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Financial Technology and Environmental Performance: How IT Governance Moderates the Link

[1]Shubham Rajpal, [2]Dr. Soma Hazra, [3]Shreya Kushwaha, [4]Sohit Kumar Pandey

[1]Assistant Professor, ITM University, Raipur (C.G.)

[2]Associate Professor, ITM University, Raipur (C.G.)

[3]Assistant Professor, Galgotias University, Noida, Uttar Pradesh.

[4]Research scholar, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G**.)**

Abstract

From the standpoint of IT governance, this study explores the relationship between financial technology (FinTech) usage and sustainability performance in Indian commercial banks. Utilizing snowball sampling and nonprobability convenience methods, data were gathered from 210 banking professionals. The study employs structural equation modeling to analyze how IT governance moderates the interplay between FinTech adoption and sustainability-related initiatives. Findings reveal a strong interconnection between FinTech, IT governance, and sustainability, emphasizing the need for an integrated approach to sustainable banking. Financial institutions can enhance long-term growth and economic sustainability by incorporating FinTech, ESG principles, and IT governance into their strategies.

The research highlights that IT governance significantly influences banks' strategic engagement in sustainable activities, facilitates FinTech development, and positively impacts sustainability performance. Beyond enhancing financial and environmental outcomes, IT governance fosters technological adoption, promoting economic sustainability. Financial institutions that proactively integrate IT governance with sustainability-focused innovations are positioned to achieve both environmental and financial benefits. Furthermore, the findings provide valuable insights for policymakers and banking executives, emphasizing the importance of balancing sustainability efforts with technological advancements while addressing potential trade-offs in economic and environmental performance.

Keywords: standpoint, sustainability, policymakers.

INTRODUCTION

Recent years have seen a paradigm shift in technological advancement driven by global sustainability concerns "(Arner et al., 2020; Atayah et al., 2023; Lisha et al., 2023a; Macchiavello and Siri, 2022; Rais et al., 2023)". In recent years, there have been several technological advancements aimed at addressing sustainability challenges. "Arner et al. (2020), Atayah et al. (2023), Hammadi and Nobanee (2019), Rambaud and Pascual (2023), and Vergara and Agudo (2021) all agree that the rise of "financial technology (FinTech)" has been disruptive to the financial sector, demonstrating how technology and sustainable practices can work together harmoniously". According to Deng et al. (2019) and Dwivedi et al. (2021), the phrase "Fintech" describes the trend of using "technological advancements" to provide consumers with financial services. Conversely, real IT governance is vital for easing tech addition and greatly affects "FinTech and sustainability outcomes" ("Almaqtari, Farhan, Al-Hattami, et al., 2023; Mutamimah and Robiyanto, 2021").

"Ryu and Ko (2020)" highlight the importance of top-notch IT in relation to the adoption and ongoing utilisation of FinTech platforms. Deng et al. (2019) suggests that the relationship between fintech and sustainable development might be mediated by the quality of information technology (IT). A hybrid strategy that places an emphasis on information technology quality was proposed by Zhao et al. (2019) to enhance "service innovation in China's banking industry amid the FinTech revolution". Merging sustainability with financial technology (Fintech) could lead to a lot of issues. A key component in enabling this integration might therefore be information

technology (IT). Anshari et al. (2019) suggests that digital markets and FinTech have the potential to significantly enhance sustainability. By removing monetary roadblocks and enhancing distribution efficiency, financial technology, or FinTech, may radically alter sustainability issues. However, it is critical to recognise potential hazards within these appealing options. Despite generally optimistic predictions, the digital gap, concerns about data security, and legislative hurdles contribute to a pessimistic environment. Even while Fintech's role in promoting sustainability is obvious, the practicality of overcoming these challenges remains a big worry. A comprehensive indicator system was produced by Deng et al. (2019) to explore the link between FinTech and sustainability within the framework of China's sustainable development.

The discussion is improved by proposing a "U-shaped relationship between FinTech and sustainable development". However, concerns over the relationship's contextual nature arise from geographical changes that affect it. This last point emphasises how complex it is to incorporate FinTech and IT into sustainability programs in many economies. Having a better grasp of these dynamics is crucial since the efficacy of anything may change based on the setting. Aysan & Bergigui (2021a) and Anshari et al. (2021) both stress the need for thorough approaches and pragmatism in technology-driven sustainable leadership. The integration of IT, sustainability, and Fintech is highlighted by Anshari et al. (2021). The implication is that the idea of using digital platforms to encourage sustainable conduct is appealing. In line with sustainability objectives, Aysan and Bergigui (2021a) state that blockchain technology may increase supply chain transparency. But they do caution that it may not work as well as intended due to a lack of resources.

Innovative answers to environmental challenges may be found in technology. It is essential, however, to assess these proposals carefully in light of relevant social, ethical, and practical considerations. Being proficient at the intersection of information technology, sustainability, and financial technology requires a deep comprehension of the topic and a commitment to balancing technological advancement with ethical standards. Although there are many benefits to combining IT with "sustainability and Fintech", there are also many obstacles, such as issues with data security, digital integration, regulatory complexity, and strategic planning. To effectively promote sustainability across sectors, regions, and levels, it is crucial to adopt an integrated strategy that considers regional variances, technical developments, ethical issues, and environmental effects. The integration of FinTech with environmental activities creates a complex ecosystem that might lead to both synergies and conflicts. The purpose of this research is to investigate the impact of IT governance on the correlation between FinTech adoption and sustainability results. Organisational approaches to integrating FinTech solutions with sustainability programs are discussed in the book. Elements of IT governance and their potential to foster or stifle synergies are also covered. It also delves into the scenarios where IT governance plays a major role in moulding relationships. The purpose of this research is to shed light on the complicated relationship that happens between sustainability, IT governance systems, and the use of financial technology (FinTech).

Organisations who are aiming to meet sustainability objectives while also achieving technical innovation might benefit greatly from the insights provided by this research. Specifically, it looks at how IT governance may affect the sustainability of FinTech, for better or worse. There has to be a thorough investigation of the many opportunities and challenges brought about by the complex web of relationships between FinTech and sustainability. Organisations are increasingly relying on FinTech solutions, hence, it is critical to comprehend the potential benefits and drawbacks of these technologies as they pertain to sustainability initiatives. At the heart of this intricate web of relationships lies the function of IT governance.

Information technology governance encompasses all policies, programs, and procedures that guide technological decision-making. "This has a significant impact on how organisations utilise technology to accomplish their strategic and operational objectives (Al-Sartawi and Al-Sartawi, 2020; F. Almaqtari, Farhan, Al-Hattami, et al., 2023; Bergeron et al., 2017; Fattah et al., 2021; Khalil et al., 2020; Scalabrin-Bianchi et al., 2021)". It is not yet apparent, however, how FinTech impacts sustainability in particular. Finding out how IT governance influences the connection between FinTech adoption and sustainability performance is the goal of this research, which aims to bridge that information gap. "This research aims to address a knowledge gap by studying how IT governance measures reduce the influence of FinTech on sustainability". Many recent studies have ignored the role of IT governance in their analyses of the effects of "FinTech adoption or sustainability initiatives, such as Callsen et al.

(2021), Chen et al. (2022), Guang-Wen and Siddik (2023), Macchiavello and Siri (2022), Ramamohan et al. (2021, 2021), Vergara and Agudo (2021), Winarsih et al. (2020), and Zhang et al. (2021)".

In addition, there has been a lack of research on how IT governance, an essential part of technology-driven decision-making, regulates the connection between FinTech and sustainability. Consequently, the complex interplay between FinTech and sustainability is further illuminated by our present research. The process of making strategic choices is improved, the Sustainable Development Goals (SDGs) are supported, and well-informed policies may be established. The findings may encourage more moral FinTech developments, which would be great for sustainability efforts all at once. The actual data presented in this paper contributes to the current literature on FinTech and IT governance. Financial technology (FinTech) is advancing at a rapid pace, which has the potential to disrupt existing business models and radically improve banking operations. But nothing is known about the "impact of IT governance on the correlation between FinTech adoption and results in the long run".

The results also include IT governance with the goal of helping financial institutions understand the intricacies of FinTech and sustainability integration. When financial institutions have a firm grasp on this moderating role, they will be better equipped to use FinTech tools to advance global sustainability initiatives, uphold ethical standards in the workplace, and boost operational efficiency.

This research examines the current state of sustainability and FinTech in Indian banks, as well as the possibilities and challenges that these institutions face in integrating these concepts. The study examines the ins and outs of information technology governance in Indian banks, including its characteristics, mediation mechanisms, and effects on the Indian banking sector. The diverse financial ecosystem in India provides an ideal setting for studying the IT governance practises and FinTech use of various kinds of institutions. A few examples of the many sustainability challenges that India faces include environmental concerns, social inequity, and barriers to financial services. To ensure that underserved communities have access to financial services, it is critical to comprehend the impact of information technology governance on the connection between FinTech and sustainability.

The regulatory framework and legislative climate in India have a significant impact on the adoption of sustainable practices and financial technology. "Examining the connection between IT governance, FinTech, and sustainability in Indian banks might provide useful information for policymakers and regulators." "Startup programs, digital payment systems like the Unified Payments Interface (UPI), and initiatives like Digital India and FinTech sandbox settings demonstrate India's commitment to digital transformation via Fintech". The IT governance frameworks, digital payment systems, Fintech efforts, and sustainable development objectives of India all appear to be moving in the same general direction. Opportunities to promote eco-friendly behaviours and ethical technology usage, as well as to increase financial inclusion, productivity, creativity, and self-reliance, present themselves via the interconnections across these domains. Insights regarding how to optimise these convergences, which might lead to a future that is both more sustainable and technologically sophisticated, could be found in this research. The results of this research could be helpful for Indian financial institutions in several ways, such as maximising the advantages of IT governance measures, using FinTech solutions to further sustainable development, incorporating ethical business practices, etc.

The following is the outline of the current investigation: In Section 2, we provide our findings and theories derived from the literature review. Part 3 lays forth the methodology of the study. The findings are analysed and explained in Section 4. In part five, we draw conclusions and talk about the study's limitations and consequences.

CURRENT DEVELOPMENTS IN THE FIELD OF FINANCIAL TECHNOLOGY

World Economic Forum (2024) reports that technological advancements, changes in consumer behaviour, changes in regulations, and market demands are causing significant transitions in the financial technology industry. Investments in the global fintech business increased from "$50.8 billion in 2010 to over $111.8 billion in 2018 (KPMG, 2016)", indicating tremendous development.

U.S. venture capitalists poured $3.6 billion into fintech in 2019, $12.8 billion the next year, $13.9 billion the following year, and $2.7 billion the following year (Bank, 2023). Following the COVID-19 epidemic, the fintech industry had a significant increase in customer expansion, with an average growth rate above 50%.

Except for Sub-Saharan Africa (SSA), where expansion rates were moderate, customer expansion was strong everywhere else. It is possible that the infrastructural problems were worsened by the COVID-19 epidemic. In 2024, the World Economic Forum said that the MENA regions, the US, and Canada all had substantial development due to regulatory changes and digitisation.

Without including loans, IPOs, and corporate rounds, the total capital received by "India's FinTech industry in 2021 was $7.8 billion". There is an ambitious goal for the Indian FinTech industry to grow tenfold in the next decade, with a goal of achieving "$1 trillion in AUM and $200 billion in revenues", according to a poll by EY. By June of 2022, India has produced over a hundred unicorns, with more than a quarter of those companies being involved in financial technology (LLP, 2022). By 2020, the value of transactions is "expected to reach USD 73 billion, thanks to India's economy's active adoption of fintech choices". "After reaching the fifteenth spot among the world's biggest start-up towns, Bengaluru—the main centre for start-ups in India—has attracted significant interest from investors in the fintech business". Indian fintech is booming because to rising investor interest, innovative solutions, and a supportive startup ecosystem (KPMG, 2016). There are over a hundred unicorns in India as of June 2022, with about a quarter of them being financial technology companies. The exponential growth and immense potential of India's FinTech industry are shown by this astounding figure. Around seven percent of all FinTech unicorns are based in India currently. Nevertheless, the global FinTech unicorn ecosystem still has a lot of untapped potential for development and further contributions (LLP, 2022). Investing more than $1.5 billion in 2015, up from $247 million in 2014, the sector in India has seen significant expansion.

Financial technology software is "expected to become a $2.4 billion industry in India by 2020". The projected value of the transactions is $73 billion, with a compound "annual growth rate (CAGR) of 22 percent". Factors that contribute to "India's potential for success include its friendly business environment, responsive investors, and highly qualified IT workforce (KPMG, 2016). From 2014 to 2015", investment in fintech in India increased significantly, going from "247 million USD to over 1.5 billion USD". The number of angel investors in the US was 300,000 in 2016, whereas the number in India was about 1800. The 691 angel transactions that took place in 2015 is indicative of "the increasing interest in start-up funding in India, which had 370 such transactions in 2014". The Indian fintech software business is projected to have a rise of between 1.2 and 2.4 billion USD by 2020. In 2016, the Indian fintech business processed transactions of more than USD 33 billion, as reported by KPMG (2016). "After expanding at a CAGR (compound annual growth rate) of 22% from 2016–2020, it is anticipated to reach USD 73 billion by 2020".

REVIEW OF EXISTING LITERATURE AND FORMULATION OF HYPOTHESES

1. The influence of Financial Technology (FinTech) on sustainability.

"Arner et al. (2020), Atayah et al. (2023), Lisha et al. (2023a), Macchiavello and Siri (2022), and Rais et al. (2023)" all agree that the modern sustainability scenario has spurred substantial technological progress and innovation. A wealth of information on the nature, scope, and impact of the link between FinTech and sustainability has been gleaned from prior research in this area. This includes works by "Bayram et al. (2022), Callsen et al. (2021), Deng et al. (2019, 2019), Guang-Wen and Siddik (2023), Macchiavello and Siri (2022), Ramamohan et al. (2021, 2021), and Zhang et al. (2021)".

Sustainable agriculture might be a reality with the help of FinTech and online marketplaces, as shown by Anshari et al. (2019). The paper highlights how FinTech has greatly improved distribution inefficiencies and tackled financial difficulties. In their analysis of FinTech companies' sustainability practices, Merello et al. (2022) find complex relationships between "CSR reports, sustainability indices, board size, market value, firm size, and sustainability". Green certificates and their effects are also shown by these complex dynamics. With an emphasis on the need of legally protecting personal data, Rambaud and G' azquez (2022) examine the regulatory hurdles encountered by FinTech in their pursuit of a sustainable and equitable society. Green finance and long-term financial viability may be advanced with the help of consumer protection regulations, as pointed out by Vergara and Agudo (2021).
"A U-shaped relationship between financial technology and sustainable development, according to Deng et al. (2019)", is affected by patterns of economic growth. The COVID-19 pandemic has altered the competitive

landscape, as reported by Yan and Jia (2022), which has had an effect on the financial technology and banking industries. “This research by Yan et al. (2022) delves at how green finance and innovation impact the relationship between FinTech adoption and sustainability performance”. To foster long-term, sustainable economic development, the research stresses the significance of combining technological innovation with financial strategies. In addition, according to Ruzita et al. (2022), customer sentiment is vital for leveraging the advantages and minimising the hazards of combining FinTech with sustainable development.

In their presentation of global context data, Deng et al. (2019) brought attention to the important issue of studying the interrelated effects of FinTech on “sustainable development”. “Governments must understand how FinTech relates to the Sustainable Development Goals (SDGs) since they are all working towards the same goal. Nevertheless, research in this area is limited, and it is difficult to agree on the best sustainable development indicator system”.

Udeagha and Ngepah (2023) investigated how the BRICS nations' use of green finance and Fintech may improve environmental sustainability. “Green finance, fintech, and energy innovation enhance environmental sustainability, whereas natural resource rent and economic expansion damage it, according to their findings”. Lisha et al. (2023b) examined the environmental sustainability of the BRICS nations from 2000 to 2019. Natural resources, financial development, sustainability, green innovation, and financial technology were the aspects that were considered. The research shows that natural resources and financial technology both hurt sustainability. Sustainability is improved by green technology and financial progress, while emissions are amplified by economic expansion. “Atayah et al. (2023) looked at 1672 US company observations from 2010 to 2019” in their own analysis. They found that when comparing sustainability and stock performance, non-FinTech firms fared better than FinTech companies. This provides further evidence that better disclosure of ESG issues may aid in resolving conflicts of interest and protecting shareholder value.

Various points of view in the literature on sustainable development and financial technology (FinTech) show how social needs, economic viability, and technological advancement are all interdependent. “As researchers delve further into mediating elements and industry-specific dynamics, it becomes clear that a comprehensive strategy is necessary to address technology, sustainable practices, regulatory frameworks, and societal objectives (Arner et al., 2020; Rambaud and Pascual, 2023)”. Consequently, the following hypothesis is developed based on this background information:

HO1: There is a notable impact of “Fintech on sustainability performance”.

2. The influence of “information technology governance on sustainability”

Various studies have investigated the complex relationship between “IT adoption and sustainability (Arner et al., 2020; Atayah et al., 2023; Lisha et al., 2023a; Macchiavello and Siri, 2022; Rais et al., 2023)”. While critically assessing the effects of IT on sustainability, this debate focusses on major findings from the aforementioned studies. The integration of GIS, FinTech, Blockchain, and other forms of information and communication technology with sustainability has been the subject of much research. “Aguboshim et al. (2019), Ahmed et al. (2020), Al-Rahmi et al. (2020), Nizam et al. (2020), and P. Sahoo et al. (2022)” are published in this field. “Nizam et al. (2020) examine the complex interplay between ICT penetration, economic progress, and carbon emissions”.

“It is crucial to consider the likelihood of rebound effects, even while ICT may increase energy efficiency and lower emissions”. “According to Sahoo et al. (2022), a well-planned strategy is required to make the most of the positive effects of information and communication technology (ICT) on sustainability while minimising its potential negative effects”.

Strategic planning, value delivery, and performance management are all aided by sound IT governance. It also improves project performance, which further proves how important alignment is (Sir isomboonsuk et al., 2018).

The benefits of financial technology should not be overlooked, but the risks must also be carefully considered. Potential barriers to FinTech's capacity to fully realise potential sustainability benefits include data security concerns, technological inequality, and regulatory limits. This necessitates a comprehensive strategy that

considers innovation, the distribution of technological advancement fairly, and the "regulatory framework (Arner et al., 2020)".

In order to achieve optimal sustainability performance, it is crucial to combine financial technology with information and communication technologies such as blockchain. Research from multiple sources "(Al-Sartawi and Al-Sartawi, 2020; Almaqtari, Farhan, Al-Hattami, et al., 2023; Fattah et al., 2021; Khalil et al., 2020, 2020; Meneks¸e and Akda˘g, 2021; Wilkin and Chenhall, 2019, 2019)" supports the idea that effective IT governance is crucial for a smooth transition when embracing new technologies. Research conducted by Karim and Purwanto (2020) highlights the need of information technology (IT) governance frameworks in effectively mitigating the risks linked to the implementation of FinTech. Lacity et al. (2020) asserts that coordinating IT policy with long-term objectives is critical for successful implementation of FinTech solutions. They highlight the effect on unique selling propositions and market dominance. In order to shape an organization's sustainability activities, IT governance is crucial, according to research by "Aguboshim et al. (2019), Downes et al. (2020), Haron et al. (2022), Romanelli (2020), Sabbaghi and Vaidyanathan (2012), Mutamimah and Robiyanto (2021), and Romanelli (2020)".

According to Harris et al. (2017), actions aimed at improving energy efficiency and reducing carbon footprint are influenced by IT governance frameworks. In order to guarantee long-term company operations and reliable reporting, Lucas et al. (2021) state that good IT governance must be put in place. Furthermore, procedures for IT governance could be useful for keeping an eye on and reaching sustainability goals (Kurnia et al., 2019). In this digital era, there has been a growth in research on the interplay between data, tech, and environmental policymaking. Having said that, a number of important questions pertaining to theory, practice, and ethics have so far remained unanswered. There have been shifts in the available data due to the development of new environmental management systems. In non-democratic contexts, the effects of rapid developments in data, information networks, and new information technologies on environmental politics and governance are murky and hard to fathom (Kostka et al., 2020).

The absence of recognised standards that may effectively link "IT governance with sustainability persists despite substantial efforts by governments and international organisations (Huang et al., 2010; Pat' on-Romero et al., 2019; Smallwood, 2019)". For example, ISO 14000 is one of many standards developed by the International Organisation for Standardisation (ISO) to aid businesses in their pursuit of sustainable development. Despite their thoroughness, these guidelines "do not include critical areas like information technology. Companies have made Green IT a top priority because they see the need of implementing measures to raise environmental consciousness (Pat'on-Romero et al., 2019)". This goal may be attained by testing the following hypothesis:

HO2: There is a significant influence of IT governance on sustainability performance.

3. The correlation between "IT governance, FinTech, and sustainability".

With the help of new innovations in financial technology, the digitisation of financial services may radically alter several sectors of the market. Macchiavello and Siri (2022), "Callsen et al. (2021), Guang-Wen and Siddik (2023), and Eskiev (2021) all address how these innovations could affect sustainability results". Environmentally friendly initiatives may have easier access to funding via FinTech financing platforms, according to research (Bouri et al., 2021). According to studies, FinTech may boost renewable energy use, reduce carbon emissions, and expand access to financial services. According to Vergara and Agudo (2021), green financing may be made easier via FinTech. Arner et al. (2020) states that FinTech contributes to the SDGs by enhancing digital financial infrastructure, which in turn helps to promote the "UN's Sustainable Development Goals". "Deng et al. (2019) found that sustainable development and financial technology have a U-shaped relationship". Digital payment systems have the capacity to increase financial inclusion and promote socioeconomic sustainability, according to "Vergara and Agudo (2021)". The operational effectiveness and corporate sustainability of Fintech P2P lending firms are positively affected by "data quality analytics, business ethics, and cyber risk management, according to the study of Putra et al. (2022)".

The term "fintech" refers to a relatively new approach to doing business in the financial sector that leverages big data analytics to bring together traditional banks with online businesses. Companies like Tencent, Alibaba,

Amazon, and Google, with their vast market capitalisation and cutting-edge "technology, may play a significant role in achieving sustainable development goals (Zhang et al., 2021)". Sustainable finance is becoming more competitive, and fintech businesses are using cutting-edge technology like robo-advisory, blockchain, Internet of Things (IoT), satellite imagery, big data, and natural language processing (NLP) to gain an advantage. Fundraising, digital assets, blockchain, AI, and massive amounts of data are the key aspects (Macpherson et al., 2021). "There are challenges to integrating sustainability with financial technology (Fintech), but IT might help". "According to Anshari et al. (2019), digital marketplaces and FinTech might greatly improve sustainability". Disparities in access to digital technology, worries about data security, and regulatory hurdles are just a few of the obstacles that FinTech faces. The significance of "technology-driven sustainability", led by pragmatism and rigorous methodology, is emphasised by "Anshari et al. (2021) and Aysan and Bergigui (2021)". It is important to carefully assess the solutions, including practical, ethical, and social aspects, before using digital platforms to encourage sustainable conduct, notwithstanding the attractiveness of such platforms. Therefore, it is necessary to have an all-encompassing plan that considers technological aspects, ethical considerations, regional variations, and environmental consequences. Thus, it is crucial to establish effective IT governance to guarantee the smooth incorporation of technology, which greatly influences the outcomes of FinTech and sustainability efforts. In 2023, Almaqtari and colleagues were joined by Nurullah and Al-Hattami. Information technology (IT) governance and sustainability go hand in hand; the two must be compatible with ESG goals. "A comprehensive plan that promotes a culture focused on sustainability and accounts for environmental, social, and governance (ESG) concerns is necessary for reducing sustainability risks, even with the implementation of IT governance". To what extent do FinTech projects adhere to sustainability objectives is an issue for IT governance to address. It also aids in controlling how developments in financial technology, such digital payment efficiency, affect sustainability.

Many branches of IT, including GIS, FinTech, Blockchain, and ICT, have the potential to reap substantial benefits by adopting more environmentally friendly procedures, according to research. It is essential to have IT governance in place for the effective integration and implementation of technology "(Al-Sartawi and Al-Sartawi, 2020; Almaqtari, Farhan, Al-Hattami, et al., 2023; Fattah et al., 2021; Khalil et al., 2020, 2020; Meneks ¸e and Akdaɔ g, 2021; Wilkin and Chenhall, 2019, 2019)". According to Karim and Purwanto's (2020) study, IT governance frameworks are necessary for the effective management of FinTech risks. According to Lacity et al. (2020), the ability to integrate FinTech solutions effectively is influenced by how well IT governance aligns with strategic objectives. This, in turn, has a significant impact on innovation and competitive advantage. As a result, we provide the following theory:

HO3: IT governance moderates significantly the relationship between FinTech and

sustainability performance.

EXPERIMENTAL METHODOLOGY

1. Theoretical framework

"Examining the role of IT governance in shaping the relationship between FinTech and sustainability performance in India is the focus of the research model". Financial technology is considered an external factor that affects sustainability performance, the dependent variable. There are three aspects that are used to evaluate sustainability performance: economic, environmental, and social. To avoid any misunderstanding or incorrect evaluation, the governance component was omitted from the sustainability metric set. This is because IT governance is already a part of this dimension.

When looking at the correlation between FinTech and sustainability metrics, one moderating factor is IT governance. The research design is shown in Figure 1, which is located below.

2. Definition of the variables in terms of their operationalization

In order to "mediate the relationship between Fintech and sustainability performance, this research looks at the function of IT governance strategies". The work uses a 5-point Likert Scale to assess the factors and look into the association. A synthesis of the literature from prior studies is used to identify each variable. Table 1 below lists the operational definitions and measurement scales for the variables.

3. The process of gathering data and the tool used for study

Bankers in India were the focus of an online survey that included members of the board, chief financial officers, customer service representatives, senior executives, financial advisors, operations officers, loan officers, and credit officers, among others. The survey contained of twenty-five questions divided into five sections.

Data collection for the study was carried out using snowball sampling and non-probability convenience sampling techniques. Studies have shown that "convenience and snowball sampling" are popular research procedures because they are easy to use, cost-effective, time efficient, and can explore hard-to-reach populations "(Almaqtari et al., 2022; Guang-Wen and Siddik, 2023; Samagaio and Diogo, 2022)". Researchers may investigate hard-to-reach or geographically distant populations more efficiently using convenience sampling since it allows them to select persons who are easily accessible (Raza et al., 2020).

Almaqtari et al. (2020) and Wang et al. (2019) found that snowball sampling is an effective way to reach marginalised groups or communities that are difficult to reach via traditional means of sampling. "These approaches enrich data, provide many perspectives, and help fill gaps in our understanding of the target demographic".

The sample size calculator and G-Power tools were used to determine the lowest sample size, which was 175 participants and 139 participants, respectively. However, 210 questionnaires were eventually obtained using an online questionnaire that was delivered using Google Docs. A number of social media platforms disseminated the survey, which included both mandatory questions and more approachable wording for closed-ended ones. The response rates increased by 20% when an abbreviated message was disseminated over many channels, stressing brevity. Participating about half-way through the study are entry-level administrative positions in fields including credit, lending, financial consulting, customer service, and operations. Alternatively, 34% are consultants, senior executives, or branch managers in middle administration, and 17% are CEOs or board members.

"Partial Least Squares (PLS) estimation is a popular method for estimating the relationships between hidden variables and indicators". "Several studies have looked at its pros and cons (Almaqtari, Elsheikh, et al., 2023; Rostamzadeh et al., 2021; Shanmugapriya and Subramanian, 2016)". An approach to route modelling known as partial least squares (PLS) "makes use of ordinary least squares regressions". This is mainly helpful when working with complex models that have several manifest and latent variables with a small number of indicators for each hidden variable. Both Henseler and Sarstedt (2013) and Hair et al. (2013) have emphasised the usefulness of this method. Contrarily, PLS route modelling is preferred over covariance-based structural equation modelling in cases when the likelihood of generating incorrect or divergent results is significant. When trying to foretell the connections between research variables, SEM-PLS is an excellent tool for assessing complex models (Memon et al., 2017). "It can identify critical target items, provide clarification, and make predictions". In cases when there are limited samples or non-normal data, PLS-SEM is used (Hair et al., 2019). Evaluation of mediation is best accomplished using PLS-SEM, which stands out from regression analysis. When undertaking moderator analysis, it is best to follow a two-step process. Consistent with other research "(Almaqtari et al., 2022; Dwivedi et al., 2021; Guang-Wen and Siddik, 2023; Samagaio and Diogo, 2022)", Smart PLS is used to determine the results in this study. "Confirmatory factor analysis, validity and reliability assessments, and hypothesis testing using structural equation modelling are all expected results".

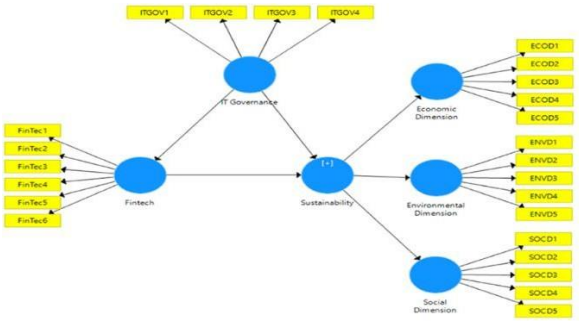

Figure 1: Research Design

Table 1: Definition of Variables

Nature	Variable	Acronym	Scale	Items	Reference
FinTech	FinTech	FinTech	1:6	"Using Fintech service makes it easier to do my online purchasing". "If I have access to Fintech services, I want to use them as much as possible". "Fintech service is the first choice to pay for the future. Fintech services are better than traditional services in terms of their contributing to sustainability". "Our management gives priority to Fintech channels rather than traditional channels".	(Le, 2021)
IT Governance	IT Governance	ITGOVE	1:4	"Our business has an ERP system that facilitates the accessibility of data Information and data are stored in a way that can be recovered, accessed, and operated from anywhere at any point in time". "Our business uses cloud computing to facilitate system operating". "Our business has a well-written and developed strategy of IT governance to deal with green finance and branchless operations that promote sustainability issues".	(Almaqtari, et al., 2021)
Sustainability Performance	Economic Dimension	ECOD	1:5	"Green finance activities generate additional economic benefits (economic value added) Branchless banking improves the economic performance of the stakeholders". "Branchless banking follows a comprehensive tax policy imposed by the government. Green financing activities help save investment and other costs Green financing activities help reduce overall risk".	(Zheng, et al., 2021; Akter et al., 2017; Raihan, 2019)
	Environmental Dimension	ENVD	1:5	"Using environmentally sustainable services will help reduce pollution due to less usage of paper and energy. Using environmentally sustainable services will help protect the environment". "Using sustainable technology-based services has more environmental benefits as compared to traditional banking services". "Our business undertook actions for environmental audit, public disclosure, employee training, and immunity Branchless banking relies on and invests in clean technologies".	(Jaiswal and Kant, 2018; Kumar et al., 2017; Taneja and Ali, 2021)
	Social	SOCD	1:5	"Green financing significantly improves the revenue and market share of our business. Green financing	(Zheng, et al., 2021; Akter et

	Dimension			significantly decreases the operational expenditure of our business" "Green financing significantly reduces paper usage and energy consumption in our business". "Green financing improves our business's compliance with environmental standards". "Green financing improves the reputation and image of the business". "Green financing improves the relationship between the community and stakeholders".	al., 2017; Raihan, 2019; Zahid et al., 2021)

RESULTS

Confirmatory factor analysis

Elements of the inquiry. Each item's factor loading measures the extent to which it is correlated with its associated notion. We consider factor loadings above 0.7 to be adequate, and those exceeding 0.8 to be excessive. Most factor loadings are considered strong or sufficient. For SOCD1, the item factor loading is 0.699, whereas for FinTec2, it is 0.836.

Results from the confirmatory factor analysis (CFA) seem to support the idea that most items accurately reflect their target components. You can see the component factor loadings in Figure 2 as well. For each construct that was studied, the results of the "construct reliability (CA), rho A values, and composite reliability (CR)" scores are shown in Table 2. "The CR value is higher than 0.7". "All of the structures have good internal consistency if the coefficient alpha (CA) is 0.7 or above, which is generally seen appropriate". "There is a high level of internal consistency, since the rho A values are more than 0.7". All of the buildings have good CR (Consistency Ratio) ratings greater than 0.7. Taken together, these results imply that the CFA results are acceptable for SEM outcome estimation.

Table 3's numerical values demonstrate the results' discriminant validity. The findings demonstrate that the items used to evaluate each concept are suitable for gauging that specific construct only. Each idea has a larger autocorrelation "than the correlation values with other constructs, suggesting a good fit for discriminant validity".

Table 2: CFA Factor loading

Variables	Items	Fintech	IT GOV	ECOD	ENVD	SOCD	CA	rho_A	CR	AVE
Fintech	FinTec1	0.826					0.906	0.908	0.906	0.616
	FinTec2	0.836								
	FinTec3	0.737								
	FinTec4	0.797								
	FinTec5	0.719								
	FinTec6	0.788								
IT Governance (ITGOV)	ITGOV1		0.779				0.857	0.858	0.857	0.600
	ITGOV2		0.797							
	ITGOV3		0.723							
	ITGOV4		0.795							
Economic Dimension (ECOD)	ECOD1			0.724			0.871	0.873	0.871	0.576
	ECOD2			0.740						
	ECOD3			0.753						
	ECOD4			0.811						
	ECOD5			0.763						
Environmental Dimension (ENVD)	ENVD1				0.813		0.875	0.877	0.875	0.585
	ENVD2				0.749					
	ENVD3				0.779					
	ENVD4				0.728					
	ENVD5				0.751					
Social Dimension (SOCD)	SOCD1					0.699	0.874	0.876	0.874	0.582
	SOCD2					0.789				
	SOCD3					0.739				
	SOCD4					0.782				
	SOCD5					0.799				

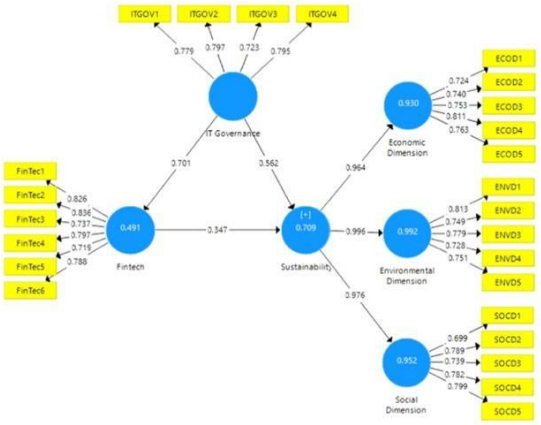

Figure 2: Confirmatory Factor Analysis

Results and Discussions

The direct effect model

"Table 4 and Figure 3 provide the results that evaluate the direct and indirect effects of the variables' route linkages". "According to the results, Fintech significantly improves sustainability performance (β=+0.347, p =0.000, α < 0.01)". There is a "statistically significant impact showing that banks' sustainability performance increases when they employ Fintech". This finding is in line with the rising tide of opinion that technology advances may improve sustainability efforts and corporate governance. "Numerous studies, like those by Battisti et al. (2023a), Rais et al. (2023), and Udeagha and Muchapondwa (2023), have shown that fintech significantly impacts sustainability".

Focussing on collaboration and modern technological platforms, "Vergara and Agudo (2021) studied the link between Fintech and sustainability".

Table 3: Discriminant Validity

Constructs	Economic Dimension	Environmental Dimension	Fintech	IT Governance	Social Dimension
Economic Dimension	0.759				
Environmental Dimension	0.770	0.865			
Fintech	0.694	0.750	0.785		
IT Governance	0.704	0.853	0.701	0.774	
Social Dimension	0.739	0.805	0.582	0.642	0.763

Table 4: SEM Direct effect modelling

Path	*β*	*STDV*	T – Stat	*p* Values
Fintech -> Sustainability	0.347	0.085	4.097	0.000
IT Governance -> Fintech	0.701	0.063	11.148	0.000
IT Governance -> Sustainability	0.562	0.086	6.552	0.000
Sustainability -> Economic Dimension	0.964	0.037	26.301	0.000
Sustainability -> Environmental Dimension	0.996	0.016	61.733	0.000
Sustainability -> Social Dimension	0.976	0.021	46.291	0.000
Total Indirect Effects				
	β	stdv	t – stat	*p* Values
Fintech -> Economic Dimension	0.334	0.084	3.987	0.000
Fintech -> Environmental Dimension	0.345	0.084	4.125	0.000
Fintech -> Social Dimension	0.338	0.083	4.076	0.000
IT Governance -> Economic Dimension	0.776	0.049	15.919	0.000
IT Governance -> Environmental Dimension	0.802	0.044	18.248	0.000
IT Governance -> Social Dimension	0.785	0.044	17.712	0.000
IT Governance -> Sustainability	0.243	0.064	3.779	0.000
Specific Indirect Effects				
	β	stdv	t – stat	*p* Values
IT Governance -> Fintech -> Sustainability -> Economic Dimension	0.234	0.064	3.685	0.000
IT Governance -> Sustainability -> Economic Dimension	0.542	0.084	6.432	0.000
IT Governance -> Fintech -> Sustainability -> Environmental Dimension	0.242	0.064	3.791	0.000
IT Governance -> Sustainability -> Environmental Dimension	0.560	0.087	6.397	0.000
IT Governance -> Fintech -> Sustainability -> Social Dimension	0.237	0.063	3.746	0.000
IT Governance -> Sustainability -> Social Dimension	0.548	0.085	6.443	0.000

This study argues that financial technology (Fintech) might help banks stay in business for the long haul by paving the way for more sustainable banking practices. “Aysan and Bergigui, 2021b; Rambaud and G' azquez, 2022; Siddik et al., 2023; Vergara and Agudo, 2021). Several research corroborate that FinTech is crucial in advancing sustainability”. The results also show that IT significantly affects FinTech, with a beta coefficient of +0.701 and a p-value of 0.000, which is on the lower end of the significance threshold (0.01 for both variables). These results lend credence to the theory that the growth of FinTech is a direct outcome of the profound impact that IT advancements have had on the banking sector. M. Sahoo et al. (2021), Macchiavello and Siri (2022), Downes et al. (2020), Khan et al. (2020), Al-Sartawi and Al-Sartawi (2020), and Macchiavello and Siri contribute to supporting this observation. Technological improvements have enhanced the infrastructure, which has expedited research in domains like data analytics, artificial intelligence, and blockchain “(Aysan and Bergigui, 2021; Aysan and Bergigui, 2021b, 2021a; Macpherson et al., 2021; Yan et al., 2022, 2022)”. Thanks to progress in cyber threat mitigation, FinTech platforms may provide users safe and reliable financial transactions (Najaf et al., 2021).

This study shows that IT governance has a major impact on Fintech's development and acceptance, indicating that IT governance is a critical component in determining Fintech's future. “A very substantial positive correlation (β=+0.562, p =0.000, $\alpha < 0.01$) between IT and sustainability performance is shown by the data”. Research from several sources supports the assumption that IT advancements greatly boost sustainability performance. Here are several papers that pertain to this topic: “Aguboshim et al. (2019), Arner et al. (2020), Guang-Wen and Siddik (2023), Sabbaghi and Vaidyanathan (2012), Zhang et al. (2021), and Zhao et al. (2019).” This kind of research highlights how crucial IT is for improving sustainability outcomes.

“The association between sustainability performance and its three primary components—economic, environmental, and social”—is substantial and statistically significant, according to the data ($p = 0.000$, $\alpha < 0.01$). This shows that the development and stability of economically sustainable activities are significantly affected by the implementation of effective sustainability practices. It implies that a key component of driving economic success is attaining great sustainability performance. “Research by Arner et al. (2020), Deng et al. (2019), Macpherson et al. (2021), and Zhao et al. (2019) supports the idea that responsible bank conduct is strongly tied to excellent sustainability practices. It also highlights the vital significance of sustainability performance in solving environmental challenges”.

Fintech has a strong and positive relationship with the three sustainability pillars. There is a positive result on the economy from FinTech. The outcomes show that the economic component is significantly improved as Fintech becomes more prevalent (β=+0.334, p =0.000, $\alpha < 0.01$). This data points to FinTech as a factor that helps the bank become more financially stable. In a similar vein, this association suggests that FinTech contributes to more sustainable environments (β=+0.345, p =0.000, $\alpha < 0.01$). “There has been a correlation between the growth of FinTech and the improvement of environmental sustainability, which raises the possibility that FinTech might help boost environmental performance”. Likewise, there is evidence that FinTech has a positive effect on social sustainability via its relationship with it (β=+0.338, p =0.000, $\alpha < 0.01$).

It follows that financial institutions with a strong “Fintech presence are more likely to engage in extensive CSR initiatives”. Based on these findings, “Fintech may help the economy last longer by making banking more accessible, simplifying procedures, and opening up new avenues for small and startup enterprises to get funding (Arner et al., 2020)”. Arner et al. (2020), Macpherson et al. (2021), and Zhao et al. (2019) all agree that alternative funding options, such as crowdfunding and peer-to-peer financing platforms, encourage economic activity and new business ventures. Financial technology increases social sustainability by making financial services more accessible. This means that people from all walks of life may learn about money and gain control over their own financial situation “(Guang-Wen and Siddik, 2023; Vergara and Agudo, 2021; Winarsih et al., 2020; Zhang et al., 2021)”.

There is a large and positive effect when looking at “the relationship between IT governance and the three sustainability pillars”. The variable's influence on economic, environmental, social, and governance sustainability is very positive (β=+0.776, p=0.000, $\alpha \leq 0.01$), as well as on all three of these sustainability metrics separately. This provides strong evidence that sustainability performance improves substantially with the advancement of IT governance. This demonstrates that responsible IT governance is critical to economic development and suggests

a relationship between IT expansion and better environmental performance and banking practices. Such results are in agreement with those of Mushtaque et al. (2014) and Mohapi and Njenga (2012).

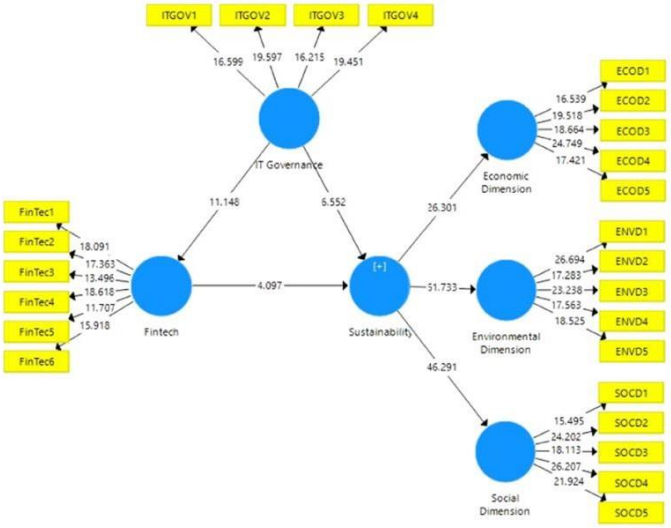

Figure 3: SEM- Direct Effect

The financial aspect is greatly improved by the interplay of IT governance, Fintech, and sustainability performance. The beta coefficient (β) is negative 0.234, and the p-value is negative 0.000, which is equal to or less than 0.01. Financial technology adoption rises in response to better IT governance, which improves sustainability performance and ultimately contributes to economic growth. "The focus on sustainable and technology-driven practices is likely to lead to economic benefits for banks that strategically use technological advancements to promote Fintech and improve sustainability performance (Dwivedi et al., 2021; Guang-Wen and Siddik, 2023; Jnr et al., 2017; Zhang et al., 2021)". "According to earlier studies, such as those by Aguboshim et al. (2019), Macchiavello and Siri (2022, 2022), Macpherson et al. (2021), and Mata et al. (1995), the utilisation of technological breakthroughs enhances sustainability performance".

The results show that the economic component, sustainability performance, and IT governance all have a favourable and statistically significant link. "At the significance level for environmental concerns, the beta coefficient (β) is +0.542 and the p-value is 0.000, both of which are less than or equal to". "Arner et al. (2020), Bayram et al. (2022), Khuntia et al. (2018), Macpherson et al. (2021), and Wijayanti and Setiawan (2023) are among the many studies that have shown that FinTech promotes digital transactions, reduces the need for physical documents and paperwork, and supports environmental sustainability by reducing energy consumption and carbon emissions".

"Information technology governance, sustainability performance, and the environmental element are positively and significantly associated (β= +0.560, p = 0.000, α < 0.01) according to the results. Thus, it is reasonable to assume that better environmental performance may be associated with the combined effects of IT governance and sustainability performance strategies".

This conclusion emphasises how complex the links are between using IT, establishing sustainable behaviours, and the environmental effects that follow.

In the same framework, there is a positive effect shown by the development from IT governance to Fintech to sustainability performance to the social component (β= +0.237, p =0.000, α < 0.01). "There is a strong relationship between IT governance and sustainability performance, which means that improving sustainability performance by coordinating IT governance is essential for long-term economic success". Based on previous research "(Guang-Wen and Siddik, 2023; Macchiavello and Siri, 2022; Macpherson et al., 2021; Zhang et al., 2021)", this conclusion lends credence to the premise that banks that prioritise both technical advances and sustainability presentation are more likely to achieve favourable economic outcomes.

"There is a positive effect on environmental sustainability from the association between IT governance, FinTech, and sustainability performance (β= +0.242, p = 0.000, α < 0.01). There can be repercussions for banks that establish sustainable performance requirements, incorporate Fintech, and execute IT governance".

Based on the references provided, it seems "that banks are more likely to engage in corporate social responsibility (CSR) initiatives if they use information technology and financial technology to improve their sustainability performance (Guang-Wen and Siddik, 2023; Samagaio and Diogo, 2022; Vergara and Agudo, 2022)". The need for all-encompassing strategies to promote ethical behaviour in the financial sector is emphasised by this result. An excellent correlation between social dimension, sustainability performance, and IT governance was found in the study. "In particular, IT significantly improves sustainability performance and corporate social responsibility (CSR) initiatives (β= +0.548, p = 0.000, α < 0.01). This beneficial effect highlights how advancements in IT motivate more people to take part in CSR initiatives. Cao et al. (2021), Guang-Wen and Siddik (2023), and Zhao et al. (2019) found that banks are more likely to demonstrate a commitment to responsible business practices when they embrace technological innovations and prioritise sustainability performance components".

The moderating effect model

Table 5 and Figure 4 show the estimated moderating influence from the structural equation modelling. "The research found that FinTech and the Economic Dimension of Sustainability are strongly correlated (β = 0.331, T = 4.139, p = 0.000). Based on the findings, it seems that the growing use of FinTech positively impacts the Economic Dimension of Sustainability, which might lead to improvements in financial inclusion and development in the economy." "To strike a balance between market integrity, financial inclusion, and economic growth while still complying with international financial norms, Arner et al. (2020) suggest that technology allows for the reassessment of present systems". "According to the results, there is a robust and very significant correlation (β = 0.538, T = 6.583, p = 0.000) between IT Governance, Sustainability, and the Economic Dimension. This highlights the need of strong IT governance in encouraging long-term economic activity inside banks. Joshi et al. (2013) states that there are several financial benefits to reporting and communicating IT budgetary problems". "The results also showed that there was a positive and statistically significant relationship between IT Governance, FinTech, Sustainability, and the Economic Dimension (β =0.232, T =3.956, p =0.000)". "This provides further evidence that sound IT governance and cutting-edge financial technology work together to improve long-term economic viability". "However, it was shown that IT Governance had a statistically insignificant and negative effect on the link between Sustainability and the Economic Dimension (β = 0.017, T = 0.488, p = 0.626)". The results show that IT Governance positively affects Economic Sustainability but has no bearing on the connection between Sustainability and FinTech. "It is clear from this that the alignment of IT Governance and FinTech does not change the direct link between FinTech and sustainability, even if both contribute to sustainability in their own ways".
"There was also found to be a positive connection between FinTech and Environmental Sustainability, which was statistically significant (o = 0.342, T = 4.241, p = 0.000)". "This provides further evidence that FinTech helps make the world a better place for the environment." "The relationship between IT Governance, Sustainability, and the Environmental Dimension was also shown to be positively correlated (β = 0.556, T = 6.707, p = 0.000)." This shows how important IT Governance is for encouraging eco-friendly actions. Innovations in technology, say Fiksel et al. (2021), make better use of materials and industrial waste while reducing pressure on natural resources.

Additionally, "there was a robust and positive correlation (o = 0.239, T = 4.028, p = 0.000) between IT Governance, FinTech, Sustainability, and the Environmental Aspect seen in the study." This indicates that environmentally friendly FinTech practices may be achieved by combining them with sound IT Governance concepts. Research by "Anshari et al. (2021), Arner et al. (2020), Khuntia et al. (2018), Tamasiga et al. (2022), Vergara and Agudo (2021)", and Zhang et al. (2021) has all shown that technology solutions improve sustainability performance. "The presence of IT Governance has no effect on the relationship between "Sustainability and the Environmental Dimension, as shown by the non-significant beta coefficient (β = 0.017, T = 0.490, p = 0.624)". While IT governance has a favourable effect on the environmental dimension of sustainability, it has no effect on the link between sustainability and fintech. This brings to light a real issue for

banks and other financial institutions: how to make sure their IT governance programs work with FinTech products so they can encourage sustainable practices in the long term.

A strong positive correlation (β = 0.335, T = 4.200, p = 0.000) between FinTech and the social aspect of sustainability is suggested by the data. It follows that FinTech initiatives should aim to improve society's long-term viability. "In addition, the IT Governance, Sustainability, and Social Dimension variables showed a robust and very significant positive connection (β = 0.544, T = 6.751, p = 0.000)." Here we see how effective IT governance may contribute to a more sustainable society. "In addition, the results show that there is a robust and statistically significant relationship between IT Governance, FinTech, Sustainability, and the Social Dimension (β =0.235, T =3.988, p =0.000)." Without statistical significance (β= 0.017, T =0.491, p = 0.624), the effect of IT governance on the link between sustainability and the social component could not be determined. "Social sustainability is directly affected by IT governance, although the link between FinTech and sustainability is little affected."

Table 5: Result Estimation

Path	β	STDV	T – Stat	p Values
Fintech -> Sustainability -> Economic Dimension	0.331	0.080	4.139	0.000
IT Governance -> Fintech -> Sustainability -> Economic Dimension	0.232	0.059	3.956	0.000
IT Governance -> Sustainability -> Economic Dimension	0.538	0.082	6.583	0.000
Moderating Effect _of IT Governance -> Sustainability -> Economic Dimension	-0.017	0.035	0.488	0.626
Fintech -> Sustainability -> Environmental Dimension	0.342	0.081	4.241	0.000
IT Governance -> Fintech -> Sustainability -> Environmental Dimension	0.239	0.059	4.028	0.000
IT Governance -> Sustainability -> Environmental Dimension	0.556	0.083	6.707	0.000
Moderating Effect _of IT Governance -> Sustainability -> Environmental Dimension	-0.017	0.036	0.490	0.624
Fintech -> Sustainability -> Social Dimension	0.335	0.080	4.200	0.000
IT Governance -> Fintech -> Sustainability -> Social Dimension	0.235	0.059	3.988	0.000
IT Governance -> Sustainability -> Social Dimension	0.544	0.081	6.751	0.000
Moderating Effect _of IT Governance -> Sustainability -> Social Dimension	-0.017	0.035	0.491	0.624
IT Governance -> Fintech -> Sustainability	0.240	0.060	4.028	0.000

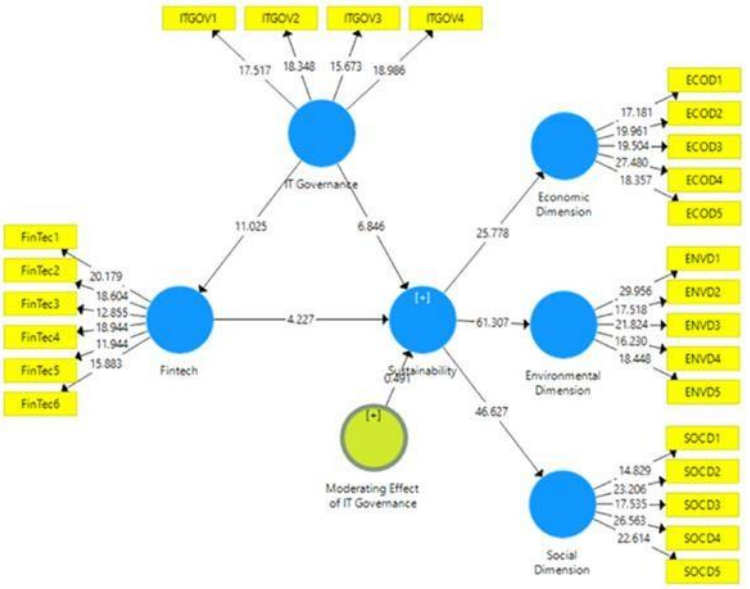

Figure 4: SEM- Moderating effect

CONCLUSION

Here we examine India to find out how "IT governance affects the connection between FinTech and sustainability metrics". How FinTech impacts sustainability performance is examined by the study model via the use of economic, environmental, and social variables. The study surveyed bankers in a variety of roles (e.g., board members, CFOs, senior executives, customer service reps, loan officers, financial advisers, operations officers, and credit officers) using an online questionnaire. In order to gather information for their studies, researchers used snowball sampling and non-probability convenience sampling. The sample size was 210 individuals, all of whom

were employed by commercial banks in India. The poll was shared on social media and Google Docs with both required and optional statements for the closed-ended questions.

“Fintech has a positive effect on sustainability performance, according to the report. Financial institutions may strengthen their social and environmental sustainability efforts and contribute to economic growth by using Fintech”. “The increasing emphasis on technological advancements to improve sustainability and corporate governance is in line with this”. According to the research, good IT governance is essential for banks to build sustainable strategies, boost innovation in Fintech and other technologies, and improve their sustainability performance. The rising profile of fintech is enhancing all three dimensions of sustainability: economic, environmental, and social. The data shows that the right sustainability measures substantially boost economic development and stability. Some research suggests that financial technology might help financial organisations' CSR efforts and environmental performance. The study found a strong correlation between IT governance and sustainability, as it promotes the adoption of Fintech and improves sustainability performance.

This, in turn, contributes to broader economic sustainability. Economic benefits may accrue to banks that place a premium on sustainable and technological operations via the strategic use of IT governance to enhance sustainability and Fintech performance.

Increased use of FinTech is associated with better economic growth and financial inclusion, according to significant positive linkages discovered between FinTech and the Economic Dimension of Sustainability. The key to financial institutions' sustainable performance over the long run is good IT governance.

Economic sustainability is enhanced via the use of effective IT governance and FinTech solutions. FinTech and Sustainability may not be able to alter their direct link with the Economic Dimension due to their distinct contributions to sustainability, since IT Governance only weakly moderates the interaction between the two.

It seems that “FinTech activities contribute to societal sustainability, since there is a positive association between FinTech and the Social Dimension of Sustainability”. Although IT governance has little bearing on sustainability and fintech, it does affect social sustainability. All three areas of IT sustainability were positively correlated with by the study's IT governance. These links are not much diminished by IT governance, which implies that different financial institutions may take different approaches to FinTech and sustainability depending on their goals, values, and operating environment. “By implementing the recommendations made in the study, financial institutions may improve their IT governance practices and increase the beneficial impact of FinTech on sustainability results”.

Numerous literary contributions are made by the research. This research looks at “the relationship between FinTech and sustainability, environmental, and economic performance as it relates to IT governance”. Through the mediation of IT governance, our comprehension of the effects of “FinTech extends beyond monetary measures. Policymakers, lawmakers, and financial and IT professionals may all benefit from the study's findings”. Regulators and others in charge of technology adoption may benefit from understanding how IT governance mitigates the impact of FinTech. The increasing emphasis on sustainability across industries is shown by the holistic strategy, which incorporates environmental and sustainability performance. Improving IT governance to make the most of FinTech benefits while minimising risks might be one of the report's recommendations. “If successful, this may contribute to worldwide attempts to achieve the Sustainable Development Goals”. “Academic and industry viewpoints on FinTech, IT governance, and organisational performance may be shaped by further research that furthers our understanding, sheds light on practical issues, assists in decision-making, and expands our knowledge”.

The impact of IT governance as a moderator is the primary focus of this investigation on “the relationship between FinTech and ESG factors”.

“This report focusses on the highly regulated banking sector in developing economies like India and provides industry-specific data on the adoption of FinTech and its impact on ESG performance. For policymakers in these countries to craft regulatory frameworks that strike a balance between innovation and sustainability, it is crucial to comprehend the role of IT governance, according to research. Financial institutions that are considering integrating FinTech may find some helpful advice in the research, such as how to set up robust governance systems to deal with potential threats”.

Sustainable finance and responsible banking have recently received a lot of attention, and this research includes non-banking businesses and industries as well. This research sheds light on the interconnected web of issues related to IT governance, financial technology, and sustainability on all three levels: economic, social, and environmental. It is helpful to know how technological progress affects economic and environmental outcomes. A comprehensive approach to sustainability is necessary, as shown by the results. Banks may develop all-encompassing strategies for long-term success by thinking about IT governance, FinTech, and ESG. If we want to see sustained economic progress, technology is the key. While studies have shown that IT and ESG may improve certain industries, they also have the tendency to reduce environmental sustainability. Banks must strike a balance between their operations and environmental concerns, as this discovery shows. The research found that CSR project participation was higher among institutions that placed a premium on IT governance and ESG factors. The potential for technology adoption to encourage ethical banking practices is therefore well understood. Policymakers and business leaders are also affected by these results. Taking into account possible trade-offs, the authors propose that banks strategically deploy technology to improve economic performance and sustainability. "More investigation into the complex interplay between technology, sustainability, and business performance is warranted in light of the results". This encourages researchers to delve further into the mechanisms behind these connections. The research has limitations even if it provides important information. Only commercial banks in India are included in the analysis. Research in the future may compare a wider range of sectors and cover more ground.

Second, the study's primary data may only be applicable to certain industries and jurisdictions since it is based on a questionnaire survey. Possible topics for future research include text analysis and secondary data in relation to "FinTech, IT governance, and sustainability practices".

Third, the relationship between sustainability and technological advancement must be carefully examined for both internal and external factors that could influence it. Future studies may expand to include both internal and external factors, while this one primarily looks at FinTech, IT governance, and sustainability. This research may not be applicable to a broader population since it uses cross-sectional estimates using convenience and snowballing samples.
Using longitudinal data, future research may examine how these worries have evolved and changed over time**.**

REFERENCE

1. Aguboshim, F.C., Ezeasomba, I.N., Ezeife, J.E., 2019. Sustainable information and communication technology (ICT) for Sustainable data governance in Nigeria: a narrative review. J. Inf. Eng. Appl. https://doi.org/10.7176/jiea/9-5-02.
2. Ahmed, Z., Nathaniel, S.P., Shahbaz, M., 2020. The criticality of information and communication technology and human capital in environmental sustainability: evidence from Latin American and Caribbean countries. J. Clean. Prod. https://doi. org/10.1016/j.jclepro.2020.125529.
3. Aktas, R., Kayalidere, K., Kargin, M., 2013. Corporate sustainability reporting and analysis of sustainability reports in Turkey. Int. J. Econ. Financ. 5 (3), 113–125. https://doi.org/10.5539/ijef.v5n3p113.
4. Aktas, R., Kayalidere, K., Kargin, M., 2013. Corporate sustainability reporting and analysis of sustainability reports in Turkey. Int. J. Econ. Financ. 5 (3), 113–125. https://doi.org/10.5539/ijef.v5n3p113.
5. Almaqtari, F., Elsheikh, T., Al-Hattami, H.M., Mishra, N., 2023. The impact of board characteristics on environmentally friendly production: a cross country study in Asia and Europe. J. Clean. Prod. 392, 136257 https://doi.org/10.1016/J. JCLEPRO.2023.136257.
6. Almaqtari, F., Farhan, N.H.S., Al-Hattami, H.M., Elsheikh, T., 2023. The moderating role of information technology governance in the relationship between board characteristics and continuity management during the Covid-19 pandemic in an emerging economy. Humanit. Soc. Sci. Commun. https://doi.org/10.1057/s41599- 023-01552-x.
7. Al-Rahmi, W.M., Alzahrani, A.I., Yahaya, N., Alalwan, N., Kamin, Y., 2020. Digital communication: information and communication technology (ICT) usage for education sustainability. Sustainability. https://doi.org/10.3390/su12125052.

8. Arner, D.W., Buckley, R.P., Zetzsche, D.A., Veidt, R., 2020. Sustainability, FinTech and Financial inclusion. Eur. Bus. Organ. Law Rev. https://doi.org/10.2139/ ssrn.3387359.
9. Atayah, O.F., Najaf, K., Ali, M.H., Marashdeh, H., 2023. Sustainability, market performance and FinTech firms. Meditari Account. Res. 32 (2), 317–345. https://doi. org/10.1108/medar-08-2021-1405.
10. Awwad, B., El Khoury, R., 2021. Information technology governance and bank performance: evidence from Palestine. J. Decis. Syst. 00 (00), 1–24. https://doi.org/ 10.1080/12460125.2021.2005860.
11. Aysan, A., Bergigui, F., 2021. Sustainability, Trust and Blockchain Applications: Best Practices and Fintech Prospects. Soc. Sci. Res. Netw. https://doi.org/10.2139/ ssrn.3936398.
12. Bank, S.V., 2023. Future of Fintech. Fam. Court Rev. https://doi.org/10.1111/ fcre.12758.
13. Battisti, E., Nirino, N., Christofi, M., 2023a. Financial innovation (FinTech) and sustainability: new tools for sustainable achievements. Qual. Res. Financ. Mark. https://doi.org/10.1108/qrfm-08-2023-236.
14. Battisti, E., Nirino, N., Christofi, M., 2023b. Guest editorial: financial innovation (FinTech) and sustainability: new tools for sustainable achievements. Qual. Res. Financ. Mark. https://doi.org/10.1108/qrfm-08-2023-236.
15. Bayram, O., Talay, I., Feridun, M., 2022. Can Fintech promote sustainable finance? Policy lessons from the case of Turkey. Sustainability 14 (19). https://doi.org/ 10.3390/su141912414.
16. Chaouali, W., Ben Yahia, I., Souiden, N., 2016. The interplay of counter-conformity motivation, social influence, and trust in customers' intention to adopt Internet banking services: the case of an emerging country. J. Retail.
17. Consum. Serv. 28, 209–218. https://doi.org/10.1016/j.jretconser.2015.10.007. Chen, B., Yang, X., Ma, Z., 2022. Fintech and financial risks of systemically important commercial banks in China: an inverted U-shaped relationship. Sustainability. https://doi.org/10.3390/su14105912.
18. Deng, X., Huang, Z., Cheng, X., 2019. FinTech and sustainable development: evidence from China based on P2P data. Sustainability. https://doi.org/10.3390/ su11226434. Downes, L., Reed, C., Reed, C., & Reed, C. (2020).
19. Distributed Ledger Technology for Governance of Sustainability Transparency in the Global Energy Value Chain. https://d oi.org/10.3366/gels.2020.0006.
20. Fr˘ at¸il˘ a, L.A., Zota, R.D., Constantinescu, R., 2013. An analysis of the Romanian internet banking market from the perspective of cloud computing services. Procedia Econ. Financ. 6 (13), 770–775. https://doi.org/10.1016/s2212-5671(13)00201-3.
21. Giovanis, A.N., Binioris, S., Polychronopoulos, G., 2012. An extension of TAM model with IDT and security/privacy risk in the adoption of internet banking services in Greece. Eur. J. Bus. 7 (1), 24–53. https://doi.org/10.1108/14502191211225365.
22. Guang-Wen, Z., Siddik, A.B., 2023. The effect of Fintech adoption on green finance and environmental performance of banking institutions during the COVID-19 pandemic: the role of green innovation. Environ. Sci. Pollut. Res. 30 (10), 25959–25971. https://doi.org/10.1007/s11356-022-23956-z.
23. Hair, J.F., Ringle, C.M., Sarstedt, M., 2013. Partial Least Squares Structural Equation Modeling: Rigorous Applications, Better Results and Higher Acceptance. Long. Range Plan. 46 (1–2), 1–12. https://doi.org/10.1016/j.lrp.2013.01.001.
24. Hair, J.F., Sarstedt, M., Ringle, C.M., 2019. Rethinking some of the rethinking of partial least squares. Eur. J. Mark. 53 (4), 566–584. https://doi.org/10.1108/EJM-10-2018- 0665.
25. Hammadi, T.Al, & Nobanee, H. (2019). FinTech and Sustainability: A Mini-Review. Social Science Research Network. 〈https://doi.org/10.2139/ssrn.3500873.
26. Jnr, B.A., Anthony, B., Majid, M.A., Romli, A., 2017. Green information technology system practice for sustainable collaborative enterprise: a structural literature review. Int. J. Sustain. Soc. https://doi.org/10.1504/ijssoc.2017.10009300.
27. Joshi, A., Bollen, L., Hassink, H., 2013. An Empirical Assessment of IT Governance Transparency: Evidence from Commercial Banking. Inf. Syst. Manag. 30 (2), 116–136. https://doi.org/10.1080/10580530.2013.773805. Karim, A., Purwanto, A., 2020. Relatsh. Good Corp. Gov. Perform. Most Liq. Stocks Indones. 11 (1), 137–142. https://doi.org/10.5430/rwe.v11n1p137.

28. Khalil, S., Khalil, S., Khalil, S., Belitski, M., 2020. Dynamic capabilities for firm performance under the information technology governance framework. Eur. Bus. Rev. https://doi.org/10.1108/ebr-05-2018-0102.
29. Khan, F., Sana, A., Arif, U., 2020. Information and communication technology (ICT) and environmental sustainability: a panel data analysis. Environ. Sci. Pollut. Res. https:// doi.org/10.1007/s11356-020-09704-1.
30. LLP, E. . (2022). The winds of change Trends shaping India's Fintech Sector: edition II (Issue September). 〈https://assets.ey.com/content/dam/ey-sites/ey-com/en_in/topics/con sulting/2022/ey-winds-of-change-india-fintech-report-2022.pdf?download.
31. Lu, J., Wang, J., 2021. Corporate governance, law, culture, environmental performance and CSR disclosure: A global perspective. J. Int. Financ. Mark., Inst. Money 70, 101264. https://doi.org/10.1016/j.intfin.2020.101264.
32. Macchiavello, E., Siri, M., 2022. Sustainable Finance and Fintech: Can Technology Contribute to Achieving Environmental Goals? A Preliminary Assessment of 'Green Fintech' and 'Sustainable Digital Finance. Eur. Co. Financ. Law Rev. https://doi.org/ 10.1515/ecfr-2022-0005.
33. Mutamimah, Robiyanto, R., 2021. E-integrated corporate governance model at the peer to peer lending fintech corporation for sustainability performance. Kasetsart J. Soc. Sci. 42 (2), 239–244. 〈 https://doi.org/10.34044/j.kjss.2021.42.2.03.
34. Najaf, K., Najaf, K., Najaf, K., Mostafiz, I., Najaf, R., & Najaf, R. (2021). Fintech firms and banks sustainability: Why cybersecurity risk matters? https://doi.org/10.1142/s2424 786321500195. Nasiri, M., Saunila, M., Rantala, T., Ukko, J., 2021.
35. Sustainable innovation among small businesses: The role of digital orientation, the external environment, and company characteristics (October). Sustain. Dev. 1–10. https://doi.org/10.1002/sd.2267.
36. Nizam, H.A., Zaman, K., Zaman, K., Khan, K.B., Batool, R., Khurshid, M.A., Khurshid, M., Shoukry, A.M., Sharkawy, M.A., Aldeek, F., Khader, J., Gani, S., 2020. Achieving environmental sustainability through information technology: "Digital Pakistan" initiative for green development. Environ. Sci. Pollut. Res. https://doi.org/10.1007/ s11356-020-07683-x.
37. Nurullah, M., Mishra, N., Almaqtari, F.A., 2023. The determinants of forward-looking narrative reporting in annual reports of emerging countries: Evidence from India. Corporate Narrative Reporting. Routledge, pp. 132–150.
38. Ryu, H.S., Ko, K.S., 2020. Sustainable development of Fintech: Focused on uncertainty and perceived quality issues. Sustain. (Switz.) 12 (18). https://doi.org/10.3390/ su12187669.
39. Sabbaghi, A., & Vaidyanathan, G. (2012). Green Information Technology and Sustainability: A Conceptual Taxonomy. 〈https://doi.org/10.48009/2_iis_2012_26-32〉.
40. Sahoo, M., Gupta, M., Srivastava, P., 2021. Does information and communication technology and financial development lead to environmental sustainability in India? An empirical insight. Telemat. Inform. https://doi.org/10.1016/j.tele.2021.101598.
41. Sahoo, P., Saraf, P.K., Uchil, R., 2022. Identification of critical success factors for leveraging Industry 4.0 technology and research agenda: a systematic literature review using PRISMA protocol. Asia-Pac. J. Bus. Adm. https://doi.org/10.1108/ APJBA-03-2022-0105.
42. Smallwood, R.F., 2019. Information Governance, IT Governance, Data Governance. Inf. Gov. 19–28. https://doi.org/10.1002/9781119491422.ch2.
43. Tamasiga, P., Onyeaka, H., Ouassou, E. houssin, 2022. Unlocking the Green Economy in African Countries: An Integrated Framework of FinTech as an Enabler of the Transition to Sustainability. Energies. https://doi.org/10.3390/en15228658.
44. Taneja, S., Ali, L., 2021. Determinants of customers' intentions towards environmentally sustainable banking: Testing the structural model. J. Retail. Consum. Serv. 59 (December 2020), 102418 https://doi.org/10.1016/j.jretconser.2020.102418.
45. Udeagha, M.C., Muchapondwa, E., 2023. Green finance, fintech, and environmental sustainability: fresh policy insights from the BRICS nations. Int. J. Sustain. Dev. amp; World Ecol. https://doi.org/10.1080/13504509.2023.2183526.

46. Udeagha, M.C., Ngepah, N., 2023. The drivers of environmental sustainability in BRICS economies: Do green finance and fintech matter? World Dev. Sustain. https://doi. org/10.1016/j.wds.2023.100096.
47. Vejseli, S., Proba, D., Rossmann, A., Reinhard, J., 2018. The agile strategies in IT governance: towards a framework of agile IT governance in the banking industry. Twenty-Sixth Eur. Conf. Inf. Syst. (ECIS2018), Portsm.,UK 1–17 https://doi.org/ https://aisel.aisnet.org/ecis2018_rp/148 Download 324 DOWNLOADS Since November 28, 2018 PLUMX METRICS SHARE.
48. Vergara, C.C., Agudo, L.F., 2021. Fintech and sustainability: do they affect each other? Sustain. (Switz.) Vol. 13 (Issue 13). https://doi.org/10.3390/su13137012. Wang, S., Shang, G., Zhang, S., 2019. Corporate governance and evolution of trust in entrepreneurial networks: A case study of NVC Lighting Holding Ltd. Chin. Manag. Stud. 13 (4), 939–966. https://doi.org/10.1108/CMS-07-2018-0620.
49. Yan, C., Siddik, A.B., Yong, L., Dong, Q., Zheng, G.-W., Rahman, M.N., 2022. A Two- Staged SEM-artificial neural network approach to analyze the impact of fintech adoption on the sustainability performance of banking firms: the mediating effect of green finance and innovation. Systems. https://doi.org/10.3390/systems10050148.
50. Zahid, M., Rahman, H.U., Ullah, Z., Muhammad, A., 2021. Sustainability and branchless banking: The development and validation of a distinct measurement scale. Technol. Soc. 67 (April), 101764 https://doi.org/10.1016/j.techsoc.2021.101764.
51. Zhang, Y., Chen, J., Han, Y., Qian, M., Guo, X., Chen, R., Xu, D., Chen, Y., 2021. The contribution of Fintech to sustainable development in the digital age: Ant forest and land restoration in China. Land Use Policy 103 (August 2020), 1–9. https://doi.org/ 10.1016/j.landusepol.2021.105306.