge and practical application of green bonds as an important instrument of funding sustainable development in the emerging markets.

7. Limitations & Future Research

Limitations

The method of self-reported data used in the study may be caused by social desirability or misconception that may undermine the quality of investor preferences or perceptions. A range of studies have small samples or lack of diversity of samples, which exclude particular groups of investors or market segments and thereby, may deprive a full picture. High turnover of government policies or regulations regarding green bonds can lead to instability in the market, as well as inconsistency in the results of the research. Unclear or inconsistent definitions of what is considered to be green may cause confusion, less investor confidence and problems in comparing issuance across markets. The high cost of issuing and certifying green bonds (including third-party verification) may put off small and medium businesses.

Future Research

Green bonds in India must be oriented on the idea of investigating the ways in which the regulatory frameworks can be streamlined to make the cost of capital lower and allow a greater variety of issuers to enter the market. Research could examine how our investor behaviour changes due to the new risk mitigation and currency hedging instruments and can also examine how a retail and institutional investor contribute to market growth. Moreover, the long-term environmental and financial effect of the projects financed by green bonds should also be evaluated in the research to confirm their suitability in achieving the objectives of sustainability. Greater attention to the implementation of standardized definitions of green bonds and the improvement of transparency with the help of strong reporting and verification may decrease the risks of green washing and build a greater level of trust in investors.

8. Conclusion

The adoption of green bonds relies on a complex combination of behaviour and risk factors and sustainability factors, as well as significant trust and transparency issues. There is a direct relationship between trust in green bonds and the decision to invest, financial literacy, investor behaviour, risk perception, and sustainability preferences. In this case, the mediator is trust, as the more investors are informed, the less perceived risks, and the more sustainability values they have, the more they respond by trust, and subsequently take real investment decisions. This reflection is supported by structural equation, which reveals how an enhancement in investor education, risk transparency and the promotion of sustainability all enhance the level of participation in green bond markets. Financial payoff is not the only factor influencing the decision to invest in green bonds, as, at the same time, it is the ESG (environmental, social, governance) reputation, corporate governance, and the strictness of the national policies. The high level of regulation and policy enforcement will enhance credibility and lead to more issuances.

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