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A Systematic Analysis of the Role of Fintech in Disaster Recovery

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ABSTRACT

Natural disasters like floods, landslides, droughts and pandemics occur frequently and become severe. The need for a strong financial system is important to people to recover from these disasters. This study explores how Fintech can be used to accelerate the disaster recovery process by facilitating quick, flexible, technology-driven services that are available to many people. Financial Technology (Fintech) had a pivotal role in assuring continuity of financial operations, delivering relief funds efficiently, and supporting economic recovery. This study uses qualitative secondary data analysis from global datasets like EM-DAT, Statista, and The Inclusive Fintech 50 paper. This study examines the combination of fintech tools like blockchain, mobile payments, Insurtech, and AI-powered analytics over all stages of the disaster management cycle. The findings reveal that fintech can strengthen the cost efficiency, speed up the fund distribution even in rural areas. Fintech tools are useful for businesses and vulnerable populations to access financial services during COVID-19.

Keywords: Fintech, Disaster management and Recovery

INTRODUCTION

Financial technology is the combination of financial protection tools and digital technology. It is also known as "fintech". It changes the financial behaviour of individuals, businesses, government, and other institutions towards managing and distributing money. Fintech tools offer speed and transparency on financial matters, and it is easily available to all. So that it can be used to restructure the lives of people and organisations who are affected by a disaster.

The increasing occurrence of disasters driven by both natural and man-made activities like urbanisation, climate change, deforestation, etc. Causes a serious impact on people's lives, daily life and economy. Recovering from these disasters is a long and complicated journey. For that, we need financial resources. Many countries do not have a good disaster recovery management system, and people do not get quick services and their recovery becomes delayed. Usually, when a disaster happens, people depend on emergency funds or insurance to recover from it. But it does not work fast and does not reach the people who need it more, and also, these kinds of emergency funds or insurance coverage do not provide more insurance, and they are limited.

The disaster recovery period was critical for the people. It should be solved quickly. Otherwise, it creates big problems for the victims. Who got affected on a large scale and who struggle to recover. The innovative tools like financial technology (Fintech) offer a new way to a more efficient and sustainable recovery from disaster that solves the issue easily and quickly.

Fintech includes a lot of digital tools like mobile money, digital banking, insurance technology (Insurtech), etc., to fix these issues up to a point like easy and faster fund transfer, clear enhancement of aid, and including more people into financial protection, etc. these can improve the ability of people to recover quickly from the difficulties before, during and after disaster.

Fintech is linking the financial system with modern technology that enables people to easily access financial

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services, including people who are poor and who are from remote communities, in every situation, including disaster recovery. It makes quick disaster recovery and helps to restructure their life.

This qualitative secondary data analysis aims to analyse the role of fintech in disaster risk management and the recovery process globally. For that, this study uses data from various sources like EM- DAT datasets, Statista, IMF and the article Inclusive fintech 50(2020) white Paper. That article profiles 403 newly started fintech across 111 countries that have 116 million customers in the world.

Fintech and Disaster Recovery

Fintech is the combination of digital technology with financial tools. It integrates digital technologies like cloud computing, big data analysis, mobile platforms, etc, into financial security tools like insurance, banking, etc. (ADB & OECD, 2020). It is also helpful to maintain a more sustainable and inclusive financial system and create innovative tools to help banks and insurers to address climate change and social inequality (Sisira Colombages, 2023). Fintech is also useful for other peoples, households, banks and other organisations and institutions, especially SMEs. When a pandemic hit, individuals, businesses, and others couldn't access their funds because the traditional banking system was disrupted. Fintech-enabled banks help people to get financial resilience without visiting the bank, and also help to recover the data (Zhou and Sun, 2024). The damage to buildings, infrastructure destruction (ATM, servers, and communication systems, etc), and unavailability of staff, etc., put people and organisations in trouble. When traditional systems are damaged, these fintech tools will help people and other institutions to maintain their financial stability (Adwani, 2025).

There are a lot of fintech tools available, such as Insurtech, payment options, blockchain, etc. these tools can be used to effective disaster recovery. Insurance is a major financial tool that can be mitigate the financial risk and help the people by providing money to restructure their lives (Kalfin *et al.*, 2022). When it comes to traditional system getting insurance amount is a slow process. People can't access the insurance amount immediately. There is an importance of "Insurtech". Insurtech is integrating technology with insurance. This is a fast system that helps people to recover from disaster and other unexpected events.

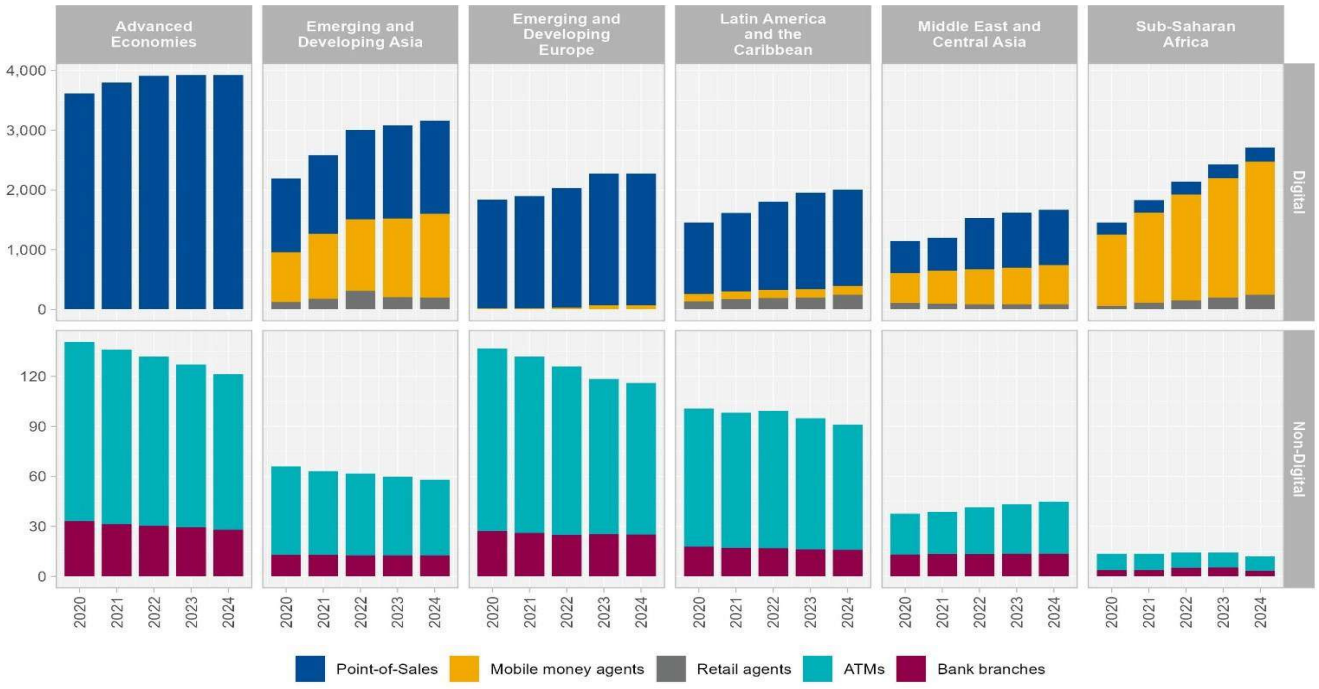
Blockchain is another type of fintech tool that stores data securely and transparently. The traditional disaster system is difficult and leads to delays and misinformation. This is a digital system that can connect government, rescue workers, hospitals and local authorities on one platform to share and verify their information quickly and safely (Sobha and Sridevi, 2020).

Apart from these, there are several fintech tools available that are useful for disaster recovery and response by processing speed, financial availability and coordination.

The recovery from disasters like floods, earthquakes, and cyclones faces delays because the infrastructure and other traditional aid services are damaged. Fintech plays a major role in covering up these delays by using mobile money platforms, blockchain, digital wallets and crowdfunding that allow governments

Table 1 : Major Fintech Tools and Their Uses in Disaster Recovery

Fintech Tools	Use in disaster recovery
Blockchain technology	A digital tool that can record, share, and store data securely through a decentralised network. Allows govts, hospitals, rescue teams and local agencies to access and verify stored data that will be useful to reduce misinformation and quick decision-making and ensure that the right person gets aid and resources.
Mobile payment system	A digital financial tool that allows people to make financial transactions and payments through their mobile phones. It is a perfect solution for the slow process of sending emergency funds to affected people.
Parametric insurance	A fintech tool that provides quick financial support to recover from disasters and other occurrences of specific events, and it will reduce paperwork.
Crowd funding	These fintech tools are used to collect loans and donations from individuals or business organisations through online platforms. it is useful for collecting donations and peer-to-peer lending, used for connecting loan providers with borrowers
AI-powered risk analytics	It is a digital tool that predicts, assesses and manages risk by using advanced technologies like machine learning, big data, etc. They use weather data and satellite images to analyse disaster risk and help government, insurers, aid agencies and other organisations to respond fast during a disaster.
e-KYC and biometric system	It can be used for quick transfer of disaster recovery funds to the beneficiaries who need it, and it verifies that people are using biometric data safely and restores access to financial services that have been removed or undocumented.



Source of data: Financial Access Survey, Financial Access Survey Pilot 2024, and IMF staff calculations.
Notes: These charts present the weighted average by region for economies whose data are available for 2020-2024. Country coverage very over indicators depending on data availability. The 2023 POS data were reciprocated in 2024 because this information was collected in the 2024 FAS Pilot, which covered the period of 2013–2023.

Fig. 1 : Digital and Non-Digital Financial Access Points (2021–2024)

and other agencies to distribute emergency funds directly to affected people, even in rural areas.

Fintech mobilises the funds and restructures the homes and lives through tools like crowdfunding and peer-to-peer lending. It will boost resilience by increasing access to savings, credit, and micro insurance, especially for vulnerable people. It can create smart planning and more targeted disaster recovery efforts. Overall, fintech is transforming disaster recovery by integrating financial gaps, accelerating aid and improving vulnerable communities to restructure with financial resilience and stability (Table 1).

The Fig.1 shows that many regions across the world are going toward digital financial services. The chart is divided into two parts. The top panel of the chart explains the digital tool access points, such as point of sale, mobile money agents and retail agents, and the bottom panel shows the non-digital financial access points such as ATMs and Bank Branches.

In advanced economies, traditional banking services like bank branches and ATMs are less common in the years 2012 and 2024. This change from traditional financial services to digital financial services means people are using mobile phones and point-of-sale (POS) systems more to access financial services. In disaster-prone areas, these fintech tools can be very helpful for the disaster recovery process. Because it can deliver emergency funds quickly and access financial services even when the banks or ATMs are damaged.

Disaster Management Cycle

The mitigation preparedness phase has to be done before the occurrence of a disaster. By using fintech, we can create financial resilience before a disaster. Parametric insurance, climate risk financing mechanisms and savings platforms help individuals and others to take precautions against disasters (Fig. 2).

The second phase is “preparedness”. In this phase, fintech is helpful to create anticipatory financial planning and public awareness. It will reduce the impact of disasters. Fintech tools like mobile wallets, digital banking platforms and others are helpful to governments and other agencies to save an emergency fund for disaster recovery and other unexpected events.

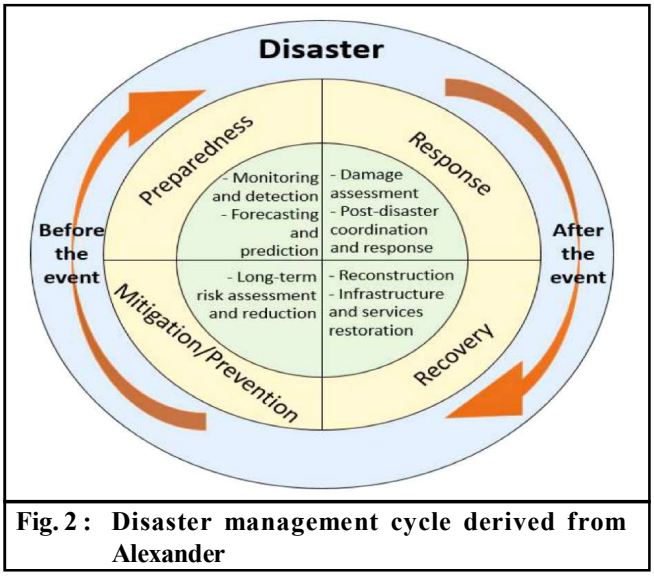


Fig. 2 : Disaster management cycle derived from Alexander

The third phase is the "response" phase. It is a post-disaster phase. In this phase, fintech is helpful to get fast, safe and secure financial assistance. They can use A mobile payment system to transfer funds to the affected populations even in rural areas.

The last phase in the disaster management cycle is "recovery". Fintech is a great tool that is helpful to restructure the lives of people and the economy. Fintech tools such as Peer-to-peer lending and crowdfunding can be used to collect funds to recover from this disaster.

Fintech tools are not only helpful for recovery from disasters but also promote the financial stability and resilience of people. For an effective recovery from the disaster, it is important to get information at the correct time, inclusive financial access, and a coordinated relief structure. Research on disaster management highlights that recovering from a natural disaster is not only limited to physical reconstruction but also a socio- economic operation that is shaped by preparedness, response, and long-term resilience (Chaudhary and Piracha, 2021; Wen *et al.*, 2023). In this context, financial technology has evolved as a potential influence tool because it includes digital payments, credit, insurance, crowdfunding, and financial information and provides speedy finance for recovery even when traditional infrastructure is not accessible (Ha *et al.*, 2025; Jafri *et al.,* 2025; Sundaram, 2024).

Fintech is improving financial inclusion and liquidity in disaster situations, and it will certainly help the disaster recovery process. Mobile-based financial services help people and micro-entrepreneurs, even when physical or traditional financial services are not accessible, supporting savings, receiving remittances, and accessing payments. Fintech and bank branches can be used together to maintain savings and financial services when users can access banking services, particularly among poor women and other marginalised groups (Adbi and Natarajan, 2023). Similarly, the development of fintech is influenced by digital infrastructure, financial literacy and regulations; it expands the accessibility of financial services (Ha *et al.,* 2025; Sundaram, 2024; The Mobile Economy, 2025a, 2025b). So fintech is playing an important role in disaster recovery because it needs both digital accessibility and efficient institutional backing. Fintech is also helpful for providing credit facilities after disasters and allocating relief funds. An article on fintech lending after experiencing an earthquake found that digital credit facilities can be used with traditional banks to meet high credit needs, especially in places where traditional local banking services are limited (Li *et al.*, 2025; Qi *et al.*, n.d.). Blockchain-based allocations of relief increase transparency and efficiency by decreasing the mediation costs and facilitating traceable allocation of aid (Das *et al.,* 2022). Crowdfunding and data from mobile phones enable authorities to easily understand the needs of people who face a disaster. They provide real-time information from affected people, and it helps them provide assistance to the people who need it and support disaster management (Cinnamon *et al.,* 2016; Crowd sourcing the Disaster Management Cycle, n.d.). Digital platforms such as big data, artificial intelligence, and data science were useful in disaster forecasting, emergency responses, and resilience strategy (Cao, 2023; Yu *et al.*, 2018). Apart from this, fintech and digital platforms create certain obstacles that prevent people from using and accessing digital financial services; these challenges include cybersecurity issues, data privacy concerns, digital exclusion, and fraud detection, which create barriers (Jain *et al.*, 2023; de Luis García, 2024). By accessing reliable data, affordable products, and trustworthy institutions, and by mobilising recovery strategies by transferring risks and properly organising capital with the help of insurance penetration, climate finance innovations are mobilising recovery strategies by transferring risks and properly organising capital (Snapshot of Sendai Framework Monitoring, n.d.; Zakaryan, 2021; Zhang *et al.*, n.d.).

Fintech and COVID-19

Fintech is a key factor to financial resilience,

especially to assist micro, small, and medium enterprises during the global economic crisis of COVID-19. Fintech models create remote access to financial services and help individuals, businesses and other organisations to navigate income shocks, accessing traditional financial institutions, especially during lockdown.

COVID-19 is a global disaster that affects a lot of people in the world. During that time, fintech was helpful in accessing different financial services through digital gadgets.

The pandemic increased personal, financial management, digital payment and consumer demand and savings. Fintech demonstrated resilience through strategies. They can maintain cash buffers, a partnership between banks and NGOs and different sources of funding.

Fintech not only enables financial stability, but it also innovates inclusive models that have a significant impact on critical conditions. During the COVID-19 pandemic, fintech was helpful in managing financial services from home.

This Fig. 3 shows the growth of fintech from the year 2008 to 2024. From 2010, the number of fintech companies has been slowly increasing. But there is a large growth in the fintech companies from the year 2019, and after that, there is a huge improvement in the fintech growth. In 2019, the COVID-19 pandemic started in China. At that time itself, fintech became popular and used by many people, businesses and organisations.

Fintech Growth Vs Disaster Frequency From 2010-2024

This Fig. 4 shows the comparative trend between the number of disasters that occurred and the fintech growth from 2010 to 2024. The blue colour bar chart shows the number of disasters that have happened worldwide, and it is mentioned on the left axis. The right axis of this chart explains the fintech growth index by drawing an orange line graph. This graph clearly explains how the fintech growth is correspondent to disaster.

The cost efficiency ratio shows the relationship between cost and revenue. It is the financial metric that shows how much cost is incurred to generate the profit. A lower cost efficiency ratio is more efficient, which means less cost per unit of revenue. In this chart, all the categories show profitability, but savings and personal financial management show the highest profitability. Compared to 2019, 2020 had an improvement in the operating efficiency of fintech. That made an economic impact during the COVID-19 pandemic. This crisis had a impact on the growth of fintech, which means people relied on fintech companies for recovery.

This Table 2 shows the compounded monthly growth rate (CMGR) of fintech tools before and during the COVID-19 pandemic.

The compounded monthly growth rate is the metric that shows the growth rate of a value over a period of time. It analyses and compares the growth rate of revenue.

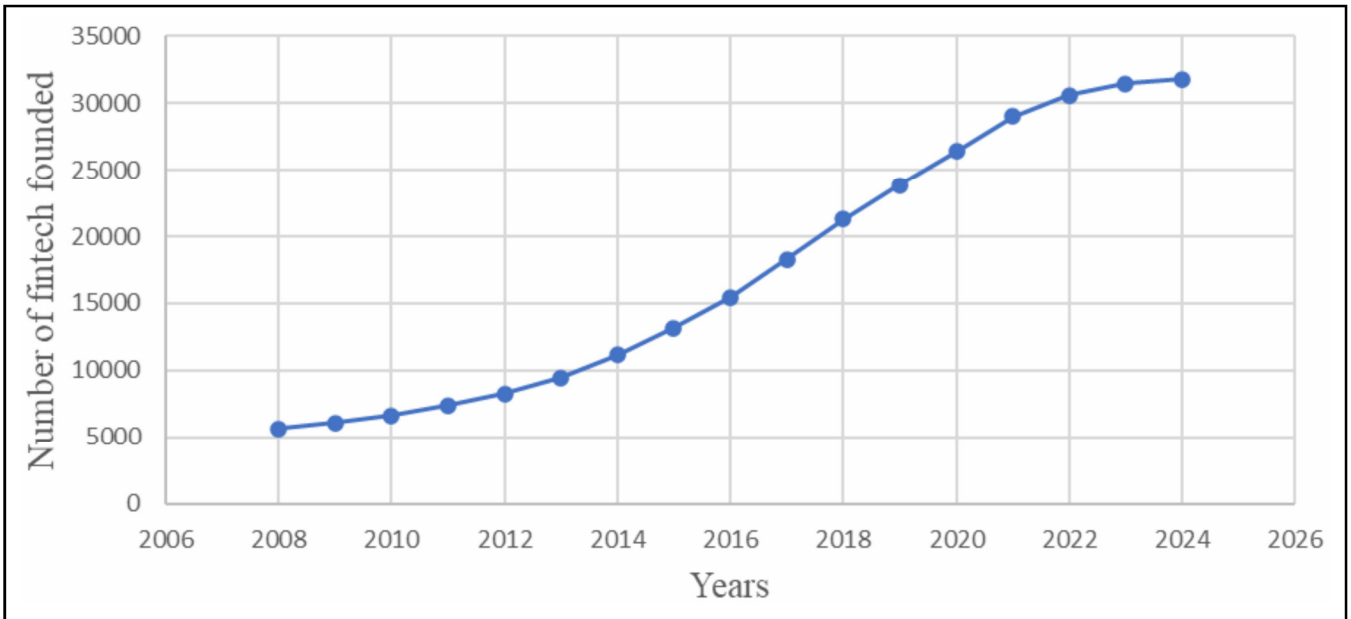


Fig. 3 : Total Number of Fintech Found

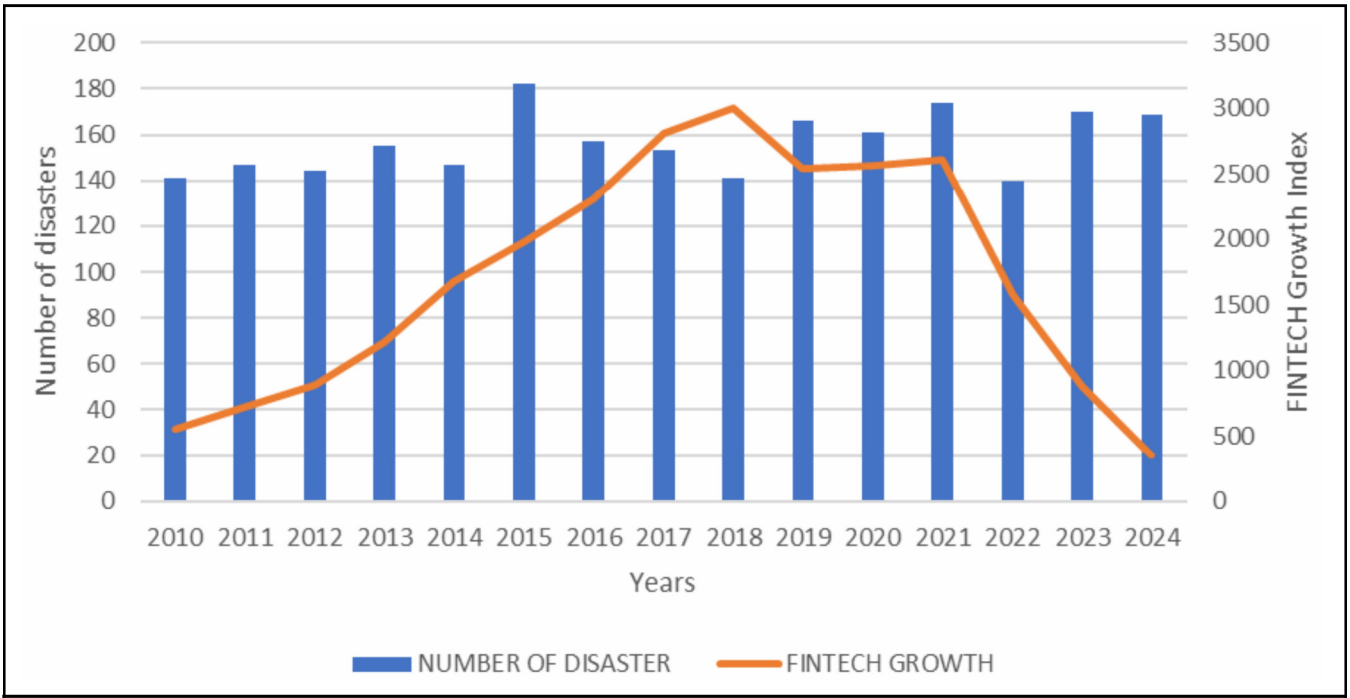


Fig. 4 : Fintech growth vs Number of Diaster

Table 2 : Economic Impact of the COVID-19 pandemic on the operating efficiency of fintech

Product Category	Cost Efficiency Ratio		Change
	Dec-19	May-20	
Credit	101	86	15
Infrastructure	100	85	15
Insurance	92	82	10
Payments and Remittance	90	74	16
Savings and Personal Financial Management	86	56	30

Source: article Inclusive fintech 50(2020) white Paper

The Table 3 shows that the savings and personal financial management fintech has the highest improvement during the COVID-19 pandemic. But unexpectedly, these data show that credit and infrastructure fintech had a decrease.

Table 3 : Compounded monthly growth rate of fintech tools during the pandemic

Product Category	CMGR Dec 19	CMGR May 20
Credit	8.60%	7.40%
Infrastructure	6.30%	6%
Payments and Remittances	11.90%	12.40%
Savings and Personal Financial Management	11.90%	15.60%

Source: article Inclusive fintech 50(2020) white Paper.

Findings

Fintech plays a major role in strengthening disaster management and boosting the recovery process globally. The research found that the efficiency in allocating disaster relief funds can be improved by integrating fintech tools with the disaster recovery process. Fintech tools like mobile payments, blockchain technology, Insurtech, AI-powered risk analytics, crowdfunding and other tools are significantly enhancing the productivity, speed, and transparency of disaster fund distribution. These tools help the government, aid agencies and others to deliver disaster relief funds quickly to affected people, even those who live in remote areas. The research findings highlight that these digital innovations are helpful to reduce the lag, misinformation and exploitation of disaster relief funds, thereby they can assure that right people receive funds for recovery at the right time.

In addition, the study declares that fintech is useful in all the phases of the disaster management cycle (mitigation, preparedness, response and recovery). Fintech tools such as parametric insurance, climate risk

financing mechanisms, and digital saving platforms are useful in the mitigation phase for individuals and communities to build financial resilience and to overcome unexpected events. In the second phase, mobile banking and digital wallets facilitate immediate financial transactions and cash transfers, promoting easy access to emergency funds when the traditional financial systems are damaged. Peer-to-peer lending and crowdfunding is helpful to collecting funds from various sources for disaster recovery.

It also highlights that from shifting the traditional financial system to digital innovative tools, it is noted that accessing financial services is easy. Fintech tools guaranteed the stability in financial operations with high improvement in savings and personal financial management systems during COVID-19. Overall, this study declares that fintech is enhancing financial inclusion and economic resilience.

Conclusion

Fintech appears as a critical factor of disaster resilience by combining the traditional financial system and offering inclusive, speedy and technology-driven explanations. This study ends with the combination of fintech in all phases of the disaster management cycle, which are mitigation, preparedness, response and recovery, that strengthen the financial accessibility, stimulate aid delivery and support long-term economic recovery. Fintech tools like mobile payments, blockchain, Insurtech, and AI-powered risk analytics that not only accelerate operational efficiency but also empower the vulnerable populations and organisations to cope up and recover from disasters. As disasters become more persistent and complicated, the strategies and ideas of fintech have a vital role in framing a more flexible, inclusive and sustainable recovery framework. The study reveals that fintech is helpful in disaster risk management and recovery even when the traditional financial system is collapses.

Limitations

- For conducting this study, we use only secondary qualitative data from global databases, which may restrict the accuracy of the data.
- The study does not include primary data, so the real-time impact is not directly explored.
- The study does not look into the country-specific distinctions; it only focuses on a worldwide approach.
- This study does not explore the negative effects of fintech tools, such as cybersecurity threats and data privacy etc.

REFERENCES

Abdi, M. and Natarajan, H. (2023). Fintech, financial inclusion and resilience among vulnerable populations. *World Bank Publications*.

Adwani, R. (2025). Fintech resilience and financial continuity during infrastructure disruptions. *J. Financ. Technol. Stud.*, **12**(1) : 45-61.

Asian Development Bank (ADB). Organisation for Economic Co-operation and Development (OECD) (2020). *Fintech for Sustainable Development: Impacts and Opportunities*. OECD Publishing.

Cao, Y. (2023). Big data and artificial intelligence applications in disaster forecasting and emergency response. *Internat. J. Disaster Risk Reduct.*, **87**, 103576.

Chaudhary, P. and Piracha, A. (2021). Natural disasters and community recovery: Understanding resilience and reconstruction. *Internat. J. Disaster Risk Reduct.*, **58**, 102168.

Cinnamon, J., Schuurman, N. and Hameed, S.M. (2016). Access to crowdsourced disaster management information during and after disasters. *Disasters*, **40**(4) : 715-728.

Das, S., Roy, A. and Chowdhury, P. (2022). Blockchain technology for disaster relief distribution and humanitarian assistance. *Technol Soc.*, **68**, 101859.

de Luis García, R. (2024). Cybersecurity and privacy challenges in fintech ecosystems. *J. Financ. Regul. Compl.*, **32**(2) : 210-225.

EM-DAT (2025). *The International Disaster Database*. Centre for Research on the Epidemiology of Disasters (CRED), Brussels.

Financial Access Survey (2024). *Financial Access Survey 2024*. International Monetary Fund, Washington DC.

Financial Access Survey Pilot (2024). *Financial Access Survey Pilot 2024*. International Monetary Fund, Washington DC.

Ha, V., Nguyen, T. and Tran, P. (2025). Fintech development, digital infrastructure and financial inclusion: Evidence from emerging economies. *Finance Res Lett.*, **67**, 105201.

Inclusive Fintech 50 (2020). *Inclusive Fintech 50 White Paper*. Center for Financial Inclusion and MetLife Foundation.

Jafri, S., Ahmed, M. and Khan, Z. (2025). Digital finance and post-disaster recovery: A systematic assessment.

Interna. J. Disaster Risk Sci., **16**(1) : 45-62.

Jain, R., Kumar, S. and Sharma, P. (2023). Challenges and risks in fintech adoption: Security, privacy and regulatory issues. *J Bank Financ Technol.*, **7**(1) : 15-28.

Kalfin, K., Sukono, S., Supian, S. and Mamat, M. (2022). The role of insurance in disaster risk reduction and recovery. *AIP Conf Proc.*, **2479**(1), 020028.

Li, X., Wang, Y. and Chen, Z. (2025). Fintech lending and disaster recovery finance: Evidence from earthquake-affected regions. *Finance Res Lett.*, **66**, 105104.

Qi, L., Zhang, H. and Liu, J. (n.d.). Digital credit accessibility and post-disaster financial recovery. Working Paper.

Sisira Colombage, S. (2023). *Fintech and Sustainable Finance: Addressing Climate Change and Inequality*. Routledge, London.

Snapshot of Sendai Framework Monitoring (n.d.). United Nations Office for Disaster Risk Reduction (UNDRR).

Sobha, K. and Sridevi, V. (2020). Blockchain technology for disaster management and emergency response systems. *Int J Sci Technol Res.*, **9**(4) : 4207-4212.

Statista (2025). *Global Fintech Market Statistics and Facts*. Statista Research Department.

Sundaram, R. (2024). Financial technology, digital access and inclusive growth in developing economies. *J Financ Innov.*, **10**(2) : 88-105.

The Mobile Economy (2025a). *The Mobile Economy 2025*. GSMA.

The Mobile Economy (2025b). *Mobile Financial Services and Digital Inclusion*. GSMA.

Wen, J., Zhang, L. and Li, Y. (2023). Post-disaster recovery and community resilience: A socio-economic perspective. *Int J. Disaster Risk Reduct.*, **83**, 103394.

Yu, M., Yang, C. and Li, Y. (2018). Big data in disaster management: A review. *Internat. J. Inf. Manage.*, **42** : 25-37.

Zakaryan, S. (2021). Climate finance, insurance and disaster resilience: Emerging trends and opportunities. *Clim Policy.*, **21**(6) : 789-801.

Zhang, H., Liu, Y. and Chen, X. (n.d.). Insurance penetration and disaster recovery financing: Global evidence. Working Paper.

Zhou, W. and Sun, J. (2024). Fintech banking and resilience during pandemics: Evidence from digital financial services. *J. Financ. Serv. Res.*, **65**(1) : 55-76.

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