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GREENING BOTTOM LINE & TECH-DRIVEN SUSTAINABILITY: FINANCIAL TECHNOLOGY JOURNEY CREATING BETTER ENVIRONMENT

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ABSTRACT

The main purpose of this investigation is to examine influence of financial technology (FT) on Corporate Environmental Performance. In addition, the present study examines green finance (GF) and green innovation (GI) as mediating variables between FT and CEP. Lastly, this study examines the moderating effect of the Resource Commitment (RC) between FT and CEP. The population of the study, comprised of managers working in different manufacturing companies in Pakistan, scholars used adopted questioner to collect data from respondents. A structural equational model was used to test the hypothesis of the study. The results indicate that FA has positively associate with CEP. The findings support the notion that GF and GI are the mediator between FA and CEP. The results confirm that RC moderates the relationship between FA & CEP. This study provides recommendations for regulators in formulating regulations that align with achievement of the technological goals of the firms. This study stands out as first to investigate the observed relationships. Research emphasizes the urgent need for the incorporation of novel technology, environmentally-friendly initiatives, and financial mechanisms into organization strategies so as to facilitate corporate environmental performance.

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INTRODUCTION

Fintech and environmental sustainability have gained lot of attention and enthusiasm in recent years (Mertzanis, 2023). Green finance and sustainable banking initiatives are implemented worldwide to enhance environmental sustainability (Ning, Cherian, Sial, Otero, Comite & Din, 2023). Now, the digitization facilitates equitable development and enhances total productivity, contributing to the advancement of sustainable economies. This change is largely attributed to online banking and commerce (Dikau & Volz, 2021). Researchers have recently been focusing

on digital finance as well as environmental sustainability. There is a special emphasis in this movement on digital finance and fintech activities. As an additional measure towards reducing disparities and promoting ecological sustainability, domestic and international digital payment infrastructures are vital for promoting sustainability. Green finance and Fintech are extremely important to regulators, especially in the developing countries, since they align with the Paris Agreement's objectives. Due to the global COVID-19 pandemic (Ceron & Monge, 2023), financial technology industry has experienced unprecedented growth and success. Digital solutions were incorporated into a variety of the sectors after the global pandemic (Jalal, Mubarak & Durani, 2023).

With its wide variety of innovative technology advances, fintech has demonstrated its ability to transform conventional financial systems essentially (Lavrinenko, Čižo, Ignatjeva, Danileviča & Krukowski, 2023), improving efficiency, accessibility, and adaptability to changing consumer & enterprise needs. Due to the significant transformation potential inherent in the phenomenon, its potential to fundamentally transform diverse sectors are widely acknowledged worldwide (Risman, Ali, Soelton & Siswanti, 2023). Despite being widely accepted in developed countries, Fintech solutions aren't yet widely used in developing countries (Nassiry, 2018). It has many limitations that prevent it from being widely adopted, despite its likely to enhance operational effectiveness, promote economic growth, and financial inclusion. Furthermore, according to Buckley & Webster (2016), regulatory obstacles, insufficient digital infrastructure, and limited access to technology can slow Fintech adoption in the developing nations. Consequently, it is evident that managers in developing country businesses have a significant impact on the speed and scope of Fintech adoption. Because they are the primary decision-makers, management is accountable for determining the course of strategic objectives (Hur & Akram, 2023) in addition to initiating and facilitating organizational change and managing resources (Hur & Akram, 2023).

At the end of the day, whether Fintech reception is effective relies upon the individual insights, mentalities, and decisions. Investigating the variables that shape supervisors' points of view on the Fintech reception is crucial for figuring out this peculiarity (Aloulou, Grati, Qudah & Okaily, 2023). A far-reaching way to deal with research should coordinate manageable turn of events, financial turn of events, and mechanical development. Thus, as indicated by insightful writing (Mosteanu & Faccia, 2020), the FinTech is an endeavor whose monetary administrations are coordinated with the imaginative innovation, for example, blockchain. In this connection, the Technological advancements are making it more and more common for the people to receive financial services and goods (Giglio, 2020). The financial resources are strategically allocated to environmentally friendly initiatives and endeavors with the green finance (GF). A developing number of monetary instruments, like Green Money (GF), are being created in view of natural supportability (Ozili, 2022). In this linking, with the use of new innovation, green developments limit squander, lessen natural corruption, diminish air pollution, decrease energy utilization, and decrease coal, oil, and power reliance. In addition to reducing greenhouse gas emissions, it promotes energy conservation (Gan, Liu, LQiao & Zhang, 2023) that bring certain undeasirable influences.

In the contemporary business sector, green innovation (GI) has become increasingly important as a means of addressing and minimising the negative impacts of climate change (Ni, Ahmad, Alshammari, Liang, Irshad, Zahri, Abyadh & Bakir, 2023). Resources commitment also means

investing in Fintech initiatives with financial, human and technological resources (Collevecchio, Cappa, Peruffo & Oriani, 2023). The allocation of resources is integral part of Fintech-driven change. Data from managers operating in developing country was collected and analyzed using a research methodology. Green finance affects an organization's environmental performance significantly according to multiple scholars (Chen, Siddik, Zheng, Masukujjaman & Bekhzod, 2022; Guang-Wen & Siddik, 2022). According to the previous studies, green finance (GF) has a significant and favorable impact on environmental (Zhang et al., 2022), social (Guang-Wen & Siddik, 2022; Zheng, Siddik, Masukujjaman & Fatema, 2021) and corporate green performance (He et al., 2022; Zheng et al., 2021). Corporate governance (CG) and green finance (GF) have been proven to positively affect environmental and sustainability performance of companies in numerous studies. In the particular setting of manufacturing firms in developing economies like Pakistan, there has been limited emphasis upon the interconnection between the financial technology (FT), green finance (GF), green innovation (GI), and environmental performance (CEP).

The conflicting findings reported in previous academic studies, still, continue to spur scholars to investigate this relationship (Ullah, Wang, Mohsin, Jiang & Abbas, 2022). As a result, the current study developed a theoretical framework to examine how manufacturing organizations' environmental performance is impacted by financial technology. Resources constraints and green innovation are specifically emphasized as mediating influences in this study. In addition to having scholarly implications, the findings of this dissertation have practical applications as well. By providing an in-depth understanding of the factors facilitating or impeding Fintech adoption in developing countries, the findings of this study will make a valuable contribution to the current academic literature. The relevance of resource commitment in the relationship between Fintech integration and organizational outcomes is illustrated in detail by the role of resource commitment as a moderator. As a result, regulators and policymakers may be able to use the recommendations of study to develop effective, adaptive, and supportive regulations as a result of its findings. While aligning with the technological objectives of firms operating in these regions, these regulations can well facilitate Fintech adoption in developing nations. Research objectives of study are based on the RBV theory: First, to investigate the relationship between FA and CEP within developing countries. G&F and GI may mediate the relationship amid FA & CEP by acting as mediators. It is vital to investigate how RC may influence FA-CEP associations.

LITERATURE REVIEW

Legitimacy Theory

As per the legitimacy theory, the drawn-out appropriateness of a suggestion is reliant upon its ability to get social salutation. As indicated by the legitimacy theory, firms put forth determined attempts to create and defense legitimacy by matching their corporate targets, activities, and practices with the upsides of local area (Ullah et al., 2022). This preparation is accepted to add to improvement of their ecological maintainability (Crossley et al., 2021). Later, organizations are dedicated to pick drives that intently line up with the current viewpoints, convictions, and propensities for society. As per hypothetical foundations of legitimacy theory, it very well might be opposed that GF fills in as an essential system utilized by relations to get and keep up with legitimacy (Ng, 2018). Activities can effectively handle environmental externalities connected to their tasks by executing estimates that plan to diminish energy utilization, fossil fuel spinoffs

and other adverse results (Chang et al., 2015). In addition, the supposed of green development embraces frequent inventive ventures embraced by a firm, with fundamental point of working on normally natural supportability (Ng, 2018). Thusly, as per believed of legitimacy, it is fitting for businesses to participate in drives connected with green supporting and green development (GI). Through the execution of such activities, ventures can possibly create, keep up with, or restore their credibility, in this way advancing fulfillment of inclusive natural manageableness. Therefore, drawing upon hypothetical system of legitimacy theory, the existing review laid out a way to contract with examination to assess the exchange between financial innovation, green finance (GF), green investment (GI), and EP inside the assembling area of the non-industrial country.

Hypothesis Development

Financial Technology & Environmental Performance

Fintech, which is documented by the performance of technological progresses in the financial business, has risen as an universal impact in contemporary works (Lontchi et al., 2023). Past investigations have shown technological innovation as the noteworthy determinant of natural execution (Hoque et al., 2023). Similarly, the examination done by Dwivedi et al. (2021) shown that financial technology influences practical adequacy and upper hand of firms. Furthermore, the idea of innovation lays inspiring spotlight on the movement of range and the reception of procedures that advance environmental manageableness (Awawdeh et al., 2022). The constant survey directed by Jesus et al. (2019) has shown association amid technological progresses and the advancement of natural supportability. The examination moreover proposed that relations ought to think about operation of clearly reasonable technology, as it adds to accomplishment of absolute ecological execution. Financial Technology assume a enormous part in advancing ecological maintainability inside hierarchical area by coordinating meaningless to ecosystem innovations into their tasks (Yadegarid et al., 2023). Several studies have been conducted so far to investigate relationship between technological innovation and environmental performance (Zhou et al., 2023). However, there has been a lack of focus on the connection amid financial technology and environment performance in manufacturing sector, mainly in Pakistan. So, the objective of research is to address knowledge gap by probing impact of financial technology on the environmental performance of the organizations. Consequently, the following hypothesis is postulated:

H1: Financial Technology has significant effect on environmental performance

Mediating Role of Green Finance & Green Investment

The preceding discussion of the linking between corporate environmental performance (CEP) and FA, GF, and GI has established that both GF and GI have noteworthy positive effects on the corporation's environmental performance. In any case, there is a lack of existing survey that has inspected the effect of FA on environmental performance inside the modern area, explicitly similar to the interceding elements of green finance and green investment (Hsu et al., 2021; A. Rehman et al., 2021). The connection between these factors, explicitly in context of industrial businesses operating in developing nations, is the emphasis of the current study, which fills in a investigate gap. Aslam and Jawaid (2023) embraced a review to inspect effect of green financial process on the ecological execution of monetary organizations, with a particular spotlight on the intervening job of GF. Some trainings have demonstrated that GI has a noteworthy impact on environmental performance (S. U. Rehman et al., 2021). Moreover, the review led by Kraus

et al. (2020) uncovered noteworthy impact of GI as a middle person in the connection between corporate social responsibility and ecological execution. As per penalties of this examination, the factors GF and GI can possibly affect the connection among FT and natural execution in the assembling business. The conceivable interceding impacts of GF and GI on assembly among FA and CEP have just been investigated in few past examinations. This means that present study fills in gaps in current body of knowledge. The following research hypotheses are presented as a result:

H2: Green Finance mediate the relationship between financial technology and environmental performance.
H3: Green Investment mediate relationship between financial technology and environmental performance.

Moderating Role of Resource Commitment

Moot writing has progressively centered around sightseeing the basics of Fintech receptions, information Codifiability, worker commitment, and asset responsibility. Regarding adoption of financial technology (Fintech) and Codifiability of Knowledge, meaning of employee meeting is widely acknowledged (Lumineau et al., 2021). Nevertheless, how much these variable impact environmental performance might rely upon the degree of possessions that an association will allot. The connotation between the adoption of financial technology (Fintech), the Codifiability of knowledge, and the environmental performance is moderated by the level of commitment to resources, with financial investments, infrastructure, as well as distribution of human capital (Alaassar et al., 2022; Li, 2014). According to the study's results, the factor GF plays a crucial role in easing the connection between environmentally responsible banking practices and financial institutions' environmental performance. Moreover, theoretical writing has shown that the operation of GF fundamentally affects CEP (Wang et al., 2022). The meaning of vital asset distribution in supplementing the joined effect of the Fintech reception on the ecological performance is underscored by this control structure. Therefore, the proposed hypotheses are as follows:

H4: Resource Commitment moderate the relationship between Fin-tech and Environmental Performance

RESEARCH METHODOLOGY

The data was gotten from managers of assembling activities located in Guangdong Province, China. To acquire more exact and reliable outcomes, it is critical to assemble data from various sources both email sources and individual sources. This study has worked with the getting of extensive data and a significant measure of data. The sample contains people in administrative situations inside these organizations. A sum of total (510) questionnaires were gotten from the respondents. The 424 responses evoked for this study were chosen in view of their degree of fulfillment and carefulness. A fundamental assessment was led to lay out factors' legitimacy, and questionnaire went finished an assessment to find out its rationality, intelligibility, and legitimacy. The questions recollected for the questionnaire were gotten from laid out writing to survey pertinent factors, and were appraised on 5-point Likert scales. Review questionnaire was organized into five segments, including demographics, Financial Technology (FT), green finance (GF), (GI), (RA) and environmental performance (EP). Therefore, researchers gather data about key recognitions of the members, including their age, orientation, and instructive foundation.

Conversely, green finance incorporates a bunch of five things that have been gotten from past insightful examinations (Zheng et al., 2021). This examination utilized group of five questions to survey the green innovation as recently applied in diverse investigations (Khan et al., 2019). Thus, the environmental performance comprises of five questions that were gotten from past exploration directed by (Wang et al., 2021). The financial technology in light of six things was taken on from (Al Nawayseh, 2020). At last, Resource Responsibility incorporates four things embraced from (Konadu et al., 2020; Wu, 2017). Thus, the ongoing examination utilized partial least squares-primary condition displaying (PLS-SEM) as a measurable programming device to direct information investigation and survey speculations. The choice to utilize partial Least Squares (PLS-SEM) was driven by its capacity to really survey little sample measures and its versatility in looking at interceding factors and circuitous affiliations. SmartPLS may likewise be utilized for the immediate assessment of united legitimacy, discriminant legitimacy, and dependability.

RESULTS OF STUDY

Table 1

Convergent Validity

Constructs	Items	FL	AVE	CR	α	VIF
Financial Technology	FT1	0.4481	0.514	0.859	0.804	1.1981
	FT2	0.6388				1.4007
	FT3	0.8274				2.2331
	FT4	0.8364				2.0921
	FT5	0.7704				2.0583
	FT6	0.7057				1.4300
Green Finance	GF1	0.5369	0.522	0.783	0.705	1.4128
	GF2	0.6882				1.0354
	GF3	0.6804				1.662
	GF4	0.6064				1.5417
	GF5	0.7207				1.7952
Green Innovation	GI1	0.7915	0.634	0.896	0.855	1.8003
	GI2	0.7559				1.6732
	GI3	0.8108				1.9032
	GI4	0.8264				2.0382
	GI5	0.7957				1.9361
	GI1	0.7915				1.8003

Table 1A

Convergent Validity

Constructs	Items	FL	AVE	CR	α	VIF
Resource Commitment	RC1	0.6711	0.513	0.840	0.769	1.1529
	RC2	0.7412				1.6150
	RC3	0.7715				1.7582
	RC4	0.7233				1.7424
	RC5	0.6715				1.4200
CEP			0.501	0.823	0.737	
	CEP1	0.7833				1.7405

CEP2	0.8176	1.9153
CEP3	0.7018	1.4452
CEP4	0.4875	1.1787
CEP5	0.662	1.3703

The measurement model depends upon investigating factor loadings, AVE, VIF, CR and alpha. Table 1 shows that all factor loadings values are over required limit of 0.4 (Becker et al., 2022). After dissecting the information introduced in Table 1, it is obvious that the interior consistency dependability of the analyzed measures is considered satisfactory. The case is upheld by exact information demonstrating that both the CR and alpha qualities outperform the laid-out limit of 0.70. The assessment of merged legitimacy involves use of normal change extricated (AVE), which is often prescribed to meet or surpass limit of 0.50, as proposed by (Hair et al., 2019). The discoveries introduced in the Table 1 and Figure 2 show that all develops display a Typical Fluctuation Extricated (AVE) esteem that outperforms the foreordained limit of 0.50. In view of this perception, it very well may be gathered that develops meet the necessities for merged legitimacy.

Figure 1

Measurement Model

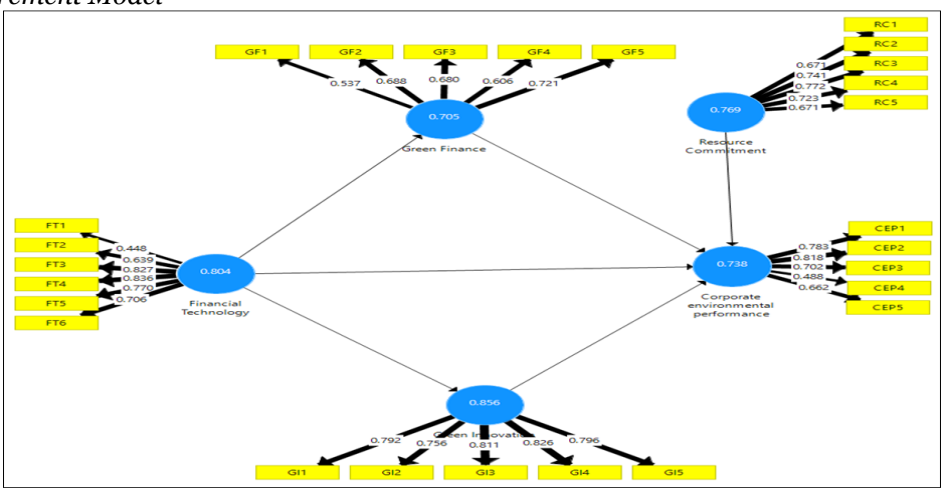


Table 2

Discriminant Validity (HTMT)

	CEP	FT	GF	GI	RC
Corporate Environmental Performance					
Financial Technology	0.61				
Green Finance	0.557	0.6311			
Green Innovation	0.4198	0.2879	0.2853		
Resource Commitment	0.4901	0.4299	0.4174	0.366	

Before, the discriminant legitimacy was evaluated utilizing old style measurements, as recently introduced by Fornell and Larcker (1981). Evaluation of discriminant legitimacy is presently directed by means of the utilization of the heterotrait-monotrait (HTMT) approach, which was

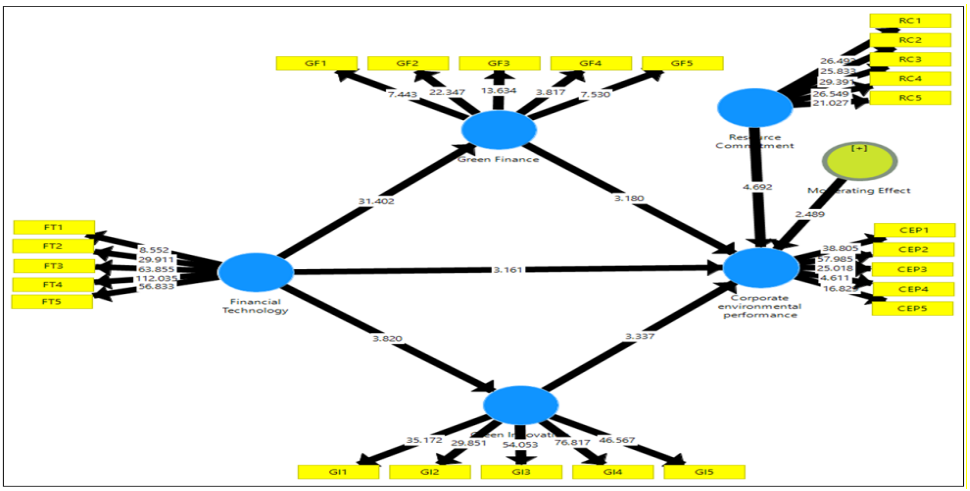
first framed by (Henseler et al., 2015). It is prudent to lay out the HTMT proportion at a worth of 0.85 for factors that have detectable calculated credits. On the other hand, it is prudent to set a limit of 0.90 for factors that show likenesses. The information introduced in Table 2 shows that the predefined measures for discriminant legitimacy have been met as evident from these results.

Table 3
Hypotheses Testing

Hypotheses	Paths	β-values	t-values	p-values	Remarks
		Direct Effect			
H1	FT -> CEP	0.3168	4.3876	0.0014	Supported
	FT -> GF	0.6544	31.402	0	
	FT-> GI	0.248	4.1377	0.002	
	GF -> CEP	0.0935	3.7073	0.0041	
	GI -> CEP	0.1599	4.5242	0.0011	
	RC -> CEP	0.1532	2.1928	0.0431	
		Mediating Effect			
H2	FT -> GF -> CEP	0.0612	3.4929	0.0058	Supported
H3	FT-> GI -> CEP	0.0397	2.6377	0.0248	Supported
		Moderating Effect			
H4	FT -> RC*-> CEP	0.0469	2.3218	0.0426	Supported

The results of the study indicated that all hypotheses are justified, as according to the findings of the study, Ft has the significant and positive effect on the CEP, GF, and Gi. Furthermore, the findings demonstrated that there is the significant as well as positive effect of GF as a mediator between FT and CEP. Moreover, the findings indicated that GI has a significant mediating role between FT and CEP. Finally, the results showed that RC moderated relationship between FT and CEP.

Figure 2
Structural Model



DISCUSSION

The experimental proof recommends a significant relationship between utilization of financial technology (FT) and the environmental performance of companies (CEP). This suggests that financial technology (FT) assumes a significant part in working with the firms to work on their corporate environmental performance (CEP) over utilization of eco-accommodating measures, including computerized loaning, electronic installments, versatile banking, and the web-based client care administrations. This study is basic assessment of relationship viable; subsequently a little corpus of momentum research exists on this issue. In any case, the information got from study done by Muhammad et al. (2022) shows that the examination of specialized headways exhibits a significant improvement in environmental viability. Besides, past examinations have shown exact discoveries that demonstrate a positive relationship between financial technology (FT) and intensity and performance of the financial business (Anwar and Li, 2021). To achieve comprehensive supportability inside their own associations, organizations are encouraged to incorporate environmentally mindful practices into their standard tasks. Thus, as expected, the values of the review demonstrate that financial technology emphatically affects green finance. This infers that financial technology can possibly work with the allocation of environmentally amicable assets through the foundation of the novel financial and venture roads, like advanced finance.

The discoveries introduced in this proclamation have been affirmed by the exploration directed by the creators referred to as (He et al., 2020). Besides, examination discoveries recommend that the utilization of Financial Technology (FinTech) plays a significant part in advancing the financial innovation. In light of the surviving examination, it has been shown that the mix of enormous information and man-made brainpower in field of financial technology (FinTech) is of the most extreme significance in working with the arrangement of green finance (GF) and speeding up the shift towards an economical as well as environmentally well disposed economy (Awotunde et al., 2021; Saksonova and Kuzmina-Merlino, 2017). Besides, the specialist has shown up at the assurance that in ongoing examples, Financial Technology (FinTech) has the ability to empower the assembly of green supporting (GF) through the smoothing out of the method for getting to novel channels for the money related resources and venture (Yang et al., 2021). Along these lines, the discoveries of the review exhibit that financial technology plays a valuable part in advancing green speculation (GI). This suggests that FT impressively serves to the expanded reception of the environmentally cognizant practices by the modern associations, subsequently working with their accomplishment of the manageability objectives (Jiang et al., 2022).

This study is among the underlying undertakings to analyze the relationship among FA and GI with regards to assembling organizations. Nonetheless, worth focusing on earlier exploration directed by (Kwong et al., 2023) has yielded restricted observational proof with respect to the association between these two factors. Besides, experimental discoveries recommend that both green supporting and green innovation impact the corporate environmental performance of assembling firms. The previously mentioned results demonstrate that associations can possibly further develop their environmental manageability through the allocation of resources towards green activities and execution of green drives. The discoveries given in this study are reliable with other examination (Dai et al., 2022), which has likewise shown that green finance affects corporate environmental performance. Moreover, the reconciliation of green venture exhibits a significant and positive impact on an association's environmental performance, as shown by

insightful examination (Kim et al., 2019). Besides, it has been shown by past examinations that Green Innovation (GI) is imperative in improving environmental performance of associations (Waqas et al., 2021). In this way, it tends to be contended that the coordination of green finance (GF) and green innovation (GI) is fundamental for accomplishing authoritative environmental performance.

Furthermore, the exploration features the job of RC as a directing variable. This highlights the significance of productive allocation of resources to accomplish fruitful reception of Fintech and upgrade environmental performance. Associations should lead an intensive assessment and vital allocation of resources to really accomplish ideal degrees of commitment and upper hand through the incorporation of Fintech (Memon et al., 2022). Given the beginning phase of Fintech execution in the non-industrial countries, this study highlights the meaning of the limit improvement and preparing programs. To achieve comprehensive supportability inside their own associations, organizations are encouraged to incorporate the environmentally mindful practices into their standard tasks. Along these lines, the discoveries of the review exhibit that financial technology plays a valuable part in advancing green speculation (GI). The previously mentioned results reveal that associations can possibly further develop their environmental manageability through the allocation of resources towards green activities and the execution of green drives. Thus, these drives can give the managers and workers the important abilities to successfully use Fintech apparatuses. This approach ensures fruitful financial investigation as well as works on the company's environmental proficiency and in general seriousness (Mao et al., 2016).

CONCLUSION

In conclusion, the study's findings indicate that it is advisable to embrace a comprehensive and extended outlook on concept of competitiveness. The integration of Fintech should be regarded as an essential component of company's overarching long-term strategy. Sustained endeavours are necessary to actively involve employees, enhance technological expertise, and respond to dynamic market trends. In summary, the implications of this empirical study offer practical guidance for managers, regulators, and policymakers as they navigate the dynamic landscape of Fintech adoption in the developing nations. In this connection, the insights provided by this study offer the comprehensive perspective on the complex interconnections that influence the dynamics of the financial accounting, knowledge creation, environmental efficiency, as well as competitiveness.

Implications of Study

The findings of empirical study have substantial implications for various stakeholders engaged in the domain of Fintech in developing nations. The global recognition of Fintech adoption has significantly increased after the COVID-19 pandemic. Nevertheless, the initial implementation of this technology in developing countries highlights considerable opportunity for expansion. It is worth noting that managers within firms play a crucial role in influencing FA. The study also emphasizes importance of regulators aligning their regulations with technological aspirations of firms. Policymakers possess capacity to assume a crucial role in facilitating Fintech adoption through establishing conducive ecosystem. Implementing streamlined regulations, robust data security protocols, and appropriate incentives can effectively facilitate a smooth and efficient adoption of digital financial services, resulting in advantageous outcomes for both financial institutions and consumers. In further investigations, it is recommended that researchers use

more extensive sample sizes, address gender disparities, include individuals from other nations and sectors. Future studies may add other mediating and moderating variables like employee commitment, regulatory technology and supervisory technology to extend current model of the study.

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