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Digital financial inclusion in coastal communities: Unlocking economic potential in the fisheries sector

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Abstract
This research delves into the potential of digital financial inclusion to augment the economic value of coastal populations, focusing on the fisheries industry, in the Indian state—Kerala. It investigates the extent to which exposure to digital financial instruments, including mobile payment, microloans, and digital insurance, impacts economic indicators such as financial stability, access to markets, and business growth. The study points out the differences in digital financial adoption between rural and urban areas, with urban areas having higher adoption levels. The study finds that areas with higher access to digital financial services experience better market access, financial security, and business expansion. Nevertheless, issues like digital illiteracy, infrastructure deficits, and regional differences limit the mass adoption of these tools, especially in rural areas. The study emphasizes the need for focused interventions in order to bridge these gaps and achieve equitable access to digital money, thus driving inclusive and sustainable coastal fishing community economic development.

Keywords: Digital financial inclusion, coastal communities, fisheries sector, economic potential, market access, financial stability

Introduction

The rural economy of India greatly depends on coastal communities who specialize in fisheries activities. The fisheries industry maintains vital functions for two regions: first it sustains millions of people and secondarily it facilitates food security and economic growth in coastal areas. The sector maintains important status despite these challenges which block economic growth of fishermen and coastal residents. Their financial service restrictions including credit and insurance and market connections increase their financial risk during natural disasters and market price changes. Financial exclusion has impeded residents from reaching better living conditions and developing sustainable economic growth for a long period.

Digital financial inclusion creates a revolutionary approach to resolve these problems. Digital payment systems combined with microloans and digital insurance enable coastal communities to obtain vital financial services which eliminate geographic as well as infrastructure and awareness-related obstacles. Digital finance shows promise to empower fishermen through improved access to finance as well as stronger market connections and expanded business opportunities because mobile phones and internet use continue to increase. Digital financial instruments serve two purposes: they improve financial stability for these communities alongside their pursuit of sustainable fishing and their economic growth into the future.

The adoption of digital financial services in coastal communities' experiences uneven progress because several barriers restrict their full potential benefits from realization. The full-scale adoption of digital financial tools remains restricted because coastal communities face problems with limited access to technology and poor infrastructure together with insufficient digital literacy knowledge. The essential nature of understanding the present digital financial inclusion status in these communities becomes clear because we must identify what obstacles prevent further progress. The research investigates how digital financial inclusion enhances economic growth for fisheries businesses while assessing its effects on financial stability together with market access and business expansion throughout coastal regions of Kerala. The study demonstrates how digital financial inclusion approaches benefit the development process of coastal fisheries while promoting sustainable growth across Indian regions.

Literature Review

Pomeroy, *et al*. (2020) investigated the obstacles to financial inclusion faced by small-scale fishing households, such as low levels of financial literacy and aptitude, insufficient collateral, physical distance from banking institutions, and an absence of a formal identity. As an added bonus, it helped fishing households manage their income and savings by discussing financial literacy, de-risking financial institutions, collecting financial data, offering a variety of financial services (not just credit), and understanding the client. Families and businesses in the fishing industry had few options for managing their cash flow and financing expenses and investments prior to the advent of banking services. The access vacuum was filled by informal lenders who also owned boats or bought seafood. Rural fishing households were more financially resilient after being included in formal financial services. Poor fishing families and rural communities were less susceptible to economic shocks after gaining access to financial services.

Anand, *et al*. (2024) [2] discovered that the fishing community has restricted economic options due to a lack of digital capacity, connectivity in the deep ocean, and access to information and communication technologies. Disasters and emergencies might strike any coastal community at any time, but those who worked in fishing were more at risk because of their occupation and the proximity to the water. There was a significant digital divide, which made life different for fishermen in Kerala. To solve these issues, the

paper proposed an Internet of Things (IoT)-enabled digital ecosystem that would build a smart digital community. In this ecosystem, you could find a low-cost method of communicating across the ocean, supplementary software, an online store that relies on blockchain technology, and a model for long-term societal change that encourages the use of new technologies. The community's ability to withstand climate change and natural catastrophes was enhanced when they embraced and made use of the digital ecosystem, which offered useful resources like an e-commerce platform to increase income and decrease exposure. Because of this, they were able to become more resilient and adjust to new social and environmental conditions.

Daniela, *et al*. (2024) [4] explored the seaweed industry and the Blue Economy on the island of Lancang in Indonesia's Kepulauan Seribu, as well as the topic of women's economic empowerment. There was a rise in support for the Blue Economy as a means to preserve marine life, increase economic activity, and encourage responsible usage of the water. The largest archipelago in the world, Indonesia, presented opportunities for the blue economy. Finding a middle ground between economic development, marine biodiversity, and the welfare of coastal communities was a central theme of this research. It brought attention to the limited financial access and roles of women in the seaweed industry. More study into seaweed industry women's empowerment, community building, and financial inclusion to strengthen long-term economic resilience was also stressed in the paper. Despite being important, seaweed women had financial and decision-making issues. In order to accelerate the expansion of the blue economy, those challenges have to be met. To close this gap, financial inclusion, particularly via digital financial services and cooperatives, was crucial.

Kanyimba AT, & Jonas MN. (2023) [8] investigated the barriers to financial inclusion faced by small-scale coastal fisherman in Namibia as a result of the country's fisheries policies and regulatory frameworks. Bank inclusion, financial loan program breaks for economically vulnerable small-scale fishermen, and access to fish markets were all topics covered in this chapter on financial inclusion. In order to help small-scale fisherman, become financially included, it looked at regulatory frameworks and laws from throughout the world. Sustainability Development Goals 14, target 14b, and 17—the FAO guidelines for securing sustainable small-scale fisheries in the context of food security—strengthened and encouraged financial inclusion for small-scale fishers. The small-scale fisherman was not mentioned in the national laws and regulations. Despite their lack of knowledge about financial inclusion, small-scale fishers in Namibia were included in the country's legislative and regulatory frameworks in the National Plan of Action. The absence of collateral, bank accounts, market access, knowledge, training, and production capability made financial institutions hesitant to cooperate with small-scale fisherman.

Research Methodology

1. Research Designs

The research design follows a quantitative approach by implementing surveys along with interviews to determine both digital financial inclusion penetration in coastal areas and related economic results regarding financial stability, business reach expansion, and market potential. This research centers on Kerala because of its importance in fisheries production and their different capacities for digital financial instruments. The research examines the topic through states that present different economic and infrastructure frameworks as well as digital adoption patterns.

2. Population and Sample

The research population comprises fishermen together with small-scale fishing businesses and financial service providers and community leaders from both urban and rural coastal regions of Kerala. The research investigates 100 participants including 70 fishermen distributed among (35 urban participants in Kochi, Thiruvananthapuram, Alappuzha, Kollam and 35 rural fishermen in Vypin Island, Kannur, Malappuram, Kasaragod and 30 community leaders) from financial institutions and local governance. Digital financial tool adoption rates of the sample match the actual data distribution between urban and rural coastal areas.

3. Sampling Technique

The study uses stratified random sampling to maintain proper representation of urban and rural coastal areas throughout the research. Each state undergoes stratified sampling that uses these categories for division:

- **Urban Areas:** Coastal towns and cities have relatively higher levels of digital financial tool adoption.
- **Rural Areas:** Remote fishing villages and communities have limited access to digital financial services.

4. Data Collection Methods

The research obtains data from surveys, interviews, and secondary source materials. The evaluation of digital financial instruments, including mobile payments, microloans, and digital insurance, conducts survey assessments that prioritise economic aspects. Financial providers together with community leaders provide valuable qualitative data through semi-structured interviews regarding potential limitations and favorable conditions as well. Relevant research documents and reports regarding digital financial inclusion within the fisheries sector serve as secondary data sources.

5. Variables and Data Analysis

The research examines three essential variables.

Independent Variables

- **Access to Digital Financial Tools:** The research examines access to digital financial tools, covering mobile transactions, microloan options, and digital insurance coverage.
- **Digital Literacy:** The level of digital skills exists within the coastal communities, particularly among fishermen.

Dependent Variables

- **Financial Stability:** The measurement includes stability of income along with savings and the capacity to control financial risks for defining financial stability.
- **Market access:** Digital payment systems and platforms enable fishermen to expand their market access to larger profitable markets.

- **Business Expansion:** The fishing business sector expands through greater production activities, leading to enhanced investment and operational capabilities.

The research uses descriptive statistics including mean and standard deviation to present data results and inferential statistics involving correlation analysis and regression models to detect digital financial inclusion relationships with dependent variables.

Data Analysis

The research analyzes survey and interview data to study digital financial inclusion effects on seafood communities in the fisheries industry. The research analyzes financial stability together with market access and business growth through descriptive and inferential statistics methods. The research demonstrates digital illiteracy and infrastructure gaps as main obstacles alongside its findings which are shown through tables leading to subsequent discussions about their effects.

1. Financial Access

The distribution of digital financial services access appears in Table 1 across coastal communities of the selected states. Digital financial tools achieve greater adoption levels in metropolitan coastal regions whereas remote locations face major troubles to establish infrastructure and popularize digital financial tools.

Table 1: Distribution of Digital Financial Service Access Across Coastal Areas in Kerala

Coastal Area	Urban Areas (%)		Rural Areas (%)	
Kerala	Kochi	75	Vypin Island	48
	Thiruvananthapuram	78	Kannur	42
	Alappuzha	72	Malappuram	45
	Kollam	70	Kasaragod	38

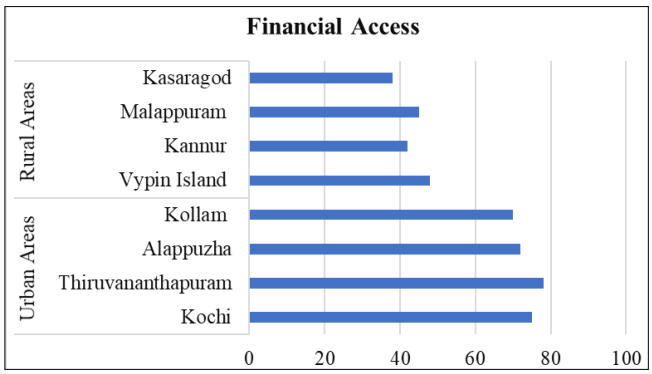

Fig 1: Distribution of Digital Financial Service Access Across Coastal States

Selected urban and rural coastal areas of Kerala show the distribution of digital financial service adoption through this table 1. Urban areas with towns and cities like Kochi together with Thiruvananthapuram and Alappuzha and Kollam demonstrate high digital financial service adoption rates between 70% and 78%. The coastal urban zones receive advantages through expanded infrastructure as well as increased levels of digital literacy and better availability of digital financial solutions that include mobile payments and microloan services. The adoption rates among rural coastal regions such as Vypin Island, Kannur, Malappuram and Kasaragod stand at 38% to 48% whereas the urban coastal areas exhibit rates between 70% to 78%. Digital financial service adoption remains low in these rural areas because they have inadequate infrastructure and minimal digital awareness and restricted exposure to digital financial products. The large gap between urban and rural digital access requires specific programs that will provide equal opportunities for fishing communities in rural areas to use digital financial tools which are vital for their economic well-being.

2. Economic Impact

An investigation of digital financial inclusion and its effects on economic indicators for fishermen can be found in Table 2. The availability of digital finance in communities allows them to achieve better market access, maintain financial stability and grow their business operations.

Table 2: Economic Impact of Digital Financial Inclusion in Coastal Communities

Indicator	Low Access to Digital Finance (%)	High Access to Digital Finance (%)
Increased Market Access	42	75
Financial Stability Improvement	33	68
Business Expansion	20	56

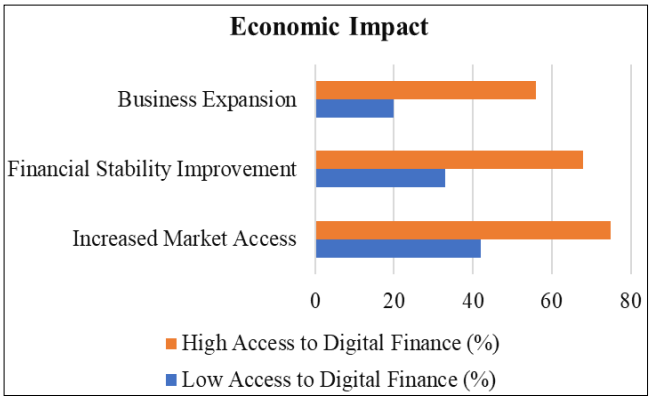

Fig 2: Economic Impact of Digital Financial Inclusion in Coastal Communities

Table 2 shows a strong positive relationship between fishermen in coastal areas gaining digital financial tools and their economic performance indicators. Fishermen who have better access to digital finance demonstrate superior market access and financial stability and business expansion potentials than those who have restricted access. The data reveals that market access grows by 33 percentage points between those who have high digital access and those who have low digital access. Higher digital financial access leads to better financial stability for 68% of fishermen whereas only 33% with low access experience such positive effects. The percentage of businesses that expanded their operations reaches 56% in communities with high digital finance access rates but only 20% in areas with low digital finance access. The research demonstrates that enhanced digital financial inclusion holds great transformative value for economic outcomes in regions with strong mobile network infrastructure while showing the essential need to expand digital financial access for economic improvement of fishing communities.

3. Challenges to Digital Financial Inclusion

The table outlines multiple ongoing challenges that persist alongside the benefits as listed in Table 3. Digital financial inclusion remains limited by the combination of infrastructure gaps and digital illiteracy and geographic differences throughout the regions.

Table 3: Challenges to Digital Financial Inclusion in Coastal Communities

Challenge	Percentage of Respondents Facing Issue (%)
Digital Illiteracy	58
Lack of Internet Infrastructure	47
Regional Disparities	39

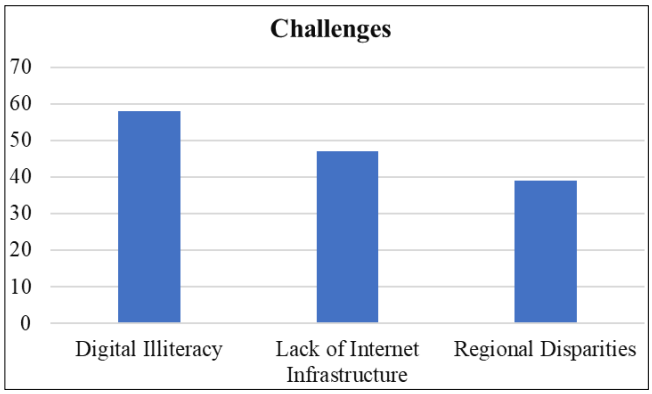

Fig 3: Challenges to Digital Financial Inclusion in Coastal Communities

Several major obstacles block the complete achievement of digital financial inclusion for coastal communities according to the information in Table 3. The major obstacle stopping people from using digital financial tools becomes their lack of digital understanding since this prevents 58% of respondents from utilizing such tools effectively. A significant portion of 47% of respondents experience digital finance service barriers due to insufficient internet connectivity which particularly affects those living in rural areas. The problem is made worse by geographical differences between regions because 39% of respondents noted these disparities. Coastal areas tend to have better digital service availability than other regions. The current challenges underscore why we must create specific policies together with intervention strategies in order to address digital literacy problems and strengthen internet connectivity and reduce spatial differences so coastal societies can take advantage of digital financial inclusion.

Conclusion

The research shows that digital financial inclusion has the vast potential for tapping into the economic strength of coastal communities engaged in fishing activities. By enabling access to essential financial services such as digital payments, insurance, and credit, digital finance can empower fisherman to improve their financial safety, expand their businesses, and access new markets. But the uneven adoption of these instruments, particularly across urban and rural areas, emphasizes persistent challenges such as regional imbalance, poor internet infrastructure, and digital illiteracy. To maximize the benefits of digital financial inclusion, targeted policy measures, capacity developent programs, and infrastructure investments bridging the digital divide are essential. Increased and more resilient regional growth will be the outcome if these issues are addressed and ensured so that all coastal communities, wherever they are located, can actively participate in and benefit from the digital economy.

References

1. Adigun WF, Busari JM. Halal Opportunities for Women Financial Inclusion in the Blue Economy for Halal Sustainability. In Green and Blue Economy Frameworks for Halal Industry Sustainability. Singapore: Springer Nature Singapore, 2025, 47-72.
2. Anand S, Enayati M, Raj D, Montresor A, Ramesh M. V. Internet over the ocean: A smart IoT-enabled digital ecosystem for empowering coastal fisher communities. Technology in Society,2024:79:102686.
3. Chen L, Bai J, Xu S, Cheng Z, Chen J, Chen Y. Study on the influence of digital inclusive finance on the development of provincial fishery economy and regional economic convergence in China, 2024.
4. Daniela L, Prayoga TZ, Mangkurat RB, Siregar JL, Rahmiati F. The Importance of Financial Inclusion for Women's Empowerment in Seaweed Industry as A Potential Resource for Blue Economy Development. JHSS (JOURNAL OF HUMANITIES AND SOCIAL STUDIES),2024:8(3):789-794.
5. Evans LS, Buchan PM, Fortnam M, Honig M, Heaps L. Putting coastal communities at the center of a sustainable blue economy: A review of risks, opportunities, and strategies. Frontiers in Political Science,2023:4:1032204.
6. Hungevu R, Lawal A, Yinusa S, Titiloye TA, Lasisi R, Okunola M. The impact of low-cost technological innovations on sustainable fisheries for economic development in developing countries. World Journal of Advanced Research and Reviews,2025:25(02):1170-1184.
7. Kakama GA, Pétursson JG, Kristófersson DM, Ibengwe LJ, Tómasson T. Role of Microfinance to Improve Livelihoods of Small Scale Inland and Coastal Fisheries Communities in Africa. In Handbook of Sustainable Blue Economy. Cham: Springer Nature Switzerland, 2025, 1-26.
8. Kanyimba AT, Jonas MN. Barriers to integrating financial inclusion for coastal small-scale fishermen into Namibian fisheries policies and regulatory frameworks. Financial inclusion and digital transformation regulatory practices in selected SADC countries: South Africa, Namibia, Botswana and Zimbabwe, 2023, 323-350.
9. Meng Z, Pang M, Zhang D, Chen W. Unlocking sustainable marine economic growth: the role of financial development, innovation, and capital investment in coastal China. Frontiers in Marine Science,2024:11:1463843.
10. Ngangun TA, Pentury F, Teniwut RMK, Hamid SK, Rahantoknam MA, Hasyim CL, Teniwut WA. preference and literacy: fishermen and marine farmers in small islands region to use fintech. jurnal riset bisnis dan manajemen,2024:17(2):95-104.
11. Nnanguma KA. Blue Economy and Job Creation in Nigeria: Exploring Opportunities for Youth Employment in Marine-Based Industries. Bolan International Journal of Research Insights (BIJRI),2024:2(1):1-9.

12. Pomeroy R, Arango C, Lomboy CG, Box S. Financial inclusion to build economic resilience in small-scale fisheries. Marine policy,2020:118:103982.
13. Su S, Zhao C, Chen Y, Tang Y. Unlocking sustainability in China's small-scale fisheries: A case study of livelihood analysis in the Bohai Region. Ocean & Coastal Management,2024:258:107405.
14. van Anrooy R, Gietzen T, Yang L, Ngugi C, Otieno S, Essel T. Assessment of fisheries innovations for investment and financing in Kenya. Food & Agriculture Org, 2022, 1245.
15. Warikandwa TV, Shakalela E, Libebe EL. Financial inclusion and the small-scale fisheries sector in Namibia: A contemporary legal perspective. In Financial Inclusion and Digital Transformation Regulatory Practices in Selected SADC Countries: South Africa, Namibia, Botswana and Zimbabwe. Cham: Springer International Publishing, 2023, 289-322.