

GREEN FINTECH: INTEGRATING FINANCIAL TECHNOLOGY FOR CLIMATE RISK MANAGEMENT

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ABSTRACT

The ecosystem of global finance is enduring into quick changeovers and evolving into a new form. This is due to the upraising of the green finance and financial technologies in the market. In this paper, we discuss about the merging of the fintech along with green finance referring the term “Green fintech” which describes about the innovative and novel usage of financial technology to reduce climate risk and adapt the sustainability management. Green fintech provides exceptional opportunities for the enhancement of sustainability in financial markets. This also includes the assimilation of artificial intelligence (AI), blockchain, and data analytics for determining, managing, and curing the climate risks. This research aim is to recognize and analyse the strategic implications of fintech in the platform of green finance that focuses about the climate risk management tools. While examining the key applications and limitations to adapting to green sustainability, this research provides some suggestions and recommendations for policymakers, financial organizations, and start-ups based on fintech for improving their contribution to sustainability. Also, this paper mainly concentrates on the wider applications of emerging markets and developed markets where digital financial inclusion plays a key role in organizing the capital related with climate adaptable projects. The paper also evaluates the economic possibilities in Green Fintech that are generated by managing the financial flows with less carbon footprint and sustainable business models. By making an in-depth analysis of empirical data, the research focuses on the possibilities of Green Fintech and its acceleration towards the transformation to sustainable and less carbon production in economy.

KEYWORDS: *Fintech, Green Finance, Sustainability Management, Startups, Artificial Intelligence.*

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INTRODUCTION

The sudden uprising emergency of the climate change has pushed before the sustainability as the foremost priority of global economic issues (Fischer, 2017), which challenges the industries to cope with sustainable development goals (SDGs) and control the financial threats which are linked with climatic changes. Green Finance has evolved as a significant solution which enables this changes to adapt, which directs the capital of company into the projects which

follows and promotes environmental sustainability (Allioui, and Mourdi, 2023). Some the examples can be renewable energy and conservation efforts. Moreover, the maintaining the complicated risks which are related to climate changes inside the financial systems needs a novel approach which has to be go out-of-the-box and overcome traditional financing models. Thus, in this situation, Financial Technology, or Fintech, acts as a crucial role that provides tools which improves the efficiency, scalability and transparency of green finance solutions (Macchiavello, and Siri, 2022).

The combination of the fintech and green finance which is termed as Green Fintech, elevated the raising frontier of digital technologies like AI, blockchain, machine learning and big data analytics are brought up to tackle the environmental related issues (Zhou, Zhu, and Luo, 2022). For example, blockchain's nature of decentralization is utilized to improve the transparency of green bonds, meanwhile AI will help in climate related risk modelling. Also, Green Fintech model represents the freedom for the usage of sustainable finance, creating green investments that are accessible to broader level of investments and enhancing the digital financial infusion between the raising and developed markets (Yadav et al., 2024).

This research paper aims to analyse the reframing capacity of Green Fintech by the novel approach to the climate risk management. The study will examine the important fintech tools and check how they can be utilized in real time combined with green finance initiatives also recognize the control and technical limitations which can impede the adaptability of it.

LITERATURE REVIEW

The Fintech literature contains unexplored theoretical capacity mainly about its implementation and regulatory features. Where the banking applications, peer-to-peer usage and financial incorporation are been evaluated and further promising platform is the assimilation of novel technologies for enhancing the company functions, like payment system through online, and entrepreneurial finance (S.M. Wong, Kwong, and Kwok, 2023). The research done by [Unleashing] mainly highlighted the crucial methods of green fintech which contributed the climate actions like renewable energy financing, investments on sustainable businesses, and developed climate risk assessment. The positive results have been explored by adapting the green fintech. Also he emphasized the significant role for implementing the global climate risk targets (Osby and Anderson, 2023).

The authors stated in their research that fintech is promoting the both green finance and sustainable development, has restructured the support for sustainability in finance service and pricing. Fintech can solve the issues for sustainable finance and along coping with green finance, it can create a bond with climate risk assessment (Cen and He, 2018). (Puschmann, Hoffmann, and Khmarskyi, 2020) proved that the literature and market analysis can show that green fintech can show significant effect to the business chain of financial services that covers customer-to-customer (C2C), Business-to-customer (B2C), and Business-to-business (B2B). At present the startup companies have grasped and adapted this method and finding the solution through sustainability study proves that there to relation between the Global Fintech Index and CO2 emissions index (Othman, 2023). This exploits that the adapting Fintech does not lead to any emission of carbon and Green Fintech is very environmental friendly. This study will be more helpful for governments and policymakers to launch more tools and apps related to green finance and fintech.

OBJECTIVES

- To find out the potential of green finance and its role in maintaining and mitigate the environmental related financial threats
- To know the economic opportunities that are generated through Green Fintech and its role in making low-carbon footprint business.
- To analyze the potential and efficiency of Green Fintech methods regarding various markets and regions and the impact on transformation to low-carbon economy

METHODOLOGY

For the study of this research paper, an analysis is done among the several research papers to find out the strength analysis of Green Fintech for startups Global wide. SWOT analysis is made for the green finance combined with fintech technology based on the situations and conditions in India. SWOT analysis is done about the geopolitical and socio-economic conditions of the different regions. Research papers have been evaluated to find the research gap of green finance and fintech corporations which are adapting the green finance.

A brief literature analysis is made about the Green Finance and also Fintech companies. The analysis is made about the situations that are positive and suitable for applying green finance in fintech companies which reduces the carbon footprint. Utilization of e-payments and emerging new trends and technology in Global wide for payments and investment process which is making more paperless work has been reducing the carbon emission and carbon footprint. Results and discussion has been made about the technical trends which can be used for Green Finance and Fintech companies. It is resulted the Green Fintech companies shall support the environment sustainability in for financial services which makes the services work more effective and efficient.

SWOT ANALYSIS

SWOT analysis is made for Green finance and Fintech companies in Global perspective view.

Figure (1) Global FinTech index



Figure 1

STRENGTHS

Demand for the Sustainability

There has been a rise of awareness about climate change and international agreements such as the Paris Accord. This has created a dynamic demand for sustainable tools related to finance globally. Thus Green Fintech satisfies the demands by assimilating with technology alongside sustainable goals.

Advancements in Technology

New innovations like Artificial intelligence, blockchain, machine learning and internet of things have been enables the precise working and management over the environmental risk assessment. These have enhanced the accountability and transparency in the Green Finance.

Global Movement

International partnerships between the governments, financial inclusions, and technology companies with their advanced tools have pushed forward the knowledge of Green Fintech initiation.

WEAKNESS

Legal and Policy Issues

Difference in the policies over the technologies and regulations which involve carbon pricing methods and taxes on green finance techniques can inculcate the inconsistency and hinder the development of green finance.

Security Threat and Data Threats

There has been more chance to misuse of the data if a technology is been exposed to a threat and other cyber-security issues. This gradually makes lose trust in green fintech solutions.

Limited Standards

The metrics are not accepted globally and there is no measure for sustainability results which confuses the analyzing the efficiency of Green fintech solutions.

Initial Costs

Releasing and developing a green fintech technology need high investment for secured coding which can discourage smaller startups and institutions.

OPPORTUNITIES

Expansion of Carbon Markets

Initiation and developing of carbon credit trading platforms have provided opportunities of Green Fintech which helps trading and asses the carbon emissions

Financial Inclusion

The sustainable issues can be addressed by Green Fintech which promotes financial inclusion, which specifically in special regions which provides the green loans and microfinance.

Corporate Sustainability Goals

The pressure has been increasing over the corporate institutions to accept ESG rules which clears a path for Fintech platforms for managing and reporting over ESG implementation.

AI and Financial Analytics

Usage of AI for the climate modelling and prediction helps the policy makers and businesses to mitigate climate risks more effectively.

THREATS

Instability in Economy

The economic crisis and recessions can hinder the enhancement in green fintech and divert the investments and funding away from sustainable and green initiatives.

Technological Backwardness

In some developing regions and countries due to lack of infrastructure and facilities for digital enhancement the implementations can be impossible.

Green Washing Threats

Unawareness and misunderstanding about the sustainable solutions by industries can cause threat in trust of green financial products and can effect the adaption of green finance.

Fast Climatic Changes

The rate of change in climate and climate related disasters could overcome the Green Fintech solutions as it can show results after a long period of time which shows a large gap among the implementations and designing of the solutions.

The above SWOT analysis is about the global view which mainly focuses on capability and threats of Green Fintech which is good administer of environmental sustainability.

Research Gap

In spite of increasing body of awareness on green finance and Fintech, there has been a gap which is not fulfilled. Several studies mainly focused on the global trends and developed economies with advanced technical systems but there lack of insights about undeveloped regions which has to be improved. There has been limited research over blockchain and AI related to green finance and failed to male clear risk assessments or implementable insights about sustainability. Lack of standard measurement tools for evaluating the efficiency of Green Fintech solutions also causes research gap. No benchmarks has been setup to check the speed of climate risk assessment and its impact. Due to lack of metrics the solutions may have not that much impact over the climatic change assessments which leads to fail of sustainable solutions.

RESULTS AND DISCUSSIONS

The global adoption of Fintech is been really emerging globally and giving sustainable solutions which take significant uptake in sectors for sustainable investment. There has been no relation between carbon emissions and green fintech solutions. So it can be a good solutions for climate risk assessment. Since the lack of metrics for measuring the efficiency of applied solutions and its results make it still under-developed solution and unchecked. This backward has to be

overcome by finding solutions for metric. There has been barriers to implementation for green fintech solutions through international wide and across the borders.

AI and big data has been showing an effective results in risk prediction and management which gives implementable insights for governments and businesses. More research studies has to explore region wise adoption techniques and strategies for enhancement of green fintech.

CONCLUSION

In this research paper, it has been mainly focused about the integration and transformative potential of Green Fintech that addresses the global climate challenges. The findings can make aware that Green Fintech is not just an innovation but also an effective tool for developing the climate risk management especially by implementing the carbon emissionless methods. This research reveals even though there is more technological advancements towards sustainability there have been some barriers which a political, regulatory and high initial cost. Moreover there has been high opportunities of financial inclusion and potential development of Green Fintech solutions in fast emerging countries and developed nations. For reaching the global sustainability targets governments, corporate sectors and Fintech innovators need to join together and make a clear standard metrics and frameworks for enhancing infrastructure and conditions to develop the climate risk assessment and decrease carbon emission.

Further researches should be focused on the long-term goals, collaborations and specified regional researches for development of Green Fintech solutions which helps to mitigate the climate changes globally.

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