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Fintech, Climate Finance, and Behavioral Shifts: Evidence from Bangladesh's Digital Lending Landscape

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Abstract - **Mobile financial services, including bKash, Nagad have led to financial inclusion in Bangladesh are bound to play a more significant role in encouraging environmental sustainability. This study explains how digital finance can be used to attain climate objectives by incorporating eco-linked lending with sustainability awareness and green incentives. This paper reflects four hypotheses on voluntary dependability of green finance, sensitivity to incentives, ecological cognizance, and age gap using survey-based data on Bangladeshis, international case studies, and behavioral hypotheses. The findings suggest that younger users exhibit more positive attitudes towards sustainability, but users become more engaged when they see the environmental pay-off and consider trade-off in adopting more sustainable input and favorably influenced by green incentives. The results indicate that opportunities among fintechs is to incorporate (ESG) principles into the digital ecosystems of Bangladesh, reinforcing the fintechs as a climate resilience and inclusive green growth driver, despite the limitations.**
Keywords - **Sustainable Finance, Green Investment, Investor Behavior**

I. INTRODUCTION

With an increasing risk of economic loss, climate change is hitting the developing economies especially hard as poor people and weak infrastructures are the most vulnerable to its effects [1]. Bangladesh is one of the highly vulnerable countries to climate related disasters like rising sea level and extreme weather events and as such, it provides an excellent background to this discussion [2]. A response to this, green finance can facilitate a matching of capital flows with the achievement of low-carbon development and climate resilience, which presupposes financial products that are specifically geared toward environmentally sustainable developments [3]. In countries such as Bangladesh, digital money services, and in particular mobile money services (MFS) have not only fast-tracked financial inclusion but also created the basis of sustainable investing approaches [4].

Previous research demonstrates that consumers can have a varied rather high focus on long-run horizons and risk sensitivity; they are willing to take reduced returns to enjoy the environmental upside [5]. Also, behavioral research suggests that transparency tools such as carbon reporting and engagement tools eco-rewards and gamification, have positive effects on adoption of green finance but at least as high as those of financial incentives [6], [7]. However, most of these insights come from developed markets, leaving a knowledge gap in low-income, high-fintech contexts such as Bangladesh [8]. Bangladesh presents a compelling case since the MFS platforms such as bKash and Nagad have a large reach and they are accessible to and trusted by most individuals, including the unbanked citizens. [9]. However, there is little empirical data on whether and how these services can be used to provide green finance on a large scale. Although evidence is still limited and fragmented, global analogs such as M-KOPA's pay-as-you-go solar financing and Paytm's green purchase offerings show promising potential [10], [11].\This paper applies a survey (N ≈ 200) with a structured process to examine user attitudes and behavioral determinants of green finance adoption in Bangladesh so that it can fill this gap. We developed research questions and tested hypothesis using the following:

Research Question 1 (Trade-offs): What is the degree to which users are ready to make financial trade-offs (reductions in returns, longer horizons, and possible slightly higher risks) in green finance products to obtain sustainability benefits?

Hypothesis 1 (H1 -Trade-off): Investors will indicate readiness to make financial tradeoffs e.g. lower returns, longer time horizon, or an increased perception of risk, provided that the investment fits with their sustainability objectives.

Research Question 2 (Incentives): Do monetary and non-monetary reinforces (carbon accounting, tax breaks, gamification of eco-loyalty programs) make the user care about green financial products and engage in using them?*Hypothesis 2 (H2 -Incentives):* The availability of custom incentives, including special tax treatment on green savings, custom carbon emission reports that will relate to users spending, and gamification of the process linked to good green financial behavior, will greatly enhance the probability of the target using green financial products.

Research question 3 (Age): Are the younger generations more willing to use sustainable and digitally delivered financial services than older generations*Hypothesis 3 (H3 - Age):* The younger consumers, especially those below 35 years who are more digital-savvy and socially active, will be more drawn to see sustainable finance products availed through digital platforms.

Research Question 4 (Awareness):
Does higher environmental awareness and knowledge about green investing increase support for and interest in sustainable finance in Bangladesh?

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Hypothesis 4 (H4 - Awareness):
Greater environmental awareness and knowledge are positively associated with stronger support for green investment and higher likelihood of adoption.

II. METHODOLOGY

A. Research Design

This study uses a quantitative, cross-sectional, correlational design to find associations between user demographics, awareness, incentives, and willingness to adopt green finance through mobile financial services (MFS). A survey approach is used for measuring behavioral constructs at scale and applying statistical tests (descriptives, χ^2, t/ANOVA, correlations, regression).

B. Data Collection

A questionnaire in English was created in the professional form and distributed on Google Forms and on paper. Demographics (age, education, location), MFS usage (frequency, type), awareness (solar/wind, green investing, environmental occurrence), trade-offs (returns, risk, waiting time), incentives (tax benefits, carbon reports, eco-rewards), adoption intent, and policy support were included in the sections. Most other items were Likert or binary, otherwise, adapted from existing fintech/green finance studies and pilot-tested (n=20). Reliability was determined by using Cronbach alpha and construct validity by error free analysis. The acquisition of data took place in Dhaka (2025) with the informed consent of the participants.

C. Population and Sampling

The targeted population were adult users of MFS in Bangladesh; that is, potential retail investors. Convenience and snowball sampling returned 212 responses that were fully completed. Sample profile: 18–24 (54%), 25–34 (32%), 35+ (14%); majority undergraduate/graduate; 96% reported active MFS use. This is an exploratory look at segments that are digitally active, although not all-inclusive.

D. Data Analysis

Data were cleaned, coded (Likert=1–5; Yes=1, No=0, Maybe=0.5), and analyzed using SPSS, Excel, and R/Python scripts. Analyses included:
1. Descriptive statistics (frequencies, means, SDs).2. Reliability & validity checks (Cronbach's α, EFA).3. Bivariate tests: χ^2 for categorical variables; t-tests/ANOVA for group differences.4. Correlation analysis (Pearson/Spearman).5. Regression modeling: binary logistic regression predicting adoption intent from incentives, awareness, age, education, MFS use, and trade-off scores.

E. Ethical Considerations

The consent to participate in the survey was informed; the anonymity and confidentiality of the research were guaranteed. No identifying data were collected. The research was carried out in accordance with ethical principles of institutions; de-identified data are available on request with following approvals.

III. RESULTS

Hypothesis 1 (H1 -Trade-off): Willingness to Accept Trade-offs for Sustainability
A clear majority of respondents expressed willingness to make financial trade-offs for green finance products:
Lower returns: 90.1% accepted, 9.4% rejected
Longer investment horizons: 89.6% accepted, 9.4% rejected.*Higher risk:* 54.7% accepted, 43.9% rejected.
This indicates strong acceptance of return and time-horizon trade-offs, with risk emerging as the main barrier (≈45% resistant). Demographics (age, education) did not have a significant impact on any trade-off (all $p > 0.14$), pointing to widespread and cross-cutting receptivity.
Digital familiarity (MFS use): Frequent MFS users were more likely to accept longer wait times ($\chi^2 = 6.33$, $p = 0.042$). Additionally, respondents who had considered saving/investing via MFS were much more willing to take higher risk for green projects ($\chi^2 = 56.20$, $p < 0.001$).

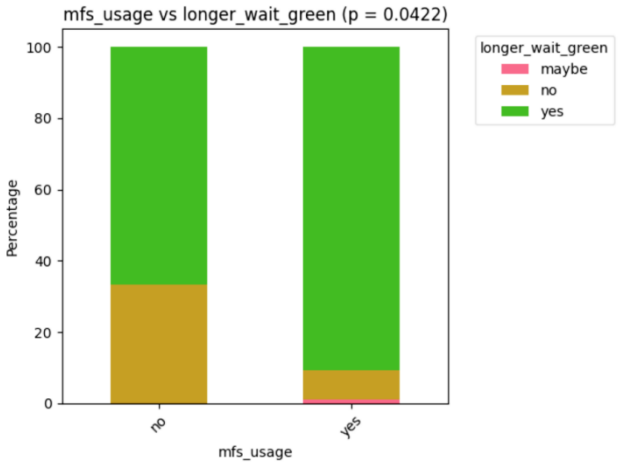


Fig. 1. MSF familiarity vs accepting longer waiting period

Beliefs and interest: Belief that green energy is better strongly predicted higher risk tolerance ($\chi^2 = 70.52$, $p < 0.001$).
Interest in investing in green projects was the strongest correlate of all trade-offs: lower returns ($\chi^2 = 93.34$, $p < 0.001$), higher risk ($\chi^2 = 47.81$, $p < 0.001$), and longer wait ($\chi^2 = 148.01$, $p < 0.001$).
Interpretation - Overall, H1 is supported. The majority tolerate reduced returns and long-term duration investments in time, and risk is the polarizing aspect. As seen in the trade-off willingness, the appeal is crosscutting across the demographics. Nonetheless, both digital financial familiarity (through MFS) and prior interest in investing have strong influences on willingness, indicating that specific nudges (e.g., education in the app or pre-commitment prodding) could be used to encourage taking up green finance products.

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Hypothesis 2 (H2 -Incentives): Incentives and Interest in Green Finance

Respondents overwhelmingly endorsed incentives as motivators:

Tax benefits: 96.2% said these would increase interest. Carbon footprint reports: 88.2% expressed interest. Gamified eco-rewards: 89.2% reported motivation. Additionally, 90.1% said they would invest in green products if tax benefits were offered. The average rating of carbon report usefulness was 3.65/5 (median = 4.0).

Inferential results:

Tax benefits: The carbon reports carbon-report rating between the "yes" and the "no" respondents was not statistically significant ($t = 2.19$, $p = 0.070$). This is because the number of those who answered no was just 7. *Carbon reports:* The reports were imbued with greater importance by those respondents who desired reports (mean = 3.80 vs 2.52, $p < 0.001$).

Eco-rewards: Had a very strong predictive effect of engagement ($F = 30.41$, $p < 0.001$); people motivated by the eco-rewards rated carbon reports higher. Correlations: Carbon report preference ↔ Eco-rewards: $r = 0.45$ (moderate, positive).Carbon report rating correlates with both carbon report preference ($r = 0.36$) and eco-rewards ($r = 0.36$)

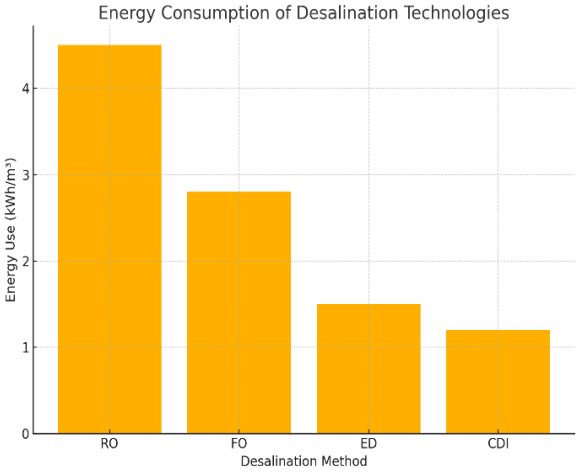


Fig. 2. Correlation Matrix of Incentive-Based Determinants in Green Finance Adoption

Interpretation - H2 is supported Incentives stimulate interest, but they are more or less strong. Carbon report footprint and gamified eco-rewards prove to be the strongest in terms of statistical and attitudinal robustness and they target similar user groups. Tax benefits, although very popular, demonstrate limited statistical variance in this survey (caused by ceiling effects) but are an excellent policy lever in stimulating adoption in practice. Within the product design footprint, carbon-impact reports coupled with eco-rewards should be the next level user-interface followed by straightforward tax-incentive communications. The fact impact reporting is complementary and gamified rewards is complementary, indicates that the two should be bundled together to have the optimum uptake.

Hypothesis 3 (H3 -Age factor): Younger people are more likely to root for green finance

At all age groups, the feeling on sustainability finance was highly favorable.

Carbon-report significance (1-5): 3,53 (18-24) to 4, 25 (55+).

National green investment (1-5): high at all ages (means 4.32-4

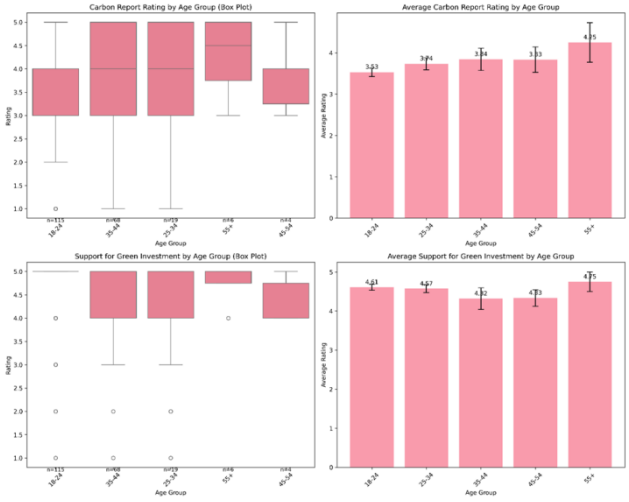


Fig. 3. Age-Stratified Analysis of Carbon Report Ratings and Green Investment Support

Inferential results

Between-group differences: ANOVAs did not show significant age differences on carbon-report importance ($F = 0.85$, $p = 0.494$) and green investment support ($F = 0.63$, $p = 0.639$).

Intra-group comparisons: In both measures, all the significant age groups were significantly above the neutral mark (3) ($p < 0.01$).

Carbon-report importance: Carbon-report importance correlated with green investment support ($r = 0.419$), which indicates that the importance attached to transparency is associated with more pro-investment attitudes.

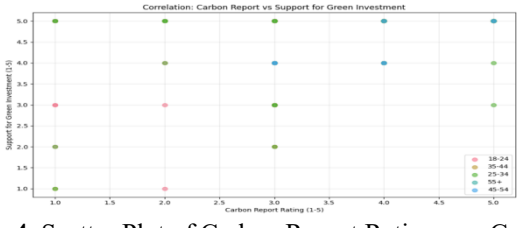


Fig. 4. Scatter Plot of Carbon Report Ratings vs. Green Investment Support by Age Group

Interpretation - H3 is rejected: younger respondents were not more favorable as compared to older groups. Rather, pro-sustainability feelings were quite consistent by age,

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suggesting that green finance is not a niche (appealing only to youth) but instead a mass-market opportunity. Carbon reporting goes a notch higher as a significant value attribute of the different demographics In the 45+ cohorts, small sample sizes in subgroups lead to the need to avoid excessive interpretation of observed differences.

Hypothesis 4 (H4 - Awareness): Awareness and Support for Green Investment

Awareness of renewables is near-universal among the tested group.
Heard of solar/wind: 99.5%.
Know about green investing: 59.9%.
Interested in green investing: 77.4%.
Environmental importance for investing (1–5): mean = 3.77 (SD = 1.13).
Support for promoting green investment (1–5): mean = 4.57 (SD = 0.85).
Correlations: Environmental importance ↔ Support for green investment: r = 0.368 (moderate positive). Environmental importance ↔ MFS saving consideration: r = 0.154 (weak).
Knowledge vs. Interest: Among those who know green investing: 83.5% were interested. Among those who do not: 68.2% were interested.

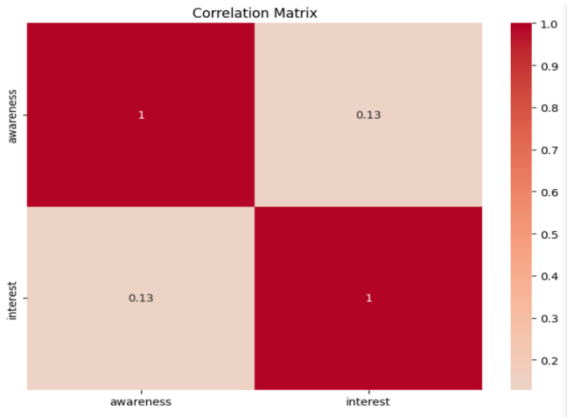


Fig. 5. Correlation Matrix of Awareness and Interest in Sustainable Products

Interpretation - H4 is supported and greater knowledge about green investing is associated with substantially greater self-reported interest (83.5% vs 68.2%). In addition, the moderate correlation between environmental importance and support at a policy level (r = 0.37) implies that greater environmental awareness and financial literacy may lead to a greater public support and demand for green product.

IV. DISCUSSION

This paper examined the Bangladesh consumer preparedness to adopt sustainable finance using digital transactional systems based on trade-offs, incentives, awareness, and age. The findings indicate the rather wide openness to the usage of the products on a cross-cutting basis with different products being adopted by people not based on their personae but the design and categorization of the products being used.

Incentives: Gamification and Transparency lead Engagement

Carbon-impact reports and eco-rewards were the strongest motivators on both statistical and substantive levels. The combination of the visibility of impact and the gamified engagement delivers trust and long-term interest. Tax incentives, which have universal appeal, were not nearly as variable in the survey data as were other policy levers, suggesting that tax advantages may be a more important policy lever than a fintech-differentiating factor.
Implication: Impact dashboards and reward mechanics deserve to be focused on as product design priorities, with governments helping to drive uptake further through the provision of some tax incentives.

Trade-offs: Eager to a Point

Most respondents would accept lower returns (90%), longer horizons (89.6%) in the case of green products, whereas fewer were adamant on the higher risk (54.7%). Intentions also influenced trading off by correlating substantially with pre-interest in green investment such that prior interest indicated willingness to compromise. Implication: Introduce tiered green funds- low-risk vehicles with moderate returns that can be used by the less enthusiastic user and riskier/high-impact funds that can be used by highly motivated adopters. Such segmentation gives a wider inclusion without cutting off the risk-sensitive groups.

Age: A Mass-Market Opportunity

As against the prevalent assumption, the support could not be more prevailing among younger users. Endorsement of sustainable finance was also extensive (≈ 4.3-4.7, using a 5-point scale), and consistent across groups. Implication Green finance is not a youth niche or a mainstream demand. Digital payment vehicles such as bKash and Nagad help ease the delivery channel to be available in every generation, so the focus should not be based on the idea of generation exclusivity, rather inclusivity.

Insights in Behavioral Finance

Nudges and framing: Current interest forecasts trade-off acceptance.
Salience: Carbon reports make intangible sustainability a reality.
Gamification: Eco -rewards remain motivated on a foundation of intrinsic motivation and social proof.
Risk sensitivity: It must be framed properly and have tips on the level of risk.

Practitioner Blueprint: Green Micro-Fund

The results indicate a product model that could work. A Green Micro-Fund in the mobile money apps, that have transparent carbon reporting and carbon e-rewards. Equipped with auto-investment through daily purchases,

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including behavioral nudges (users can round their bill to invest in sustainable energy). With progression of risk, starting with secure bonds, to more risk-laden climate funds.

Policy link: Push towards rebates of light taxes to support adoption.

Why this matters:

The robust environmental consciousness of the people of Bangladesh and the shift to digital rails means that sustainable fintech can take root firmly in the country. Gamifying transparency and inclusive design will enable the transition between expressing interest to actual participation by the providers and facile regulation to policymakers. Those combined position green finance as being mainstream, trusted and scalable, not just aspirational.

V. CONCLUSION

The study shows that mobile financial services like the ones used in Bangladesh (bKash and Nagad), have high potential to promote green finance. The user community is amenable to the diminution of returns and extension of horizon although the motivations of carbon reporting and eco-rewards go a long way in stimulating users to use the sites. Non-differently to age categories, interest in sustainable finance does not vary by age, making it a cross-mass-market rather than youth-oriented opportunity. By incorporating ESG principles, gamified rewards and clear impact reporting into fintech networks, Bangladesh can harness the opportunity of fintech as a lever in creating climate resilience and green inclusive growth.

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