

BEYOND FINANCIAL ACCESS: THE INCLUSIVE TECH CAPITAL FRAMEWORK FOR DIGITAL FINANCIAL INCLUSION IN INDIA

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Abstract

India has made significant strides in financial inclusion by providing public digital infrastructure like Aadhaar, the Unified Payments Interface (UPI) and the Pradhan Mantri Jan Dhan Yojana (PMJDY) to millions of people. Though these initiatives gave access to financial inclusion, access has not brought uniformity to consistent engagement and economic well-being. People with similar access to bank accounts, mobile phones and internet connectivity still vary significantly in the extent to which they use and benefit from digital financial services. This creates a paradox in digital financial inclusion, where the mere availability of access does not necessarily translate into meaningful inclusion. This review critically analyses the literature on the digital financial inclusion, human capital theory, capability approach, technology acceptance theory, social capital theory, digital capital and digital trust to understand the impact of these theories on digital financial inclusion. It identifies a notable gap in the existing literature: the concept of access, capability, trust and participation has been studied separately, but not yet in combination. Thereby providing understanding of how these elements work together to foster and create digital financial inclusion and financial well-being. On this synthesis, the study presents the InclusiveTech Capital (ITC) Framework, which combines four interrelated dimensions: Digital Access Capital, Digital Capability Capital, Digital Trust Capital and Digital Participation Capital to describe digital financial inclusion beyond an access-centric perspective. The framework explains how these dimensions work together to empower individuals to access, engage and gain financial benefits of digital financial services. This study also provides actionable insights for banks, NBFCs, fintech companies and policymakers to redefine meaningful financial inclusion. The review advocates for assessing the success of financial inclusion not only by the number of people who are able to access financial services, but by their ability to use digital financial services confidently and in a meaningful way to enable them to achieve economic well-being.

Keywords

InclusiveTech Capital framework, Digital financial inclusion, Financial capability, Digital trust, Digital participation, Financial well-being

Introduction

Financial inclusion is deemed to be an critical component of economic development because it empowers households and businesses to save, manage risk, access credit and engage in economic

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activity. Digital financial inclusion has become rapid, cheap and widely available, driving it to the forefront of the policy agenda, particularly in developing economies where technology can help overcome geographical and institutional barriers.

India has become a global benchmark for digital financial inclusion with Digital Public Infrastructure (DPI) such as Aadhaar, Pradhan Mantri Jan Dhan Yojana (PMJDY), Unified Payments Interface (UPI), DigiLocker and the Account Aggregator framework having connected millions of previously excluded to the formal financial system.

However, there is one big challenge that remains: while access has increased, engagement with the digital financial ecosystem is not encouraging. Many people with bank accounts, smartphones and internet access are still using cash and are not yet convinced of the benefits of digital financial products, while others actively use digital payments, savings, credit, insurance and investment and benefit significantly financially. This disparity shows that access alone does not guarantee meaningful inclusion or financial well-being. This leads to an important question: why is there a disparity in digital financial participation and well-being among people who have the same access? The focus in financial inclusion policy has traditionally been on access, but there is growing evidence that knowledge about digital financial services, confidence in their use, trust in digital platforms and continued engagement are all important factors in determining whether people benefit.

These dimensions have been analyzed separately in previous studies. The Human Capital Theory focuses on the importance of knowledge and skills; the Capability Approach looks at how people use the resources they have in order to create the outcomes that they value; Technology Acceptance Theory examines the factors that influence the uptake of

digital technology; Social Capital Theory focuses on the role of social connections and trust; and the emerging concept of “digital capital” addresses digital inequalities in terms of digital resources and competencies. Human Capital Theory emphasises the role of knowledge and skills; the Capability Approach examines how people convert available resources into valued outcomes; Technology Acceptance Theory explains what drives adoption of digital technology; Social Capital Theory highlights the role of social connections and trust; and the more recent concept of “digital capital” explains digital inequality through digital resources and competencies. All these dimensions provide useful partial views, yet none brings together these perspectives in a coherent framework of understanding digital financial inclusion. This fragmentation contributes to the constraints of research and policy design to go beyond access.

This review, thus, develops the InclusiveTech Capital (ITC) framework by conducting an integrative literature review, in which meaningful digital financial inclusion is understood as the result of four interconnected dimensions of capital: Digital Access Capital, Digital Capability Capital, Digital Trust Capital and Digital Participation Capital.

Objectives

This study has three objectives: (i) the critical review of the literature on digital financial inclusion and its theoretical foundations: human capital theory, the capability approach, technology acceptance theory, social capital theory, digital capital and digital trust; (ii) to identify the conceptual fragmentation in the above literature, specifically the lack of an integrated account of the relationship between access, capability, trust and participation; (iii) to develop the InclusiveTech Capital framework as a conceptual synthesis that gives direction to future studies and policy.

Literature Review

Evolution of Financial Inclusion

The importance of financial inclusion in the realms of financial resilience, poverty alleviation and inclusive growth has been a key policy concern for Governments, financial institutions and development agencies, with some of the initiatives aimed at leveraging branch networks, digital payments and technology for inclusive financial services delivery.

Early literature viewed financial inclusion as being able to access formal financial services, such as savings, credit, insurance and payment services (Sarma, 2008; Alliance for Financial Inclusion, 2020). The Government policies majorly targeted on decreasing physical, geographical and economic barriers to access. The World Bank, Alliance for Financial Inclusion (AFI) and the G20 Global Partnership for Financial Inclusion (GPFI) all recommended greater access to financial services at affordable prices for growth and to mitigate inequality. Ownership of an account and access to digital payments thus became the national and international norms for inclusion. India pursued financial inclusion through branch expansion, priority sector lending, the business correspondent model, simplified Know Your Customer (KYC), financial literacy programmes, among others. A major milestone was the launch of the PMJDY in 2014, which gave several people the access to formal banking services. India also used technology-based solutions such as the secure digital identity through Aadhaar, UPI, DPI initiatives like DigiLocker, the Account Aggregator framework and low-cost payments for expanding financial inclusion.

As financial inclusion initiatives expanded, researchers began to question whether mere access to formal financial services an adequate measure of financial inclusion. Several studies also revealed that many account holders remained largely cash dependent

and that account ownership was not necessarily linked to increased savings, credit access and improved financial well-being. This led to a paradigm change: the access to the formal financial system is no longer defined by account ownership but rather by the capacity to use, benefit and remain engaged in the formal financial system. This directed to shift the focus from account ownership to the capacity to have a financial capability, to engage and to have trust with digital financial services to achieve economic well-being.

Despite these limitations, many studies continue to use access-based indicators (Demirgüç-Kunt et al., 2022; World Bank, 2022), which refer to decreases in exclusion rather than the variation in benefit received in participation. Individuals may have access to digital financial products, but they derive limited benefits if they are unable to use them effectively. This suggests that access is only the first step towards financial inclusion, not the complete solution. As financial services have become increasingly digital, researchers have begun to focus on digital financial inclusion, recognising that meaningful inclusion depends on more than merely providing access.

Evolution of Digital Financial Inclusion

In recent years, financial inclusion has taken a new form, moving beyond physical infrastructure to facilitate the provision and access to financial services via mobile banking, digital wallets, fintech applications, biometric authentication and interoperable payment options. Digital financial inclusion complements financial inclusion by ensuring that the barriers to access, use and benefit from formal financial services can be overcome using digital solutions. As identified by the World Bank, International Monetary Fund (IMF) and Organisation for Economic Co-operation and Development (OECD), digital financial inclusion is a key enabler to inclusive development and lower

transaction costs and increased transparency.

India is a perfect example of this change. Aadhaar, UPI, DPI components like DigiLocker, e-KYC and the Account Aggregator framework have helped millions of people in opening accounts, get digital identity, make instant fund transfers and access financial products through their mobile phones. Growing UPI's transaction witnesses, the scale of digital financial transformation in India. Digital financial services are always associated with convenience, reduced costs, financial resilience, better credit access, better opportunities for small business and efficient Government benefit transfers.

Studies moved from access to engagement as digital ecosystems grew. Early studies relied on indicators such as account ownership, smartphone ownership, access to the internet and digital payments (Demirgüç-Kunt et al., 2022; Sarma, 2008), but these are not measures of effective use, as individuals with the same access demonstrate varying levels of use and outcomes. This has created a trend of distinguishing digital access from meaningful participation, as individuals must also have an understanding of financial products, understand the risk, trust digital systems and connect with digital finance in everyday life. This illustrates that digital financial inclusion is a multifaceted process involving behavioural, technological and social components.

There have been partial explanations about this variation in different literatures (Ozili, 2018; Ferilli et al., 2024), including financial literacy research, technology adoption research, social capital research, and digital trust research, and the more recent digital capital research, which focuses on digital resources and competencies. Each provides valuable insight but considers those factors separately, providing only partial explanations for financial behaviour in the digital realm. There is broad consensus that

digital financial inclusion involves more than access; it involves adoption, engagement and use, but there is little understanding of how these enablers work together, which is where the theoretical review to come.

Human Capital Theory

According to human capital theory, the differences in financial outcomes are driven by differences in knowledge, education and skills, and this has been further expanded to explain variation in digital financial service adoption and use. According to Schultz (1961) and Becker (1964), education, knowledge, training and skills can boost productivity and decision-making ability, and equip individuals to learn, adapt to technology, and make rational economic decisions. This perspective is often used in financial and digital literacy and technology adoption.

Financial literacy is about understanding products, assessing risk and making informed choices, whereas digital literacy focuses on the skills required to use mobile banking, digital payments and internet banking. The theory's assertion that investments in knowledge and skills increase capacity to benefit from economic activity. This was also supported by several empirical studies showing that individuals with greater financial and digital literacy are more inclined towards the use of digital payments, credit access and better financial management (Lusardi & Mitchell, 2014; OECD, 2022).

Previous studies also finds that not everyone with similar skills and knowledge is equally inclined to use e-wallets, some who are equally skilful and knowledgeable are sticking to cash (Tandilino et al., 2025; Kamboj & Sharma, 2025). This disparity suggests that there are other factors including trust, security, social influence, institutional support and prior experience with technology influencing financial behaviour of individuals. Another constraint is that

the human capital theory addresses the development of individual capacity but not whether it leads to meaningful financial participation or outcomes.

Overall, the human capital theory serves as a useful starting point for the ITC Framework dimension of Digital Capability Capital and underpins the expectation that more financial and digital skills increase readiness to access digital financial services. It also highlights the requirement for a more inclusive lens, the Capability approach, to consider the extent to which the investment in skills and resources is translated into real opportunities and outcomes.

Capability Approach

Human capital theory relates to the learning of skills, while the Capability approach (Sen, 1985, 1999; Nussbaum, 2000) focuses on well-being in terms of the freedoms and opportunities people have to make what they value, rather than in terms of their assets.

The distinction is directly applicable to the concept of digital financial inclusion: access to a bank account, smartphone, internet connection or payment platform, is a resource that transforms into a valuable outcome only when it allows an individual to understand financial products, use the technology, evaluate risk and make informed choices. The argument is that equal access does not guarantee equal participation or benefit. Recent studies increasingly assesses digital financial inclusion by measures of resilience and well-being, not just access (Demirgüç-Kunt et al., 2022; Klapper et al., 2025). The approach has also been used in digital inclusion studies to highlight the importance of individual, social and institutional factors in shaping the benefit of access to digital services, particularly in the field of digital finance, where social support, age, gender, income and education all influence access.

There are some drawbacks in the Capability approach despite these strengths. It does not contain an in-depth understanding of the technology adoption

process itself. Its general and context-specific definition of “capability” is difficult to measure across studies, leading to inconsistent empirical results. For this review, the approach gives the ITC framework, a necessary theoretical context, by shifting the focus from infrastructure to outcomes and capacity, and viewing financial inclusion as the first step on a longer path to capability, trust and continued engagement.

Technology Acceptance Theory

The Capability approach leaves the behavioural process open: why people accept or reject a particular digital financial technology and this can be explained through Technology Acceptance Theory (TAT), specifically the Technology Acceptance Model (TAM) (Davis, 1989). TAM strongly suggests that attitude towards a technology is affected by perceived usefulness and perceived ease of use, which in turn, influence intention and actual use. It has been one of the most widely used lenses in 30 years of study in the banking, e-commerce, healthcare and public services industries.

In digital financial inclusion, TAM is being used extensively to explain adoption of internet banking, mobile banking, digital wallets, UPI and contactless payments. It underscores that services that are perceived as convenient, reliable and easy to use are consistently more readily adopted. Later extensions have added trust, perceived security, privacy, facilitating conditions, social influence and perceived risk for digital financial transactions, which involve sharing personal and financial data. The Indian context is relevant to the theory when considering the fast adoption rate of UPI, as it is easy to use, quick and interoperable (Zahid, 2022; Venkatesh et al., 2003; Davis, Bagozzi & Warshaw, 1989).

Despite these strengths, TAM has some significant caveats for digital financial inclusion. It is argued that adoption of one payment app does not necessarily

mean uptake of other services such as savings, insurance, credit or investment, and so technology is a tool, not a goal. The theory is also based on individual perception, not social or economic context and does not adequately consider financial literacy, income, regulatory protection or community support. It also assumes that positive perceptions lead to continued usage but the users often terminate usage after failed transactions, fraud or poor service.

While TAM accounts for intentions to adopt well, the core of TAM does not account for meaningful and sustained digital financial inclusion. TAM highlights that financial decisions are made not only based on attitudes toward technology but also on social context, such as family, peers, community networks and institutional relationships.

Social Capital Theory

Adoption and continued use of financial services are not likely to happen in isolation; they are influenced by family, friends, communities and institutions, as Social Capital theory suggests. The concept has been developed in different ways by Bourdieu in 1986, Coleman in 1988 and Putnam in 1993 and 2000. Bourdieu emphasised on enduring social relationships, Coleman focused on trust, reciprocity and norms and Putnam eyed on civic participation. All three commonly emphasised on the fact that opportunities are not always created by the individual's own actions.

In the context of financial inclusion, this means that access to knowledge, experience and support from social networks is as important as individual capability and that advice from trusted family, friends or community leaders decreases uncertainty about financial products. This is particularly important for digital financial inclusion, where users acquire knowledge and skills about digital payment, mobile banking or fintech applications through observation

rather than formal instruction. Empirical studies shows that peer recommendations, social learning and community participation positively contribute to adoption and sustained use of digital financial services (Coleman, 1988; Putnam, 2000).

Social capital theory, however, places relatively less importance on individual capability, technology use and digital infrastructure, as low technology uptake and poor cyber security or digital privacy are not enough to compensate for poor social networks, and social networks alone cannot completely offset the risk of digital finance. The effect of social capital is also moderated by the broader social, cultural and institutional factors, as social networks can reinforce resistance to digital finance where cash preference or distrust is culturally ingrained.

Social capital theory argues that sustained participation requires social learning and peer influence, with institutional support and trusted relationships, as well as individual capability and technology acceptance. It is a useful lens for this review, explaining the sustainability of digital financial adoption and directly informing the Digital Participation Capital dimension of the ITC Framework.

Digital Capital

The earlier “digital divide” framing (access versus no access) gave way to an interest in how people use, build and adopt digital resources, leading to a focus on “digital capital”. Digital capital, a concept introduced by Ragnedda (2018) and developed by Ragnedda and Ruiu (2020) based on Bourdieu's (1986) digital theory of capital, refers to the ability of people to turn digital access into social, cultural and economic value, encompassing digital resources (devices, connectivity, infrastructure) and digital competencies (knowledge and skills needed to successfully use digital tools). It has been used in education, work, public service, health care and

entrepreneurship. It is also evident that higher levels of digital capital are linked to higher levels of digital learning, public services and professional networks.

As access to digital financial services is intertwined with digital participation more broadly, this idea is now gaining traction in the realm of digital financial inclusion studies. It argues that higher digital literacy should enhance the use of mobile banking, digital payments and online financial services. However, a closer look shows that being digitally active is not the same as participating in digital finance. Most digital capital studies focuses on areas such as communication, education, work and access to e-government services (Ragnedda, 2018; Van Dijk, 2020). In contrast, digital financial participation involves additional requirements including managing financial risks, understanding regulatory requirements, and trusting digital financial institutions and platforms. Digital financial behaviour cannot be defined solely by digital competence, as a person with digital competency can still not use digital financial services because of fraud, a person with moderate digital competency can be financial active because of financial literacy and institutional trust. Digital capital also helps to account for involvement in digital environments, but not involvement in activities that lead to tangible financial results.

Digital capital is a key element but not the only element of digital financial inclusion, as it is a good indicator of digital resources and competencies. However, it does not fully capture three dimensions that are specific to the financial domain: monetary risk and financial-product knowledge, trust in financial institutions and regulatory systems, and the translation of digital engagement into tangible financial outcomes such as savings, credit access and financial resilience. The ITC framework extends the existing digital capital literature by introducing two

finance-specific dimensions: Digital Trust Capital and Digital Participation Capital. Thus, the ITC framework can be considered as a financial ecosystem-specific extension of digital capital theory.

Digital Trust

Trust plays a vital role in determining whether individuals adopt and continue using digital financial services. Because digital financial services involve money transfers, the sharing of personal information and reliance on technology, individuals must also have confidence in the security, privacy, reliability and integrity of the digital financial system. Concerns about fraud, data misuse and institutional reliability can discourage people from using these services, even when access is readily available. Digital trust is the trust in digital technologies, service providers and the institutions such as regulators and cyber security systems that enable secure and reliable digital interactions.

Trust was identified as key factor in early e-commerce and internet banking studies, both in terms of initial adoption (Gefen, Karahanna & Straub, 2003; Mayer, Davis & Schoorman, 1995; McKnight, Choudhury & Kacmar, 2002) and in terms of continued meaningful use of digital finance. Fraud, cybercrime and concerns around data misuse reduce mobile banking and digital lending uptake, whereas users who consider digital platforms as secure and reliable are more likely to use the service. However, recent studies has identified distinct dimensions of trust: in technology (reliability and security), in financial institutions (responsible conduct) and in regulatory frameworks (governance, data protection, redressal for grievance) (Gefen, Karahanna & Straub, 2003; Mayer, Davis & Schoorman, 1995; McKnight, Choudhury & Kacmar, 2002). This is especially true in India, where the rapid pace of DPI has been matched by increasing incidents of fraud and identity theft, with the RBI releasing cyber security guidelines, consumer

protection and grievance redressal guidelines.

Even though sustained digital financial inclusion demands repeated positive experience, diversification of services and long-term institutional behavior, digital trust is consistently said to be important but is typically examined as an individual element without attention to how it affects continuation of services. For this reason, digital trust is an important link between capability and participation. People who have more financial knowledge and understanding of digital technologies may be less likely to join digital financial systems if they feel they are not secure. On the other hand, people who become more confident are more likely to engage and achieve greater financial outcomes.

Synthesis of the Literature

Studies over the past two decades exhibits a clear shift in the understanding of financial inclusion. Early studies primarily focused on expanding access to formal financial services (Sarma, 2008; Alliance for Financial Inclusion, 2020). More recent studies, however, emphasises that meaningful digital financial inclusion also depends on individuals' trust in digital systems, their willingness to adopt and their continued use over time. Despite these advances, the literature remains fragmented. Human Capital Theory explains the role of education and skills, the Capability Approach focuses on converting these resources into meaningful outcomes, Technology Acceptance Theory examines adoption behaviour, Social Capital Theory highlights the influence of social networks and institutions, Digital Capital Theory emphasises digital resources and competencies and Digital Trust explores confidence in digital systems. While each perspective offers valuable insights, they have largely been studied in isolation. As a result, the interdependent roles of digital capabilities, technology adoption, trust and participation have not been adequately integrated. This suggests the need

for a unified framework that treats these elements as interconnected components of a single process leading to meaningful digital financial inclusion.

Another finding from this study is that access is not the sole determinant of outcomes. People with equal access to phones, accounts, internet and digital financial platforms exhibit very different levels of participation and well-being. The literature is generally consistent that digital financial inclusion is multidimensional. Each dimension provides an opportunity to individuals to access, to use, to participate, to engage and improve confidence in digital financial platforms. However, few studies integrate these complementary views and understand the link between access and participation and financial outcomes in a more encompassing way than by looking at the interactions between.

More recently, Kamboj and Sharma (2025) have identified 311 studies on digital financial inclusion across Scopus-indexed publications, finding that the field is still structured in fragmented thematic clusters, including mobile money, financial services and financial literacy, entrepreneurship, and financial inclusion. He also proposes an alternative integrative framework based on citation and keyword co-occurrence analysis of the published literature. This review did not create or uncover this problem. Instead, it highlights a longstanding issue in the field: studies on access, usage and behavioural factors have generally been conducted separately rather than as part of an integrated framework. The present review adopts a different approach to integration. Rather than identifying patterns in citation networks or keywords, it develops the four dimensions of the ITC framework through a theory-driven synthesis of the literature. These dimensions: digital access, digital capability, digital trust and digital participation capture the key mechanisms that explain why individuals with similar access to digital financial services often

experience different outcomes. This deeper, theory-based explanation goes beyond what bibliometric mapping can provide.

Table 1 and Table 2 summarise the main contributions and limitations of the key literature reviewed. Together, they show that while each theoretical perspective explains an important aspect of digital financial inclusion, none provides a complete understanding of the factors that shape meaningful inclusion. This highlights the need for an integrated conceptual approach, which is developed in the following sections through the identification of the research gap and the proposed InclusiveTech Capital framework.

Table 1: Comparative Summary of Major Literature Streams

Literature Stream	Primary Contribution	Key Limitation
Financial Inclusion	Expands access to formal financial services	Focuses predominantly on access rather than outcomes
Digital Financial Inclusion	Explains the role of digital technologies in financial service delivery	Limited explanation of differences in participation and financial well-being
Human Capital Theory	Explains the importance of education, financial literacy and digital capability	Gives limited attention to trust, participation and institutional factors
Capability Approach	Explains why access does not automatically lead to meaningful outcomes	Does not explicitly explain technology adoption or financial behaviour
Technology Acceptance Theory	Explains adoption of digital financial technologies	Focuses primarily on adoption rather than sustained participation
Social Capital Theory	Explains the influence of social relationships and institutional support	Gives limited attention to digital capability and technological resources
Digital Capital	Explains digital participation through digital resources and competencies	Focuses on general digital environments rather than digital financial ecosystems
Digital Trust	Explains confidence in digital technologies and institutions	Generally examined independently of other enabling dimensions

Table 2: Review of the Main Literature on Digital Financial Inclusion and its Theoretical Foundations

Author(s) / Study	Theory / Concept	Key Contribution	Limitation Identified	Relevance to ITC Framework
Schultz (1961); Becker (1964)	Human Capital Theory	Explains how education, knowledge and skills improve individual productivity and decision-making	Focuses mainly on individual capability; does not explain trust or participation	Forms the basis of digital capability capital

Author(s) / Study	Theory / Concept	Key Contribution	Limitation Identified	Relevance to ITC Framework
Sen (1985, 1999); Nussbaum (2000)	Capability Approach	Emphasises that access to resources creates value only when individuals can convert them into meaningful outcomes	Does not explicitly explain technology adoption or sustained digital financial behaviour	Supports the capability-based perspective of the framework
Davis (1989); Venkatesh et al. (2003)	Technology Acceptance Theory	Explains adoption of technology through perceived usefulness and ease of use	Primarily explains adoption rather than sustained financial participation	Supports the behavioural aspects of digital financial engagement
Bourdieu (1986); Coleman (1988); Putnam (1993, 2000)	Social Capital Theory	Highlights the role of social relationships, trust and institutional support in shaping behaviour	Limited attention to digital capability and financial technology	Supports digital participation capital
Ragnedda (2018); Ragnedda & Ruii (2020); Van Dijk (2020)	Digital Capital	Digital participation is explained through digital resources and digital competencies	Focuses on general digital environments rather than digital financial ecosystems	Provides the conceptual foundation extended by the ITC Framework
Gefen et al. (2003); Mayer et al. (1995); McKnight et al. (2002)	Digital Trust	Demonstrates that trust in technology and institutions influences technology adoption and continued use	Usually examined independently of financial capability and participation	Forms the basis of Digital Trust Capital
Lusardi & Mitchell (2014); OECD (2022, 2025)	Financial Literacy and Financial Capability	Shows that financial literacy improves financial behaviour and the adoption of digital finance	Financial literacy alone cannot explain differences in participation or financial well-being	Reinforces the importance of digital capacity capital
Demirgüç-Kunt et al. (2022); World Bank (2025)	Financial Inclusion	Demonstrates the global expansion of formal financial access through digital infrastructure	Access-based indicators provide a limited explanation of meaningful participation and well-being	Establishes the need to move beyond access-based measures
Ozili (2018); Sahay et al. (2020); IMF (2024)	Digital Financial Inclusion	Explains how digital technologies improve the accessibility and efficiency of financial services	Provides a limited explanation of why users with similar access experience different outcomes	Motivated the need for an integrated conceptual framework

Author(s) / Study	Theory / Concept	Key Contribution	Limitation Identified	Relevance to ITC Framework
Klapper et al. (2025); Kamboj & Sharma (2025)	Recent Digital Financial Inclusion Trends	Documents continuing global growth in connectivity-based financial inclusion and maps the field's fragmented thematic clusters through bibliometric analysis	Bibliometric mapping identifies thematic clusters but does not offer a theory-driven explanation of why access, capability, trust and participation diverge	Confirms the currency of the research gap and motivates the theory-driven synthesis underlying the ITC Framework

Research Gap

The review of literature reveals significant insights and developments around financial inclusion and its digitalization, ranging from the significance of access to the integration of digital competence, technology adoption, social participation and trust. These studies have collectively contributed to a paradigm shift in the field on how financial inclusion is understood, from access to meaningful digital engagement.

Despite this, the literature is not clear about the interactions between these enablers. Human Capital Theory focuses on education, financial literacy and digital skills; the Capability Approach links resource access to outcomes; Technology Acceptance Theory focuses on adoption behaviour; Social Capital Theory focuses on social networks and institutional support; and Digital Capital focuses on digital resource and competency differences. Each one is useful on its own, but each is generally used in isolation and provides only a partial explanation.

As a result, one the paradox still remains: why do people with identical access to bank accounts, mobile phones, internet and digital payment platforms have such varied experiences and levels of digital financial participation and financial well-being? Previous studies suggests that these differences cannot be explained by access alone. Although access, capability, trust and participation are all recognised as important, their combined influence remains under

examined. Most empirical studies examine only parts of this relationship, such as the link between access and capability or between trust and participation, without bringing these elements together within a broader conceptual framework. As a result, there is limited understanding of how these factors interact to support sustained engagement with digital financial services and improve sustained financial well-being.

An identified constraint of digital capital is that it mainly explains digital inequality in terms of access to technology and digital skills. It does not fully address the monetary risk, trust in financial institutions, consumer protection, regulatory safeguards and long-term financial decision-making. It is evident that participating in the digital world does not necessarily mean that individuals can participate safely, confidently and effectively in digital financial ecosystems.

While the literature has separately identified the importance of capability, technology adoption, social relationships, digital competence and trust as factors, current financial inclusion indicators are overwhelmingly access-focused. There is no current conceptual framework that integrates these elements. There is also a lack of theoretical foundation to support policy and intervention development that goes beyond mere access.

This study fills that gap by creating the InclusiveTech Capital framework, which brings together four

complementary dimensions: Digital Access Capital, Digital Capability Capital, Digital Trust Capital and Digital Participation Capital. ITC does not act as stand-alone capitals, but it acts as interacting forms of capital that work together to allow people to access, use and maintain engagement with digital financial opportunities in ways that contribute to their economic empowerment, financial well-being and active participation.

Positioning relative to existing integrative frameworks

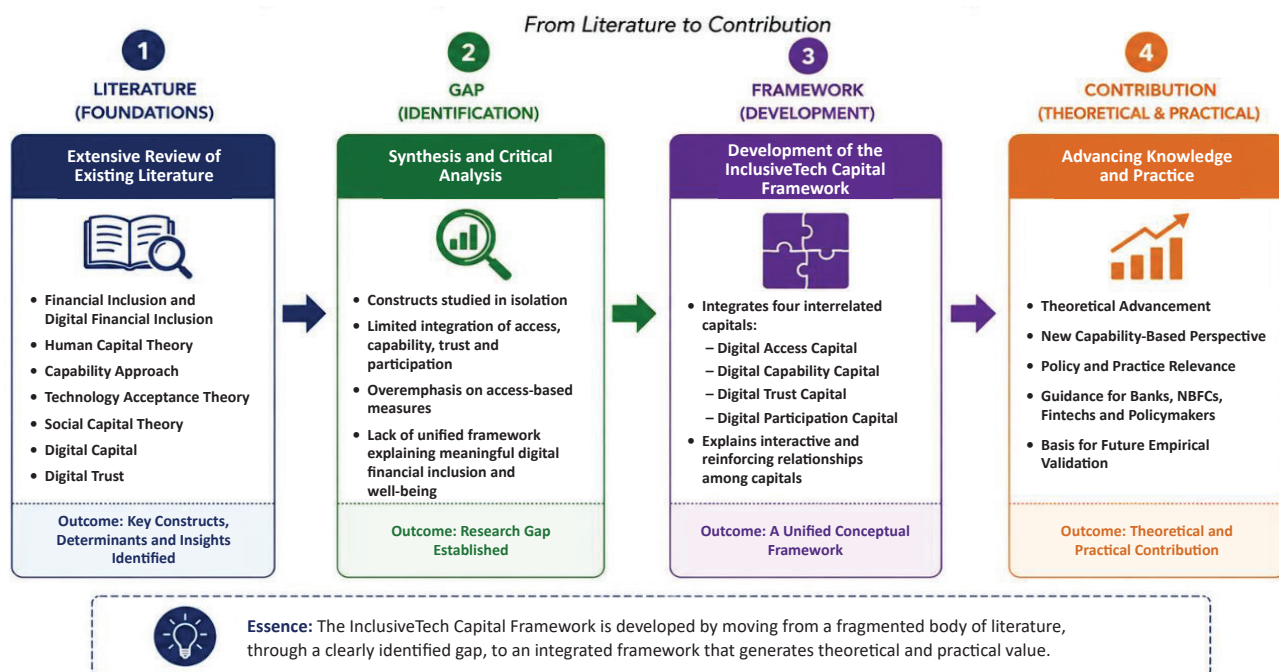
Although two existing frameworks already incorporate some elements of this integration, neither provides a comprehensive explanation of how these dimensions interact to shape meaningful digital financial inclusion. This highlights the need for the InclusiveTech Capital (ITC) Framework, which brings these interrelated dimensions together within a single conceptual model. Financial inclusion is no longer viewed only in terms of account ownership. Existing frameworks, such as the Access, Usage, Quality (AUQ) model and its extension to the Access Usage Quality Impact (AUQI) framework developed by the Alliance for Financial Inclusion (AFI) and CGAP, recognise that meaningful financial inclusion also depends on how financial services are used, the quality of those services, and the outcomes they generate. Digital participation has already been addressed through the concept of digital capital (Ragnedda, 2018; Ragnedda & Rui, 2020),

which refers to digital resources and competencies.

The ITC framework is different from Access-Usage-Quality in terms of the meaning of each dimension. The usage and quality dimensions of Access-Usage-Quality are generally translated into service delivery related measures at the system and provider level, but not as person level capacities. Rather than assuming that digital competence is implicit in usage, ITC explicitly defines that competence as capacity to transform usage opportunities and service quality into actual benefit of the user. This is especially significant in the context of a financial services landscape where the ability to use a channel should not be taken for granted due to its availability.

The ITC framework differs from digital capital in scope. The InclusiveTech Capital (ITC) framework can be understood as a domain-specific extension of digital capital. It incorporates factors that are unique to digital finance, including trust in financial institutions, monetary risk, consumer protection and the regulatory environment. These factors play a critical role in shaping meaningful and sustained participation in digital financial services. Read in this way, the ITC Framework operationalizes the Access, Usage, Quality space from the perspective of digital capital theory, with a finance-specific trust dimension, but without competing with either of the two traditions.

Figure 1: Conceptual Development process of the InclusiveTech Capital framework



Source: Developed by the author based on the integrative synthesis of the reviewed literature.

Rather than introducing another factor, this review integrates existing theoretical perspectives into a unified framework that explains how digital access, capability, trust and participation interact to shape meaningful digital financial inclusion. In doing so, it moves the discussion beyond a narrow focus on access towards a capability-based understanding of inclusion and provides a stronger theoretical foundation for future studies, policy and practice.

Methodology

Research Design

This study uses an Integrative Literature Review (ILR) methodology defined as a critical analysis of theoretical and empirical literature that supports new conceptualisation (Torraco, 2005; Snyder, 2019). This is appropriate to digital financial inclusion, a multi-disciplinary space that brings together finance, information systems, economics, sociology and public policy, and is well-termed to discussing the

reasons for the divergent participation and well-being outcomes of people who have similar access to digital financial ecosystems.

Literature Search Strategy

The review covered literature published between 2000 and 2025, along with seminal theoretical works published earlier.

Search Strategy and Keywords

Keywords included “Financial Inclusion,” “Digital Financial Inclusion,” “Financial Capability,” “Financial Well-being,” “Digital Capital,” “Digital Literacy,” “Financial Literacy,” “Digital Trust,” “Technology Acceptance,” “Technology Acceptance Model,” “Capability Approach,” “Human Capital Theory,” “Social Capital Theory,” “Digital Public Infrastructure,” “FinTech,” “Digital Payments,” “Unified Payments Interface (UPI)” and “Financial Participation,” combined using Boolean operators.

Inclusion and Exclusion Criteria

The inclusion criteria were: peer-reviewed journal articles in English, seminal theoretical research that underpins the four key theories, recent empirical studies on digital financial inclusion, fintech adoption, financial capability and digital participation, and reports of recognised international organisations and regulators.

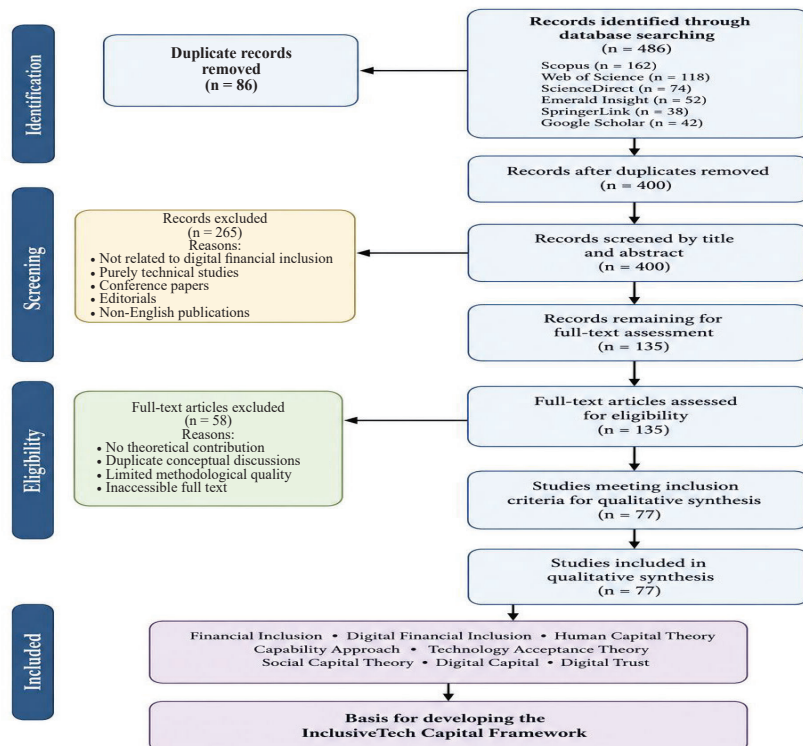
Exclusion criteria: conference abstracts and unpublished manuscripts; publications that are not in English; technical papers only on information systems and not on financial inclusion; conceptual or empirical papers not directly related to digital financial participation; and duplicate publications.

The screening process followed the PRISMA 2020 reporting approach (Page et al., 2021), which is used here purely as a transparent reporting convention for the search, screening and selection stages rather than as a claim that this integrative review meets the criteria of a quantitative systematic review. At both the title/abstract and full-text stages, records were additionally filtered by document type (peer-reviewed articles, seminal books/chapters, and reports of recognised international organisations and regulators were retained; conference abstracts and editorials were not) and by subject relevance (records outside the domains of financial inclusion, digital financial inclusion or the six theoretical foundations of the ITC Framework were excluded), consistent with the inclusion and exclusion criteria stated above.

Figure 2: Literature Screening Process

PRISMA 2020 FLOW DIAGRAM FOR LITERATURE SELECTION

Identification of studies via databases and registers



Source: Screening stages adapted from the PRISMA reporting approach (Page et al., 2021); literature search, screening and synthesis conducted by the author.

A total of 486 publications were retrieved from the six databases and registers searched (Scopus, Web of Science, ScienceDirect, Emerald Insight, SpringerLink and Google Scholar). Following the removal of 86 duplicate records, 400 studies were screened by title and abstract; 265 records were excluded at this stage for reasons including limited relevance to digital financial inclusion, purely technical (information systems) focus, conference papers, editorials and non-English publications, leaving 135 records for full-text assessment. Of these, 58 full-text articles were excluded (mainly for lacking a clear theoretical contribution or financial inclusion focus, duplicating conceptual discussions already captured, limited methodological quality or inaccessible full text), leaving 77 studies that were included in the qualitative synthesis and that formed the basis for developing the InclusiveTech Capital framework. This screening funnel provides a transparent and systematic approach to identifying and selecting the source material. The subsequent analysis follows an interpretive thematic synthesis, which is appropriate for an integrative literature review, rather than the effect-size aggregation typically employed in systematic reviews of intervention studies.

Analysis and Synthesis of the Literature

A thematic synthesis strategy was employed to extract themes, theories and empirical evidence that emerged repeatedly. These four dimensions emerged in multiple theories: digital access, digital capability, digital trust and digital participation. Each has been the subject of significant scholarly study, with studies on financial inclusion focusing on access, human capital and capability focusing on skills, technology acceptance focusing on adoption behaviour, and social capital and digital capital focusing on relationships and digital resources, respectively. This synthesis showed that there is a conceptual deficit in the absence of an integrated framework that explains

how these four dimensions combine to create meaningful digital financial inclusion, which is why the ITC framework is being developed.

Methodological Contribution

This review is more than a summative appraisal of previous research; it is a foundational conceptualization of the InclusiveTech Capital framework and a critical synthesis of several theoretical perspectives and disciplinary results in the field. The framework does not stand alone as a new theory, but a synthesis providing a holistic explanation of digital financial inclusion beyond access.

The InclusiveTech Capital Framework

The literature review shows that meaningful digital financial inclusion cannot be explained by any single theory. Financial access, social relationships, digital and financial capabilities, and trust in technology have all been identified as important contributors. Together, these findings highlight the need for a broader understanding of how these dimensions interact within digital financial ecosystems to support meaningful and sustained inclusion.

In response to this, the study proposes a framework, InclusiveTech Capital (ITC), that sees digital financial inclusion as the sum of various capitals and not merely one enabling capital. InclusiveTech Capital is the digital resources, individual capacities, institutional trust and participatory capacities that empower people to always use, access, participate and gain from digital financial services. ITC expands on access-based approaches and underscores that availability of infrastructure and products is not enough for meaningful inclusion.

The four theoretical foundations identified through the review are as follows: Human Capital Theory (value added of financial and digital knowledge and skills build capacity); Capability Approach (value of access depends on a person's freedom and ability to

use it purposefully); Technology Acceptance Theory (behavioural process of adopting digital financial technologies); and Social Capital Theory (social connections and institutions sustain participation). It also builds on digital capital, with a focus on digital resources and skills, and digital trust, which sets out the conditions for trust in digital financial systems that drive meaningful engagement.

These are not mutually exclusive explanations, rather they are interdependent and connected, and are incorporated within a single conceptual framework in the ITC framework. The four dimensions are:

- Digital Access Capital: the digital and financial infrastructure needed to access the digital financial ecosystem.
- Digital Capability Capital: the knowledge, financial literacy, digital skills and competencies needed to understand and use digital financial services effectively.
- Digital Trust Capital: the trust people place in digital technologies, financial institutions, regulatory frameworks and the security of digital transactions.
- Digital Participation Capital: the extent to which an individual is actively, consistently and meaningfully involved in digital financial services as part of everyday financial life.

The four dimensions are not separate but complementary kinds of capital that reinforce one another in determining a person's ability to achieve financial security and economic empowerment.

The ITC framework is unique in focusing specifically on digital financial ecosystems, where financial decisions also include monetary risk, institutional trust, regulation and ongoing formal financial

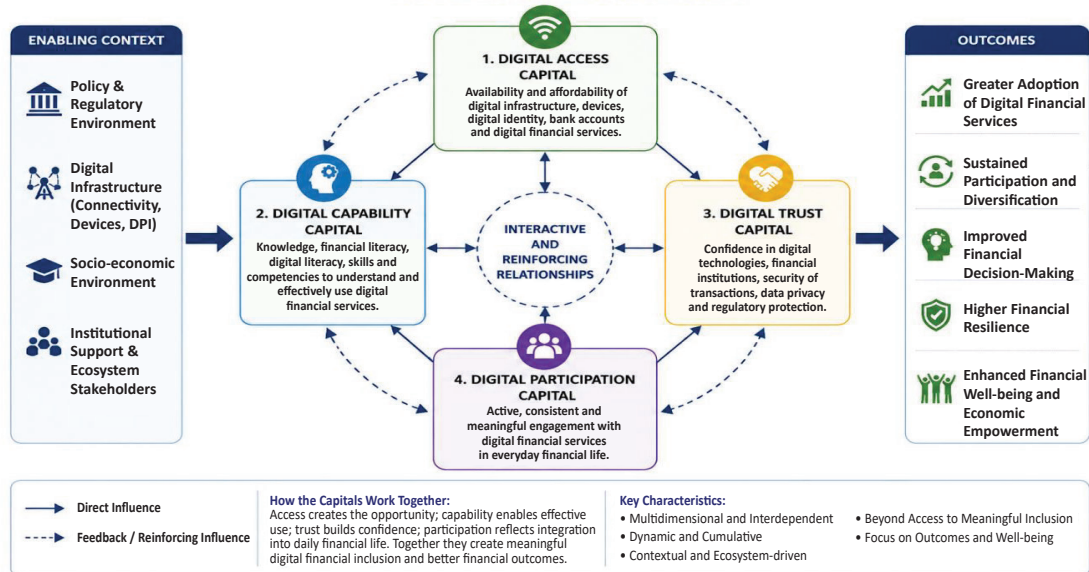
service utilization, in addition to digital competence. It also represents a change in the way inclusion is measured as traditional measures reflect access and not meaningful inclusion. Overall, meaningful digital financial inclusion should be viewed as a dynamic process rather than a fixed outcome. Progress in one dimension depends on the strength of the others and a weakness in any one area can limit overall inclusion. The InclusiveTech Capital framework, therefore, represents more than the sum of its individual dimensions. It highlights how access, capability, trust, and participation continuously interact and evolve, offering a more comprehensive understanding of digital financial. The four dimensions of the framework and their interconnections are illustrated in Figure 3.

Framework Development

Conceptual Architecture of the InclusiveTech Capital Framework

The ITC framework defines meaningful digital financial inclusion as a multi-dimensional journey, where the four complementary streams of capital converge around a person's journey towards digital finance. Meaningful digital financial inclusion is not simply a matter of access or participation. It is a progressive process in which access provides the foundation, capability enables effective use, trust builds confidence in digital financial services and participation reflects their sustained integration into everyday financial activities. Together, these dimensions contribute to improved financial well-being and ultimately, greater economic empowerment. The four dimensions are not additive but mutually reinforcing, because a lack of any one of the four can jeopardize outcomes generally.

Figure 3: InclusiveTech Capital Framework
Conceptual Architecture of Meaningful Digital Financial Inclusion
The InclusiveTech Capital Framework



Source: Developed by the author based on the integrative synthesis of the reviewed literature.

This architecture has been built by synthesizing different theories into an integrative approach through the Human Capital Theory, the Capability Approach, the Technology Acceptance Theory, the Social Capital theory and the Digital Capital and Digital Trust literature.

Digital Access Capital

The backbone of the framework is the Digital Access Capital, which includes physical, technological and institutional infrastructure, including smartphones, internet, bank accounts, digital identity, digital payments and low-cost financial services. It has been a constant theme in financial inclusion literature. In India, formal financial access has advanced significantly with PMJDY, Aadhaar and UPI, which have eliminated physical and administrative hurdles. But the ITC framework is based on the assumption that simply having access is not enough. Access is the beginning of inclusion, not the end result.

Digital Capability Capital

Digital Capability Capital consists of the financial and digital literacy, problem-solving ability and technological competence that is required to use digital financial services effectively. Guided by the human capital theory and the capability approach, it acknowledges that digital capability has a positive impact when people are empowered to translate access into positive outcomes such as understanding financial products, comparing products, understanding risk, recognising fraud and using digital platforms safely. This will help to reduce vulnerability to digital exclusion and financial fraud. The ITC framework argues that digital capability capital complements digital access capital by converting infrastructure into real financial outcomes.

Digital Trust Capital

Digital Trust Capital is a trust in financial technologies, institutions, regulatory frameworks and digital transaction processes. It not only about technology,

but how the data is secured, institutions act responsibly and consumers are well protected. This dimension becomes more relevant as digital channels become more common and replace traditional banking. People use and diversify digital financial services when it becomes secure, transparent and reliable. In ITC framework, digital trust capital is shown as the link between capability and participation. The framework also argues that people will not use digital platforms if they do not trust the system though they have the capability and skills to participate.

Digital Participation Capital

The behavioural outcome of the above discussed three dimensions is Digital Participation Capital. It talks about regular use of digital payments, savings, insurance, investments, credit and Government benefit transfers with technology. It is not about occasional technology use but sustained integration of digital financial services into everyday financial decisions. The ITC framework theorizes digital participation capital as a result of an interaction between digital access, digital capability and digital trust capital.

Interaction among the Four Dimensions

The four dimensions are not treated as independent variables, but are seen as interrelated and mutually reinforcing components of the ITC Framework. Digital Access Capital creates opportunity, Digital Capability Capital enables people to use that opportunity, Digital Trust Capital builds confidence to engage and Digital Participation Capital reflects the sustained use. These connections are not linear always. For instance, greater digital literacy can be linked to increased awareness of digital security, which can, in turn, lead to higher levels of trust and increased adoption of additional services. Positive participation experiences can also strengthen trust and in turn, foster uptake of additional services. Digital financial inclusion is, thus,

the synergy between the four dimensions and not the single dimension.

Conceptual propositions of the InclusiveTech Capital Framework

The ITC framework states that four complementary forms of capital are essential to meaningfully include digital financial services. The theory underlying the framework and its basis for empirical studies are stated in the following propositions.

Proposition 1 (P1): Digital Access Capital

P1: Digital access capital creates opportunities for access to digital financial services; access is a prerequisite for meaningful digital financial inclusion but not a sufficient condition alone.

Theoretical basis: financial inclusion literature, digital financial inclusion literature and the capability approach.

Proposition 2 (P2): Digital Capability Capital

P2: Improving meaningful digital financial participation is positively supported by digital capability capital of individuals in accessing, understanding and using digital financial services.

Theoretical basis: human capital theory and the capability approach.

Proposition 3 (P3): Digital Trust Capital

P3: Digital trust capital creates trust in financial technologies and digitally operated institutions, encouraging continued interaction with digital financial systems.

Theoretical basis: technology acceptance theory and digital trust literature.

Proposition 4 (P4): Digital Participation Capital

P4: Higher digital participation capital enables individuals to create sustainable financial returns, resulting in improved financial outcomes and economic empowerment.

Theoretical basis: social capital theory and digital financial inclusion literature.

Proposition 5 (P5): Interaction among the Four Dimensions

P5: Digital Access Capital has a diminishing marginal role to play in meaningful digital financial inclusion as Digital Capability Capital and Digital Trust Capital.

This proposition is falsifiable: empirical evidence that access contributes equally irrespective of the individual's ability or trust level would refute it and support an additive rather than interactive relationship between the four dimensions.

Theoretical basis: the capability approach's account of resource conversion and interaction effects observed in the technology acceptance and digital capital literatures.

Proposition 6 (P6): InclusiveTech Capital and Financial Well-being

P6: InclusiveTech Capital predicts that financial well-being and economic empowerment is measured beyond what access-based indicators can measure alone.

This proposition is falsifiable through nested-model comparison: financial well-being can be explained by a model that includes only access indicators and any additional explanatory power attributed to the ITC framework would be disconfirmed.

Theoretical basis: financial capability and financial well-being literature and the framework's core claim that access-based measurement understates meaningful inclusion.

Expected Results of InclusiveTech Capital

People with high InclusiveTech Capital are expected to be more active in using, engaging in digital financial ecosystems. They are also likely to make good financial choices and be more financially resilient. This will result in better financial outcomes

and economic empowerment. However, if one dimension is weak, then individuals can never enjoy the advantages of digital financial services despite the presence of infrastructure and products. The framework, therefore, focuses not only on the availability of digital financial services, but also on the quality of the people's interaction with digital financial services and the results they achieve.

Theoretical Contributions

The ITC framework is not an entirely new theory but rather a synthesis and extension of existing theoretical strands with the following contributions.

Contribution to Financial Inclusion Literature

The definition of financial inclusion has been largely based on access that are important proxies of infrastructure expansion. But whether access is meaningful and yields financial benefit, has not been addressed. The ITC framework builds on this literature by arguing that access is just the starting point not the end goal of inclusion. Digital Access, Capability and Trust and Participation Capital are included in this framework in a more holistic way to explain why people with the same access get different outcomes.

Contribution to Digital Capital literature

Digital capital research has improved the understanding of digital inequality by demonstrating that participation relies on digital resources and skills, most often within a broader digital environment, including education, work and e-government. The ITC framework expands this literature to digital financial ecosystems, where participation also includes monetary risk, institutional responsibility, consumer protection and long-term financial planning. The framework also introduces Digital Trust Capital and Digital Participation Capital and financial capability in addition to digital competence. The framework, thus, refines the existing theory of digital capital for digital finance rather than supplanting it.

Contribution to Capability approach

The Capability approach underscores that resources create value when people use them with confidence and convert them into meaningful outcomes. This is very much influential in development economics and seen less applied to digital financial inclusion. The ITC framework builds on the Capability approach by seeing financial capability as a leading indicator of meaningful inclusion. It also involves access to digital infrastructure, trust in financial systems and the capacity for consistent and ongoing participation. The framework, thus, offers a more comprehensive picture of the way financial resources contribute to financial outcomes.

Contribution to Digital Finance Literature

The study of digital banking, fintech and digital public infrastructure has expanded quickly, with most of the studies focused around technology adoption, digital payments, innovation and cyber security. The InclusiveTech Capital (ITC) framework extends the Capability Approach by recognising financial capability as a core element of meaningful digital financial inclusion. It emphasises that meaningful inclusion depends not only on access to digital infrastructure but also on confidence in digital financial systems and the ability to engage with them over time. This provides a richer understanding of how digital resources are transformed into positive financial outcomes.

Contribution to Theory Building

Methodologically, the major strength of this study is that multiple complementary theories are integrated systematically into a theory-building process instead of a single theory as have been done in previous studies. The InclusiveTech Capital (ITC) framework brings fragmented knowledge together into a single structure and serves as the basis for designing an instrument for measuring, testing the structural relationships between the four dimensions.

Contribution to Policy and Practice

ITC framework provides practical relevance for policymakers, financial institutions, regulators and development agencies in designing, developing and evaluating digital financial inclusion programmes. Rather than focusing only on digital infrastructure, account ownership or transaction volume, the InclusiveTech Capital (ITC) framework adopts a capability-based perspective built around four complementary dimensions: Digital Access Capital, Digital Capability Capital, Digital Trust Capital and Digital Participation Capital. This approach helps researchers and practitioners identify specific capability gaps and design targeted interventions that promote meaningful participation in digital financial services. In doing so, it supports a broader shift from infrastructure-led expansion towards capability-led empowerment.

Table 3: Summary of Theoretical Contributions

Literature	Contribution of the InclusiveTech Capital Framework
Financial Inclusion Literature	Extends financial inclusion from access-based measurements to meaningful digital participation and financial well-being.
Digital Capital Literature	Develops a domain-specific extension of Digital Capital for digital financial ecosystems by incorporating trust and participation.

Literature	Contribution of the InclusiveTech Capital Framework
Capability Theory	Applies the Capability Approach to digital finance by explaining how access, capability, trust and participation jointly produce meaningful financial outcomes.
Digital Finance Literature	Moves beyond technology adoption to explain sustained digital financial participation and financial well-being.
Theory Building	Integrates human capital theory, capability approach, technology acceptance theory, social capital theory, digital capital and digital trust into a unified conceptual framework.
Policy and Practice	Provides a multidimensional framework for designing and evaluating digital financial inclusion strategies.

Practical Implications

The ITC framework has implications for financial institutions, fintech companies, regulators, policymakers and researchers in the field of digital financial inclusion. The literature examined here demonstrates that extending availability does not necessarily lead to meaningful use and better financial results. The ITC framework instead calls for co-investment across all four dimensions shifting emphasis from access to participation.

Implications for Banks

Traditional metrics such as account opening, deposit mobilisation, transaction size and digitalisation rates continue to be important but not sufficient. Lenses such as understanding that digital access does not mean customers have the ability or confidence to use a wider variety of digital products can help for deeper engagement and longer-term relationships.

Implications for Non-Banking Financial Companies (NBFCs) and FinTech firms

Fintech companies and NBFCs have spearheaded the technological advancements in lending, payments, wealth management and advisory services. Notably, they have also sparked issues related to cyber security, algorithmic transparency and fraud risk.

The ITC framework emphasises that user confidence and capability matter as much as innovation itself. It recommends firms to design consumer-friendly, intuitive services and invest in customer education and fraud awareness, building Digital Capability Capital through user-friendly interfaces, multilingual applications and guided onboarding.

Implications for Policymakers and Regulators

In addition to efforts to increase digital infrastructure and account access, the ITC framework encourages a broader lens when assessing financial inclusion efforts by asking whether individuals can access digital financial services in a safe, secure and productive manner. The capability, trust and participation indicators can be incorporated into financial inclusion monitoring. Regulators should also focus on financial and digital literacy, cyber security regulation, grievance redressal and data protection to build digital trust capital. This multi-dimensional approach is more conducive to the development of coherent, evidence-based and effective policy than an access approach alone.

Implications for Digital Financial Inclusion Programmes

Many digital financial inclusion programmes continue to concentrate on the infrastructure and technology

dimension. The ITC framework calls for infrastructure development to be paired with digital literacy, financial capability, cyber security awareness, consumer education and trust-building measures. This can be achieved through community-based training, local digital banking services and financial education campaigns. The framework also recognises that different population groups require different forms of support. For example, older adults may benefit from initiatives that strengthen digital skills and build trust in digital financial systems, while rural communities may require digital financial services that are accessible, locally relevant and responsive to their specific needs.

Implications for Financial Inclusion Measurement

Current approaches to measuring digital financial inclusion mainly focus on indicators of access, such as account ownership, ATM availability, internet connectivity, smartphone ownership and transaction volume. While these measures capture the availability and use of financial services, they do not necessarily reflect whether these services improve users' financial capabilities and well-being. The ITC framework offers a multi-faceted measurement approach across all four pillars to help policymakers and institutions pinpoint barriers to meaningful inclusion and design interventions based on evidence.

Future Research Directions

The ITC framework is a conceptual framework that combines four interrelated forms of capital to help describe meaningful digital financial inclusion. It is not yet tested and needs to be further developed. The following directions are suggested for further enhancing its theoretical and practical value.

Empirical Validation of the InclusiveTech Capital Framework

The immediate priority is to empirically validate the relationships among the four dimensions of the InclusiveTech Capital (ITC) Framework. This can be

achieved by developing and validating measurement scales for each dimension and testing the proposed relationships using methods such as Confirmatory Factor Analysis (CFA), Structural Equation Modeling (SEM) or Partial Least Squares Structural Equation Modeling (PLS-SEM). Such studies can examine how the four dimensions jointly influence digital financial participation, financial well-being and economic empowerment, while also establishing the reliability and validity of the framework across different populations and contexts.

Development of an InclusiveTech Capital Measurement Scale

Future studies should provide measurable indicators for each dimension and create a standardised multidimensional InclusiveTech Capital Scale for academic research and institutional or regulatory analysis. The framework can also be used alongside existing financial inclusion indicators that measure access, capability, trust and participation, providing a more comprehensive assessment of meaningful digital financial inclusion.

Cross-Country and Cross-Cultural Validation

Future studies should examine the generalisability of the InclusiveTech Capital (ITC) framework across a wide range of digital financial ecosystems, including both developed and developing economies and culturally diverse contexts. Such studies should also investigate how context-specific factors, such as social norms, institutional trust and regulatory environments, influence the relationships among the framework's dimensions and identify any adaptations needed to ensure its applicability across different settings.

Comparative Studies among Population Groups

Factors contributing to digital financial inclusion are also likely different among various demographic

and socioeconomic groups, such as rural and urban population, women and men, younger and older adults, Micro, Small and Medium Enterprises (MSMEs), self-employed, low-income groups, migrant workers and first-time digital finance users. Comparative studies across these groups of the differences in the four ITC dimensions would help to identify capability gaps in the relevant populations and better provide evidence to guide more contextually relevant policy design.

Longitudinal Studies of Digital Financial Inclusion

Current studies mostly reflect a single time period. Longitudinal studies that track InclusiveTech Capital as experience accumulates would provide a more dynamic view of digital financial inclusion as a continuous process of building capability, rather than a static target.

Integration with Emerging Digital Financial Technologies

Future studies can investigate the impact of emerging technologies like AI-based financial services, Open Banking, Account Aggregator ecosystems, Central Bank Digital Currencies, embedded finance, digital lending, decentralised finance, Buy Now Pay Later and blockchain-based services on the four ITC dimensions. ITC framework can be adapted to tackle issues like data privacy, cyber security and algorithmic transparency.

Behavioural and Psychological Dimensions

Future studies could extend the InclusiveTech Capital (ITC) framework by incorporating behavioural and psychological factors, such as financial self-efficacy, financial confidence, risk perception, digital anxiety, technology readiness and behavioural biases. These factors may act as antecedents, mediators or moderators of InclusiveTech Capital and help explain

differences in individuals' participation in digital financial services.

Evaluation of Policies and Institutional Research

The ITC framework can also guide evaluation of financial inclusion policy and institutional initiatives by assessing their impact on Digital Access, Capability, Trust and Participation Capital rather than access-based metrics alone, offering more robust evidence of programme effectiveness.

Extension of the Framework

The InclusiveTech Capital (ITC) framework should continue to evolve alongside advances in digital finance. Future studies can further refine the framework by exploring additional dimensions, examining contextual and moderating factors, adapting it to specific financial sectors or user groups and integrating it with complementary theoretical frameworks. Such efforts will strengthen its conceptual foundations and enhance its relevance across diverse digital financial contexts.

Conclusion

In India, digital public infrastructure and technology-driven financial services have transformed financial inclusion, with PMJDY and Aadhaar and UPI contributing to a significant increase in access to formal financial services. However, access is not enough to facilitate meaningful inclusion; people with similar access still exhibit different extents of participation, economic empowerment and economic well-being.

This study addresses this gap by synthesising Human Capital Theory, the Capability Approach, Technology Acceptance Theory, Social Capital Theory, Digital Capital and Digital Trust into the InclusiveTech Capital (ITC) framework. Four interrelated dimensions of ITC

framework together explain what enables people to participate meaningfully in the digital financial ecosystem, moving the understanding of digital financial inclusion from infrastructure and access toward capability, sustained participation and financial outcomes.

Theoretically, the study offers a conceptual framework integrating previously disparate perspectives on digital financial inclusion, extends digital capital theory into financial ecosystems. The framework brings a capability-based lens that links digital financial inclusion to financial well-being and economic empowerment, providing a foundation for future empirical work.

The framework also carries practical significance for policymakers, regulators, financial institutions, fintech firms and development agencies, supporting the design and evaluation of digital financial inclusion programmes around capability building, trust building and long-term engagement rather than access indicators alone. It contributes to more effective, inclusive and sustainable digital financial ecosystems.

Like all conceptual studies, this study is subject to limitations: the framework is not yet empirically tested and the relationships between the four dimensions are theoretical. Future studies should create measurement scales, test it in various demographic and institutional contexts and explore its applicability to new digital financial technologies.

Meaningful digital financial inclusion entails not just access to digital financial services, but also the ability to use them, the trust to rely on them and sustained engagement to reap the benefits from them. The InclusiveTech Capital (ITC) Framework provides a common conceptual language for understanding meaningful digital financial inclusion and offers

new directions for research, policy and practice. It emphasises that the success of digital financial inclusion should be assessed not only by the number of accounts opened or transactions completed, but by the extent to which digital financial services enhance participation, improve financial well-being and promote economic empowerment.

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