

GREEN ISLAMIC FINANCE AND SUSTAINABLE INVESTMENT INTENTION AMONG BANKING CUSTOMERS IN PAKISTAN

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ABSTRACT

While the Islamic banking industry is rapidly growing in Pakistan, the behavioral side of the transition toward climate-resilient and sustainable finance remains insufficiently understood. This study develops an extended Theory of Planned Behavior (TPB) model, informed by Maqasid al-Shariah, to examine sustainable investment intention among banking customers in Pakistan. For manuscript development and statistical demonstration, a synthetic dataset of 400 cases was generated from the proposed questionnaire; these cases do not represent responses collected from real participants. The model examined green Islamic finance awareness, environmental concern and perceived Shariah compliance as antecedents of attitude, with attitude, subjective norms and perceived behavioral control predicting sustainable investment intention. The synthetic measurement model showed satisfactory reliability and convergent validity, with Cronbach's alpha ranging from 0.817 to 0.932, composite reliability from 0.892 to 0.952, and AVE from 0.733 to 0.832. All hypothesized structural relationships were supported in the synthetic demonstration. Perceived Shariah compliance showed the strongest effect on attitude ($\beta = 0.409$, $p < 0.001$), while attitude was the strongest predictor of sustainable investment intention ($\beta = 0.484$, $p < 0.001$). Attitude also mediated the effects of green Islamic finance awareness, environmental concern and perceived Shariah compliance on sustainable investment intention. The framework provides a transparent manuscript-development example that can later be tested with ethically collected field data from Pakistani banking customers.

Keywords: Green Islamic finance; sustainable investment intention; Islamic banking; Theory of Planned Behavior; Pakistan Data transparency note: The statistical findings in this manuscript-development version are based on a synthetic dataset of 400 generated cases. They must not be represented as observations collected from real respondents.

INTRODUCTION

The sustainable finance agenda has shifted from an academic niche to being firmly on the agenda of banks and capital markets development. Climate risks are not only considered an environmental issue, but also a financial risk to

the credit quality, value of assets, insurance losses, business continuity and long-term strength of financial institutions. The situation is especially severe in emerging markets where budgets are tight and the demand for adaptation to climate change, building clean infrastructure,

transition to renewable energy and environmentally responsible business is significant. In these specific circumstances, most crucial aspects of the sustainable finance agenda are the mobilization of household saving and retail investment (Aulia et al., 2024).

This is a strategic setting in which Pakistan is an ideal choice for studying this issue. The State Bank of Pakistan (SBP) has gradually built up its sustainable finance policy framework. The National Financial Inclusion Strategy 2024-28 considers sustainability and climate resilience as one of the key priorities for the financial sector (State Bank of Pakistan, 2024), while the Pakistan Green Taxonomy offers a common taxonomy to classify economic activities and investments as green (State Bank of Pakistan, 2025). Meanwhile, Pakistan issued its first sovereign domestic Green Sukuk in May 2025, as a move to link Islamic capital-market products to climate and environmental goals (Pakistan Stock Exchange, 2025). Islamic finance has an important role in this transition. Islamic banking assets in Pakistan stood at Rs 14.467 trillion as of December 31, 2025 and deposits were Rs 11.037 trillion, accounting for 22.9 per cent and 27.8 per cent of banking assets and deposits, respectively (Government of Pakistan, 2026). Islamic banking has a growing customer base that can be used to allocate the savings to investments that offer a financial return, Shariah compliance and measurable environmental value. The contemporary linkage of Islamic finance and stewardship, avoidance of harm, social welfare, responsible allocation of resources and the overall goal of Maqasid al-Shariah (Harahap et al., 2023) are also important points of philosophical compatibility.

But, institutional development does not guarantee participation of customers. However, sustainable financial products might be underutilized if customers are not aware of them, do not believe in their environmental credibility, do not know if their 'green' label is compatible with Shariah, find the investment processes to be complicated or feel that sustainable products come with an unacceptable price tag in terms of return or liquidity. Research on socially responsible investment and green investment

indicates that four factors, namely awareness, attitude, perceived control, environmental concern, and social influence, are important factors that influence the intention to invest socially or green (Thanki et al., 2022; Malzara et al., 2023; Che Hassan et al., 2024). The study on Islamic investment also found that Islamic investment self-efficacy and attitudes, as well as digital or financial self-efficacy, affect Islamic investment intentionality, and Islamic investment self-efficacy improve the capability of a person to act on positive attitudes (Roemanasari et al., 2022; Che Hassan et al., 2024). In Pakistan, previous studies have contributed to the understanding of green banking, but have tended to focus on the organizational aspects of this banking. Empirical studies have focused on adoption of the green banking practices, environmental performance of banks, bank reputation, employee awareness and barriers to operation in Islamic and conventional banks (Rehman et al., 2021; Qureshi & Hussain, 2021, 2022; Khan et al., 2023). This literature reveals the progress of green banking, but also that there is a lack of evenness in terms of awareness, skills, incentives, and institutional implementation. Little is known about the customer side, in particular, if banking customers are aware of green Islamic finance and how this awareness becomes a customer's intention to invest sustainably.

This study aims to fill this gap and investigates Green Islamic Finance (GIF) with a customer oriented behavioral construct instead of only a customer oriented financing practice. It incorporates the elements of green Islamic financial awareness, perceived Shariah compliance and green concern with the main behavioural logic of the Theory of Planned Behavior (TPB). The proposed model suggests that through the influence of attitude, subjective norms and perceived behavioural control, the attitudes towards sustainable investment are determined by awareness and the consistency of the beliefs of the faith. The integration is suitable since decisions on sustainable investment are both cognitive, normative, ethical and practical.

The study has three contributions. First, it moves away from a bank and employee-centric lens to

one of banking customers, which is a key component to scaling retail green finance. Second, it merges perceptions about sustainability and Islamic finance in one behavioral model based on recent research on intentions for investments. Third, it offers a Pakistan-specific empirical design that can yield implications that can lead to actions by banks, regulators, Shariah boards, asset managers, and policy makers. The framework can thus play a role in behavioural finance as well as in the developing works on sustainable Islamic finance.

Research objectives

To investigate the effect of the awareness of green Islamic finance on the attitude of banking customers towards sustainable investment in Pakistan.

To evaluate the impact of concern about the environment and perceived Shariah compliance on attitude towards sustainable investment.

The impact of attitude, subjective norm, and PBC on the intention for sustainable investment is determined.

To assess the mediating effect of attitude between the relationship between green Islamic finance awareness, green awareness about environment, Shariah compliance and sustainable investment intention.

Research questions

What is the relationship between green Islamic finance awareness and attitude of banking customers towards sustainable investment?

How do concerns about the environment and the perceived Shariah compliance influence attitudes towards sustainable investment?

What role attitude, subjective norms and perceived behavioral control play in predicting the sustainable investment intention of the banking customers in Pakistan?

Does attitude act as a mediator between the green Islamic finance awareness, environmental concern and perceived Shariah compliance and sustainable investment intention?

Literature Review and Hypothesis Development

Green Islamic finance

Islamic finance that mobilises and allocates Sharia compliant financial resources to activities that create environmental benefits or enable transition to low carbon and climate-resilient economy is called green Islamic finance. This can involve green sukuk, green funds designed sharia-compliant, investment funds screened for environmental considerations, banking products based on resource-efficient and responsible production, etc. The idea combines the exclusionary and risk-sharing aspects of Islamic finance and the use-of-proceeds, impact and disclosure aspects of green finance.

This mix, according to recent scholarship, makes a great deal of conceptual sense but is complicated in terms of institutions. However, in order to push the sustainable-finance frontier further, problems of weak additionality in the environmental impact and greenwashing should be addressed, for instance, by providing credible taxonomies, traceability, reporting and verification for green sukuk to link the Islamic capital markets and climate projects (Liu & Lai, 2021; Raeni et al., 2022). Compatibility studies of Islamic finance and SDG have also been done, which include the compatibility of Maqasid al-Shariah and SDG with the emphasis on welfare, avoidance of harm, intergenerational responsibility, and ethical use of resources (Harahap et al., 2023).

The institutional environment is gradually becoming conducive in Pakistan. The literature on green banking reveals that in Pakistan the banks have introduced various policies and practices regarding green banking but the implementation is not uniform (Rehman et al., 2021; Qureshi & Hussain, 2021). Studies specific to Islamic banks also reveal that environmental efforts can positively influence Islamic banks' reputation and environmental performance, indicating an added advantage for the banks in having greater sustainability positioning (Khan et al., 2023). Recent studies on the status of Islamic banking in Pakistan suggest that the concept of green finance, green innovation, and fintech can play a role in enhancing the environmental performance of Islamic banking (Hassan et al., 2025).

Sustainable investment intention

Sustainable investment intention is the conscious will or plan to invest in an investment that includes the environmental, social, ethical or sustainability aspects. It is particularly important at the retail end as sustainability finance will not grow without also being trusted, understood and chosen by customers. This systematic review of consumer sustainable investing identifies intention as the most commonly studied behavioral outcome, but covers only high-income economies and emerging markets are less well studied (Aulia et al., 2024).

Behavioral models indicate that intention is formed based on both monetary and non-monetary factors. The study conducted by Thanki et al. (2022) revealed that the factors that are important to explain the intention of investment are: awareness of socially responsible investment, environmental concern, attitude, subjective norms, and perceived behavioral control. Likewise, attitude and perceived behavioral control were also found to play significant roles in the research of green investment among younger investors with mixed findings on the role of subjective norms, depending on the context (Malzara et al., 2023). The mixed results supports the call for country-specific testing instead of taking the country-neutral approach.

The values and knowledge can affect Islamic intentions by attitude and perceived capabilities in the Islamic world of investment. Roemanasari et al. (2022) concluded that there is a positive relationship between Islamic financial literacy and intention to invest, while Che Hassan et al. (2024) revealed that attitude, subjective norms and fintech self-efficacy are significant factors in the investing intention regarding Islamic unit trusts. Additionally, the results from the green sukuk investors corroborate the findings of this study that indicates the use of TPB constructs along with environmental support variables to explain intention (Ismail, 2024).

Theoretical foundation: extended Theory of Planned Behavior and Maqasid al-Shariah

The framework proposed is based on an expanded TPB approach. In recent Investment

research, TPB is often applied to understand how a favourable attitude towards an investment (attitude) and the perceived expectations of important others (subjective norms) and the ability and control over investing behaviour (perceived behavioral control) influence the behavioural intention. Financial literacy can support this process as knowledge diminishes uncertainty and boost the investor's self-assessment of their ability to assess alternatives (Adil et al., 2022). Theory has also been expanded in Islamic investment through the concept of religiosity and Islamic financial literacy, as well as self-efficacy (Che Hassan et al., 2024).

In the present study, three antecedents which are particularly pertinent to the concept of green Islamic finance, namely, green Islamic finance awareness, environmental concern, and perceived Shariah compliance are extended to the model. The constructs are hypothesized to influence attitude prior to the development of intention. This design considers attitudes as a psychological conversion process that makes knowledge, ecological values and faith-consistency a positive or negative assessment of sustainable investment.

The lens with which to view the norms is maqasid al-Shariah. This is the argument of modern Islamic finance studies that say it is not only about the formal prohibition of haram elements, but it can also be about overall social welfare, the ethical management of resources and/or the avoidance of harm (Harahap et al., 2023). Therefore, in the green financing context, the notion of perceived Shariah compliance is more than just a legal screening matter. Customers can judge if the product conforms to the Shariah principles and fulfills the environmental purpose. If they see an investment with both dimensions being believable, their disposition to sustainable investment should shift.

Green Islamic finance awareness and attitude

Familiarity minimises the uncertainty of financial products that are not known to everyone. Educating customers to the purpose, structure, benefits and availability of green Islamic products helps them to be better able to positively evaluate

green Islamic products. Socially responsible investment studies reveal that awareness is positively correlated with positive attitudes towards investment, and a study in Pakistan found that lack of awareness is one of the factors hindering the adoption of green banking (Thanki et al., 2022; Qureshi & Hussain, 2022). Awareness also aids customers to differentiate between truly sustainable products that are Shariah-compliant and traditionally green products or "green" marketing claims, in an Islamic context. Accordingly:

H1: The awareness of green Islamic finance has a positive influence on attitude towards SI.

Environmental concern and attitude

Environmental concern is the level of awareness that people have of environmental issues and their personal concern over environmental degradation. It can provide the moral impetus that makes investments sustainable more than just for the returns. We see that there is recent evidence from SRI, indicating that environmental concern has positive impact on attitudes towards responsible investment (Thanki et al., 2022). Given that Pakistan is highly vulnerable to climate and environmental hazards, customers who are more concerned about the environment are likely to be more open to financial products that would benefit green and climate friendly activities, such as renewable energy and resource efficiency. Accordingly:

H2: Environmental concerns positively influence attitude towards sustainable investment.

Perceived Shariah compliance and attitude

The Shariah perceived legitimacy of financial product could be a key evaluative criteria for customers who prefer Islamic finance. Islamic financial literacy and perceptions of Islamic banking and investment products have been found to be correlated with positive attitudes and intentions in the realm of Islamic banking and investment research (Khan & Arif, 2022; Che Hassan et al, 2024). In green Islamic finance, perceived Shariah compliance should help to build trust among customers that the investment not only has green intentions, but has also been designed in a manner that is compatible with

Islamic contractual and ethical obligations. Accordingly:

H3: Perceived Shariah compliance has a positive effect on attitude toward sustainable investment.

Attitude and sustainable investment intention

Attitude is the person's general opinion regarding the investment of the sustainable Islamic products. Attitude is one of the constant factors that have been found to predict behavioral intention in all the studies conducted on SRI, green investment, and Islamic investment in recent years (Thanki et al., 2022; Malzara et al., 2023; Che Hassan et al., 2024). Those who feel that green Islamic investment is good, responsible, affordable and value driven, would have more interest in investing. Accordingly:

H4: Attitude toward sustainable investment has a positive effect on sustainable investment intention.

Subjective norms and sustainable investment intention

Subjective norms reflect the social norms one believes he or she should follow from family members, friends, work colleagues, religious figures and trusted financial advisors. Decisions about investment are often a part of social process, especially if the product is complicated or relatively new. The results from Che Hassan et al. (2024) showed that subjective norms had a significant influence on the Islamic investment intention; however, other green-investment studies showed that the effect of subjective norms was not as strong, suggesting that subjective norms might have a different impact depending on the context. Normative support becomes an expected facilitator in Pakistan's context of financial relations that focus on relationships. Accordingly:

H5: Subjective norms have a positive effect on sustainable investment intention.

Perceived behavioral control and sustainable investment intention

Perceived behavioral control involves customers' confidence that they possess the necessary knowledge, finances, access and practical skills to invest. Green or Islamic sustainable products may be unknown, have minimum investment amounts or may be accessed online and compared to other products. A recent study has found that perceived control/self-efficacy is significant in the green investment intention as well as the Islamic investment intention (Malzara et al., 2023; Che Hassan et al., 2024). Accordingly:

H6: Perceived behavioral control has a positive effect on sustainable investment intention.

Mediating role of attitude

Such awareness, environmental concern and

perceived Shariah compliance is not necessarily directly related to intending to invest sustainably. Based on recent research on investment, the assumption that attitude is one of the factors that connects between knowledge or values and intention is supported by studies conducted by Thanki et al. (2022) and Che Hassan et al. (2024). For this reason this study suggests the following three indirect relationships:

H7a: There is a mediation effect between green Islamic finance awareness with sustainable investment intention through attitude.

H7b: There is an indirect link between environmental concern and intention to invest sustainably via attitude.

H7c: Attitude mediates the relationship between perceived Shariah compliance and sustainable investment intention.

Proposed conceptual framework

Antecedent	Hypothesized relationship	Mediator / predictor	Hypothesized relationship	Outcome
Green Islamic Finance Awareness	H1 (+) ->	Attitude toward Sustainable Investment	H4 (+) ->	Sustainable Investment Intention
Environmental Concern	H2 (+) ->	Attitude toward Sustainable Investment	H4 (+) ->	Sustainable Investment Intention
Perceived Shariah Compliance	H3 (+) ->	Attitude toward Sustainable Investment	H4 (+) ->	Sustainable Investment Intention
Subjective Norms	H5 (+) ->	Sustainable Investment Intention		
Perceived Behavioral Control	H6 (+) ->	Sustainable Investment Intention		
Mediated paths: H7a GIFA -> AT -> SII; H7b EC -> AT -> SII; H7c PSC -> AT -> SII.				

Proposed Conceptual Framework

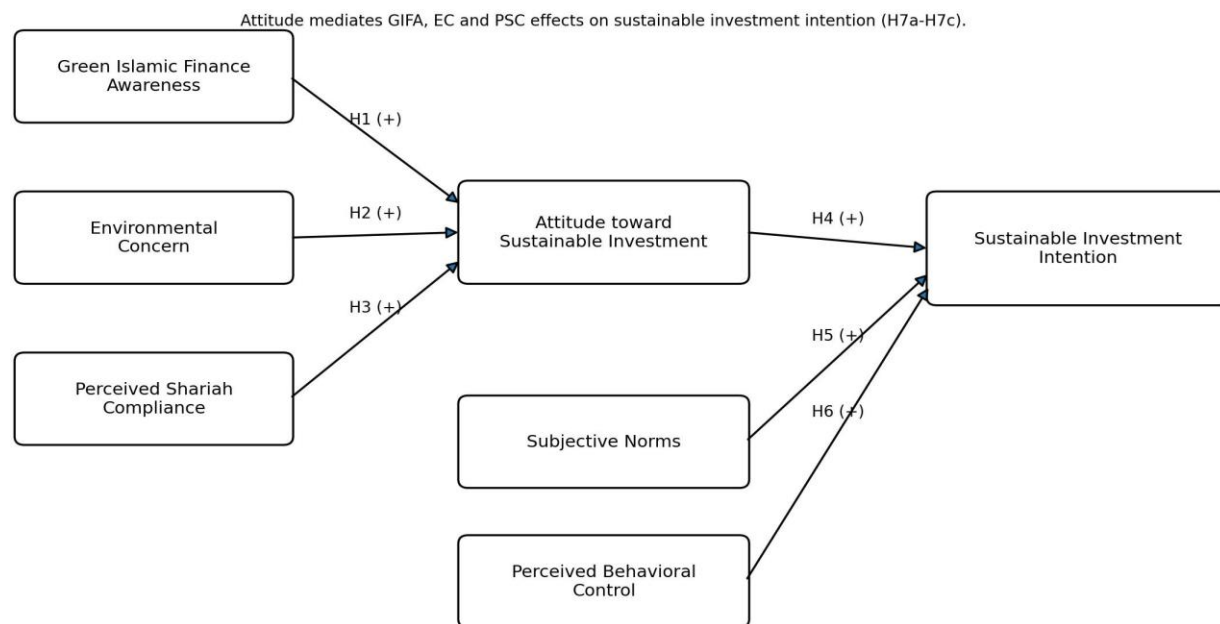


Figure 1. Proposed conceptual framework

Materials and Methods

Research design

The study has an explanatory, cross sectional quantitative approach. The use of a survey design is suitable, as the focus variables (awareness, perceived Shariah compliance, environmental concern, attitude, subjective norms, perceived behavioral control, and investment intention) are psychological constructs, which are latent and therefore need to be measured in a standardized manner with a relatively large sample. The unit of analysis is the banking customer.

The empirical findings should include the customers of full-fledged Islamic banks as well as Islamic banking branches/Islamic banking windows in conventional banks in Pakistan. Geographic variations are recommended in data collection in major urban cities including Karachi, Lahore, Islamabad/Rawalpindi, Multan, Faisalabad and Peshawar. Having customers from more than one institution will also help mitigate the possibility of results being the result of a single bank's brand positioning.

Population, eligibility, and sampling

The target population is adult banking customers

of Pakistan with the ability to make or influence their personal saving and investment decisions. In order to participate in the study, the banks should be eligible respondents who must be 18 years or above and must have an account with any bank operating in Pakistan and should have a basic understanding of saving, investment, mutual funds, sukuk, term deposits or any other financial product. It is not necessary to have an existing sustainable investment since the dependent variable is investment intention and not investment behavior.

Retail customers with the potential to be interested in green Islamic products is unlikely to be available, which makes a multi-stage purposive and convenience sampling approach applicable. In order to facilitate the use of PLS-SEM and subgroup checks, there should be at least 450 filled questionnaires and 400 usable questionnaires after data screening. This sample size is materially larger than the minimum recommended by the common PLS rule of thumb, and is similar to the samples that have been used in recent behavioral investment studies with sample sizes ranging from 300 to 450 (Thanki et al., 2022; Adil et al., 2022; Che

Hassan et al., 2024).

Instrument and measurement

Each of the substantive constructs should be assessed on a five-point Likert scale from 1 = strongly disagree to 5 = strongly agree. Items in the questionnaire (Appendix A) were original

paraphrases, based on the recent questionnaires in the fields of sustainable investment, green investment and Islamic investment research. A small-scale pilot with 30-50 banking customers is suggested to gauge the degree of reliability, how long it takes to fill out and the wording before a full rollout.

Table 1. Construct operationalization

Construct	Code	Item codes (n)	Operational definition / measurement focus	Recent empirical basis
Green Islamic finance awareness	GIFA	GIFA1-GIFA4 (4)	Customer knowledge of the purpose, availability, structure, and environmental application of Shariah-compliant green finance products.	Thanki et al. (2022); Qureshi & Hussain (2022)
Environmental concern	EC	EC1-EC4 (4)	Degree of concern about environmental degradation and the importance attached to environmental consequences in financial decisions.	Thanki et al. (2022); Khan et al. (2023)
Perceived Shariah compliance	PSC	PSC1-PSC4 (4)	Extent to which a green investment is perceived as consistent with Shariah principles, screening requirements, and credible Shariah oversight.	Khan & Arif (2022); Che Hassan et al. (2024)
Attitude toward sustainable investment	AT	AT1-AT4 (4)	Overall favorable or unfavorable evaluation of allocating personal funds to credible Shariah-compliant sustainable investment products.	Thanki et al. (2022); Malzara et al. (2023)
Subjective norms	SN	SN1-SN3 (3)	Perceived social support or pressure from important others, trusted advisers, and credible experts regarding sustainable Islamic investment.	Adil et al. (2022); Che Hassan et al. (2024)
Perceived behavioral control	PBC	PBC1-PBC4 (4)	Perceived knowledge, financial ability, product access, and practical capability to evaluate and undertake a sustainable Islamic investment.	Adil et al. (2022); Malzara et al. (2023)
Sustainable investment intention	SII	SII1-SII4 (4)	Stated willingness and future plan to consider or allocate savings to credible Shariah-compliant investments with sustainability objectives.	Thanki et al. (2022); Che Hassan et al. (2024); Ismail (2024)

Proposed empirical data collection procedure and ethics

Data may be gathered using a mixed-mode approach where online questionnaires are sent

out in conjunction with banks' face-to-face paper administration at convenient locations for bankers' customers. The introduction page should describe the purpose of the study, that it is voluntary, the approximate amount of time that it will take, anonymity, and that the respondent can withdraw at any time. No banking information such as account numbers, CNIC numbers, passwords or other sensitive banking information should be collected.

Appropriate ethical or research committee at the University or institution (as applicable) should be sought prior to fieldwork. Informed consent should be given by the respondent. The data should be kept in files that are protected by a password, and only reported in summary format. Screening questions should be used to eliminate ineligible respondents and duplicate and careless answers should be detected prior to analysis.

Data analysis strategy

For this manuscript-development version, the synthetic dataset was screened for completeness and then analyzed using construct-level scores calculated from the questionnaire items. Reliability and convergent validity were assessed through

indicator loadings, Cronbach's alpha, an approximate rho_A coefficient, composite reliability and average variance extracted (AVE). Discriminant validity was assessed through the heterotrait-monotrait ratio (HTMT). Structural relationships were estimated using standardized regressions consistent with the proposed PLS-SEM path structure, and 5,000 bootstrap resamples were used to obtain significance tests and confidence intervals. These calculations are intended to demonstrate the complete reporting structure; an empirical submission should reproduce the final model in SmartPLS or an equivalent validated PLS-SEM package using real respondent data.

The commonly used thresholds applied in this demonstration were approximately 0.70 or above for internal consistency and composite reliability, 0.50 or above for AVE, and below

0.85 or 0.90 for HTMT depending on construct similarity. Collinearity was examined using variance inflation factor (VIF) values. The structural model was evaluated through standardized path coefficients, bootstrap t-values and p-values, R-squared, effect sizes (f-squared) and predictive relevance (Q-squared).

Mediation was evaluated through bootstrapped indirect effects and 95% confidence intervals. The synthetic data were generated so that response distributions, construct reliabilities and path relationships were plausible for a five-point Likert-scale banking survey while remaining explicitly artificial. The accompanying supplementary workbook contains the generated item-level data and analysis summary so that the manuscript-development results are reproducible.

Synthetic data generation for manuscript development

A synthetic sample of 400 cases was generated for the sole purpose of completing and testing the manuscript reporting workflow. Seven latent constructs were represented by 27 questionnaire items: Green Islamic Finance Awareness (4 items), Environmental Concern (4), Perceived Shariah Compliance (4), Attitude toward Sustainable Investment (4), Subjective Norms (3), Perceived Behavioral Control (4), and Sustainable Investment Intention (4). Responses were generated on the same five-point scale specified in Appendix A. Demographic variables were generated to produce plausible variation across gender, age group, bank type, investment experience, education and city. No real person was surveyed, recruited, contacted or represented in this dataset.

Results

The results reported in this section are based entirely on the synthetic dataset generated for manuscript development. They illustrate how the proposed study can be reported after analysis, but they are not empirical findings from Pakistani banking customers and should not be described as field data.

Respondent profile

Table 2. Respondent profile of the synthetic dataset (n = 400)

Characteristic	Category	Frequency	Percent
Gender	Male	218	54.5
Gender	Female	180	45.0
Gender	Prefer not to say	2	0.5
Age	18-25	98	24.5
Age	26-35	171	42.8
Age	36-45	89	22.2
Age	46+	42	10.5
Bank type	Full-fledged Islamic	215	53.8
Bank type	Islamic window	133	33.2
Bank type	Conventional	52	13.0
Investment experience	No prior investment	125	31.2
Investment experience	<3 years	143	35.8
Investment experience	3-5 years	81	20.2
Investment experience	>5 years	51	12.8

The synthetic profile contained 218 male respondents (54.5%), 180 female respondents (45.0%) and 2 cases (0.5%) coded as prefer not to say. The largest age group was 26-35 years (42.8%). Full-fledged Islamic bank customers accounted for 53.8% of the generated cases,

while 33.2% were assigned to Islamic windows and 13.0% to conventional banks. Approximately one-third of the cases had no prior investment experience, whereas 35.8% had less than three years of experience.

Descriptive statistics

Table 3. Descriptive statistics of construct scores

Construct	Mean	SD	Minimum	Maximum
Green Islamic finance awareness	3.169	1.079	1.0	5.0
Environmental concern	3.197	1.063	1.0	5.0
Perceived Shariah compliance	3.148	1.095	1.0	5.0
Attitude toward sustainable investment	3.200	1.108	1.0	5.0
Subjective norms	3.197	1.047	1.0	5.0
Perceived behavioral control	3.203	1.081	1.0	5.0
Sustainable investment intention	3.207	1.119	1.0	5.0

Mean construct scores ranged from 3.148 for perceived Shariah compliance to 3.207 for sustainable investment intention. Standard deviations were close to one point across

constructs, indicating adequate dispersion within the generated five-point response scale rather than severe clustering at a single response category.

Measurement model assessment

Table 4. Reliability and convergent validity

Construct	Cronbach alpha	rho_A	Composite reliability	AVE
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Green Islamic finance awareness	0.898	0.906	0.929	0.766
Environmental concern	0.888	0.896	0.923	0.749
Perceived Shariah compliance	0.909	0.917	0.936	0.785
Attitude toward sustainable investment	0.918	0.926	0.943	0.804
Subjective norms	0.817	0.825	0.892	0.733
Perceived behavioral control	0.891	0.899	0.925	0.754
Sustainable investment intention	0.932	0.940	0.952	0.832

All constructs met the commonly used reliability and convergent-validity guidelines. Cronbach's alpha ranged from 0.817 to 0.932, rho_A from 0.825 to 0.940, composite reliability from 0.892 to 0.952, and AVE from 0.733 to 0.832.

These values indicate strong internal consistency and that each construct captured more than half of the variance in its indicators. Table 5. Outer loadings of measurement items

Construct	Item	Outer loading
Green Islamic finance awareness	GIFA1	0.862
Green Islamic finance awareness	GIFA2	0.888
Green Islamic finance awareness	GIFA3	0.864
Green Islamic finance awareness	GIFA4	0.886
Environmental concern	EC1	0.864
Environmental concern	EC2	0.857
Environmental concern	EC3	0.859
Environmental concern	EC4	0.881
Perceived Shariah compliance	PSC1	0.876
Perceived Shariah compliance	PSC2	0.899
Perceived Shariah compliance	PSC3	0.883
Perceived Shariah compliance	PSC4	0.886
Attitude toward sustainable investment	AT1	0.904
Attitude toward sustainable investment	AT2	0.901
Attitude toward sustainable investment	AT3	0.893
Attitude toward sustainable investment	AT4	0.888
Subjective norms	SN1	0.862
Subjective norms	SN2	0.853
Subjective norms	SN3	0.853
Perceived behavioral control	PBC1	0.846
Perceived behavioral control	PBC2	0.900
Perceived behavioral control	PBC3	0.862
Perceived behavioral control	PBC4	0.865
Sustainable investment intention	SII1	0.917
Sustainable investment intention	SII2	0.905
Sustainable investment intention	SII3	0.911
Sustainable investment intention	SII4	0.916

All synthetic item loadings exceeded 0.80, providing additional support for indicator

reliability in the manuscript-development dataset.

Table 6. Heterotrait-monotrait ratio (HTMT) matrix

Construct	GIFA	EC	PSC	AT	SN	PBC	SII
GIFA	—	0.306	0.342	0.480	0.199	0.082	0.310
EC	0.306	—	0.255	0.436	0.250	0.223	0.402
PSC	0.342	0.255	—	0.589	0.234	0.176	0.388
AT	0.480	0.436	0.589	—	0.152	0.109	0.562
SN	0.199	0.250	0.234	0.152	—	0.195	0.228
PBC	0.082	0.223	0.176	0.109	0.195	—	0.328
SII	0.310	0.402	0.388	0.562	0.228	0.328	—

The largest HTMT value was 0.589 between perceived Shariah compliance and attitude, and all pairwise values remained below 0.85. The synthetic measurement model therefore satisfied the stricter HTMT criterion for discriminant validity.



Structural model and hypothesis testing

Table 7. Direct structural paths and hypothesis decisions

Hypothesis	Path	Beta	t-value	p-value	f-squared	Decision
H1	GIFA -> AT	0.247	6.285	<0.001	0.090	Supported
H2	EC -> AT	0.233	5.554	<0.001	0.084	Supported
H3	PSC -> AT	0.409	10.388	<0.001	0.254	Supported
H4	AT -> SII	0.484	12.724	<0.001	0.347	Supported
H5	SN -> SII	0.096	2.203	0.028	0.013	Supported
H6	PBC -> SII	0.236	5.882	<0.001	0.081	Supported

All six direct hypotheses were supported in the synthetic analysis. Green Islamic finance awareness had a positive effect on attitude (beta = 0.247, $p < 0.001$), environmental concern had a positive effect on attitude (beta = 0.233, $p < 0.001$), and perceived Shariah compliance showed the strongest antecedent effect on

attitude (beta = 0.409, $p < 0.001$). Attitude was the strongest direct predictor of sustainable investment intention (beta = 0.484, $p < 0.001$), followed by perceived behavioral control (beta = 0.236, $p < 0.001$). Subjective norms showed a smaller but statistically significant effect (beta = 0.096, $p = 0.028$).

Mediation analysis

Table 8. Bootstrapped indirect effects through attitude

Hypothesis	Indirect path	Effect	t-value	p-value	95% CI	Decision
H7a	GIFA -> AT -> SII	0.119	5.462	<0.001	[0.079, 0.163]	Supported
H7b	EC -> AT -> SII	0.113	5.011	<0.001	[0.070, 0.157]	Supported
H7c	PSC -> AT -> SII	0.198	8.150	<0.001	[0.152, 0.246]	Supported

The three hypothesized indirect effects were statistically significant and their 95% bootstrap confidence intervals excluded zero. The indirect effect of perceived Shariah compliance through attitude was the largest (beta = 0.198), followed by green Islamic finance awareness (beta = 0.119) and environmental concern (beta = 0.113). These synthetic results support the proposed role of attitude as a mechanism through which knowledge, environmental values and perceived faith-consistency can translate into sustainable investment intention.

Table 9. Explanatory power, predictive relevance and collinearity

Endogenous construct	R-squared	Q-squared	Maximum VIF
Attitude toward sustainable investment	0.419	0.404	1.161
Sustainable investment intention	0.341	0.331	1.043

The model explained 41.9% of the variance in attitude and 34.1% of the variance in sustainable investment intention. Predictive relevance was positive for both endogenous constructs ($Q\text{-squared} = 0.404$ and 0.331 , respectively). Maximum VIF values were well below conventional collinearity concern thresholds, indicating that the synthetic structural estimates were not distorted by problematic predictor collinearity.

Discussion

The synthetic demonstration provides a coherent test of the proposed extended TPB framework and illustrates the pattern of findings that the empirical study is designed to evaluate. The positive relationship between green Islamic finance awareness and attitude is consistent with socially responsible investment research showing that awareness and knowledge help potential investors evaluate unfamiliar sustainable financial alternatives more favorably (Thanki et al., 2022). It is also consistent with evidence from Pakistan that lack of awareness and knowledge has hindered green banking adoption and implementation (Qureshi & Hussain, 2021, 2022). In the synthetic model, awareness had a moderate positive effect on attitude, suggesting that information about product purpose, availability and environmental use of funds can be an important entry point for customer engagement.

Environmental concern also showed a significant positive relationship with attitude. This pattern is consistent with prior responsible-investment studies in which ecological concern contributes to favorable evaluations of sustainable investment options (Thanki et al., 2022). In the Pakistan context, environmental concern can be particularly relevant because climate vulnerability makes environmental outcomes more visible to households and financial consumers. The finding therefore supports the inclusion of

environmental values alongside conventional financial and behavioral predictors.

Perceived Shariah compliance emerged as the strongest antecedent of attitude in the synthetic results. This finding is theoretically important because it suggests that customers may judge green financial products not only by their environmental claims but also by the credibility of their Shariah structure and oversight. Prior studies of Islamic financial literacy and Islamic investment have similarly shown that faith-consistent knowledge, attitudes and perceived legitimacy can influence financial intentions (Khan & Arif, 2022; Che Hassan et al., 2024). Within a Maqasid al-Shariah perspective, credible Shariah compliance can therefore operate jointly with environmental integrity rather than as a separate product attribute.

Among the direct predictors of sustainable investment intention, attitude had the strongest effect, followed by perceived behavioral control, whereas subjective norms showed a smaller but still significant relationship. This ranking is consistent with the central logic of the Theory of Planned Behavior and with recent green and Islamic investment studies in which favorable evaluation and perceived capability are important predictors of intention (Malzara et al., 2023; Che Hassan et al., 2024). The weaker subjective-norm effect implies that social endorsement may help, but customers' own evaluation of the investment and their practical ability to access and understand it may be more consequential.

The significant indirect effects strengthen the theoretical contribution of the model because they show how antecedent beliefs can be converted into intention through attitude. The largest synthetic mediation effect originated from perceived Shariah compliance, followed by green Islamic finance awareness and environmental concern. This is more informative than treating awareness, environmental concern or Shariah compliance as isolated direct predictors: it

suggests that these factors matter partly because they shape whether sustainable Islamic investment is viewed as useful, credible, value-consistent and worthwhile.

These findings should nevertheless be interpreted strictly as a manuscript-development demonstration. Because the dataset is synthetic, the effect sizes and significance levels cannot be generalized to Pakistani banking customers. Their purpose is to validate the analysis plan, table structure, hypothesis logic and reporting workflow before field data are collected. An empirical study may produce stronger, weaker, non-significant or differently ranked effects, and those real results should replace the present synthetic findings before the article is presented as empirical research.

Practical implications

The synthetic pattern suggests several practical implications that can be tested empirically. Banks should provide clear customer-facing explanations of what qualifies as green, how Shariah compliance is established, where funds are deployed and how environmental outcomes are verified. Shariah boards and sustainability teams should coordinate product disclosure so that Islamic legitimacy and environmental integrity are communicated as one credible proposition rather than as separate narratives.

The relatively strong role of perceived behavioral control suggests that product accessibility should receive attention alongside awareness. Banks and asset managers can reduce perceived barriers through simple digital onboarding, accessible minimum investment amounts, transparent risk-return information, comparison tools and investor education. The Pakistan Green Taxonomy can also be used as a reference point for clearer product classification and customer communication (State Bank of Pakistan, 2025).

The launch of Pakistan's sovereign domestic Green Sukuk provides a timely opportunity to increase public familiarity with Shariah-compliant sustainable investment (Pakistan Stock Exchange, 2025). Retail-facing products can build on this visibility, but transparent impact reporting is important to limit greenwashing concerns and to demonstrate that environmental objectives are

linked to actual use of proceeds.

Conclusion

This paper develops an extended Theory of Planned Behavior framework to explain sustainable investment intention in the context of green Islamic finance in Pakistan. The model integrates green Islamic finance awareness, environmental concern and perceived Shariah compliance as antecedents of attitude, while attitude, subjective norms and perceived behavioral control predict sustainable investment intention. In the synthetic manuscript-development analysis, all proposed direct and indirect relationships were supported. Perceived Shariah compliance was the strongest predictor of attitude, and attitude was the strongest direct predictor of sustainable investment intention. The model explained 41.9% of the variance in attitude and 34.1% of the variance in sustainable investment intention, with positive predictive relevance for both endogenous constructs.

The analysis illustrates how customer knowledge, ecological concern, faith-consistent product credibility and practical investment capability can be integrated into a single behavioral framework.

It also provides a complete measurement, structural and mediation reporting structure for a future empirical study. However, the present numerical findings come from synthetic data and must not be treated as evidence about real banking customers. The next stage is to administer the questionnaire to an ethically recruited sample, analyze the resulting data with SmartPLS or an equivalent PLS-SEM package, and replace all synthetic estimates with the actual field results.

Future empirical research can extend the framework by examining actual investment behavior, longitudinal changes in intention, and moderation by perceived greenwashing risk, expected financial return, religiosity and fintech self-efficacy. Comparisons across full-fledged Islamic banks, Islamic windows, provinces, age groups and income categories may further clarify how green Islamic investment preferences vary across Pakistan.

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Conflict of Interest

The author(s) declare that there is no conflict of interest.

Data Availability

The synthetic item-level dataset and analysis summary used in this manuscript-development version are supplied as a supplementary workbook. The dataset does not contain information from real participants.

Author's Contribution

The author(s) contributed to the conceptualization, methodology, analysis design, manuscript drafting and critical review of the paper.

Ethics and Informed Consent Statement

No human participants were involved in the synthetic analysis; therefore, ethical approval and informed consent were not applicable to the generated dataset. Ethical approval and informed consent must be obtained before collecting and analyzing real respondent data for an empirical version of the study.

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