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Identifying enablers and barriers of fintech adoption: An integrated ism and micmac analysis

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Abstract:

Fintech in India holds significant potential to transform financial services and enhance financial inclusion. However, adopting fintech technologies faces several challenges, as many industry stakeholders lack a clear understanding of how to leverage these innovations effectively. The purpose of this study is to identify the key enablers that promote the adoption of financial technologies (fintech) in India and to explore the barriers that may hinder their widespread use. The study aims to develop a structural relationship model that highlights the connections between these enablers and barriers, providing a comprehensive understanding of the factors influencing fintech adoption. Additionally, the study seeks to categorize and analyse these factors based on their dependence and driving power, offering insights into how each element impacts the overall fintech ecosystem in India. In total, 11 Enablers and 19 Barriers variables were mined via systematic literature review along with expert opinions. A group interview with more than 12 experts, each having over 10 years of experience in the financial and technological sectors, was conducted. Usually odd in number, they were presented with pairs of variables to gather their opinions. Using "Interpretative Structural Modelling" (ISM) and "Cross-Impact Multiplication Applied to Classification" (MICMAC) analysis, a model unfolding the structural relationship among these factors was formulated to understand the conceptual framework. The study identified digital literacy and regulatory support as connection or mediating variables. Financial inclusion, technological innovation, and ease of use were found to be the driving or independent variables. Risk perception, trust, and infrastructure availability emerged as the dependent variables. Additionally, the subsequent hierarchy and contextual linkages among variables shed light on the key dimensions for decision-making. Financial inclusion, trust, and infrastructure availability were found to be interconnected and significantly influenced by lower-level enablers and barriers, such as risk perception and digital literacy. Regulatory support was identified as a crucial factor to ensure fintech adoption in India.

Keyword:

Digital finance; Enablers; Financial inclusion; Fintech; Fintech adoption; ISM; MICMAC

Introduction

The financial landscape has undergone significant transformations due to rapid technological advancements and the growing adoption of DFS (Digital financial services). With the increasing penetration of mobile devices and internet connectivity, fintech has become a major force in driving financial inclusion and revolutionizing the way financial services are delivered (Arner, Barberis, & Buckley, 2015). However, this rapid evolution in the financial sector comes with challenges, as fintech adoption is influenced by a variety of factors, including regulatory frameworks, consumer trust, and technological infrastructure (Dugstad, Eikebrokk, & Olsen, 2018). The situation is further complicated by the fact that, while fintech innovations offer immense potential to improve access to finance, especially in developing economies like India, they also present risks related to security, privacy, and regulatory compliance (Agarwal & Zhang, 2020).

Fintech adoption faces several barriers that require long-term strategic interventions. Issues such as the digital divide, low levels of financial literacy, and infrastructural limitations create significant obstacles to widespread adoption in India (Jain, Bhasin, & Agarwal, 2019). On the other hand, there are multiple enablers, such as ease of use, regulatory support, and technological advancements, that drive the adoption of fintech services, helping bridge the gap between traditional financial systems and digitally active consumers (Kashyap & Garimella, 2018). These enablers are critical in ensuring that fintech solutions can cater to the diverse needs of the Indian population while contributing to the larger goal of financial inclusion.

The global movement toward financial digitalization has placed greater emphasis on understanding the factors that promote and hinder fintech adoption. However, most of the previous research has either focused on specific aspects, such as mobile banking or payment gateways, or examined single enablers in isolation. As a result, there is a gap in the literature that calls for a more comprehensive examination of the interactions between these enablers and barriers (Singh, Kumar, & Sharma, 2020). Therefore, the present study seeks to address this gap by exploring the key enablers and barriers of fintech adoption in India within a single framework.

This study makes a valuable contribution to the existing literature by integrating various factors that influence fintech adoption and analysing their interrelationships using ISM (Interpretative Structural Modelling) and MICMAC (Cross-Impact Multiplication Applied to Classification) analysis. By summarizing and classifying these factors, the study provides a comprehensive understanding of the fintech adoption process in India, offering insights that are crucial for policymakers, businesses, and researchers alike. Additionally, this research responds to the increasing importance of fintech as a tool for financial inclusion, especially in a developing country like India, where digital financial services have the potential to significantly impact the economy and society.

Interpretive Structural Modelling

ISM is a qualitative and systematic methodology used to identify and model relationships among a set of factors within a system. In this study, ISM is utilized to analyse the hierarchical relationships between enablers and barriers of fintech adoption. By employing expert input and iterative pairwise comparisons, ISM helps to construct a structural model, identifying which

factors are foundational (driving factors) and which are outcomes (dependent factors). This approach is particularly suitable for fintech adoption research as it provides a structured framework to understand the complexity and interconnectedness of the influencing factors.

MICMAC

MICMAC (Cross-Impact Multiplication Applied to Classification) complements ISM by analysing the driving power and dependence of each factor. Using the ISM framework, MICMAC categorizes factors into four categories: autonomous, dependent, linkage, and driving. This classification aids in identifying critical enablers and barriers, offering strategic insights for targeted interventions.

Rationale for Methodological Choice

ISM and MICMAC are appropriate for this research because fintech adoption in India involves numerous interrelated factors with varying degrees of influence. Traditional statistical methods often fail to capture these complex relationships and their systemic effects. By using ISM and MICMAC, this study can:

1. **Uncover Interdependencies**: Reveal the structural relationships among the factors.
2. **Prioritize Factors**: Identify high-priority enablers and barriers for effective policymaking and implementation.
3. **Provide a Strategic Framework**: Develop a roadmap to address challenges and enhance the adoption of financial technologies in India.

The remaining sections of this paper are structured as follows: Section 2 reviews the relevant literature on fintech adoption enablers and barriers. Section 3 details the research methodology used in this study, followed by the presentation of results and analysis in Section 4. Section 5 discusses the implications of the findings, while Section 6 provides the conclusion, along with limitations and future research directions.

2.0 Literature Review

The rapid development of fintech and digital financial services has transformed the financial sector globally. Various studies have focused on understanding the factors that enable or hinder fintech adoption, particularly in emerging markets like India. The literature surrounding fintech adoption explores multiple dimensions, including regulatory support, financial literacy, technological advancements, and consumer trust, as well as the challenges posed by risks and infrastructure.

One key enabler of fintech adoption identified in the literature is regulatory support. Kashyap and Garimella (2018), in their paper *"Fintech Adoption in India: Regulatory Challenges and Solutions,"* argue that the proactive role of regulatory bodies, such as the RBI (Reserve Bank of India), in creating a conducive environment for digital financial services has been instrumental in encouraging fintech growth. Similarly, international authors, such as Zalan and Toufaily (2017) in their study *"The Promise of Fintech in Emerging Markets: Not as Disruptive,"* highlight that government regulations tailored to fintech innovation can accelerate adoption by reducing uncertainties and improving consumer confidence.

Financial literacy is another critical enabler that impacts fintech adoption, particularly in developing economies. According to Agarwal and Zhang (2020) in their paper *"Fintech, Financial Inclusion, and Literacy: A New Dawn in Emerging Markets,"* the lack of financial education among consumers is a major barrier to adopting digital financial services. This finding is echoed by Jain, Bhasin, and Agarwal (2019) in *"Fintech for Financial Inclusion in India: An Empirical Study,"* where they argue that improving financial literacy, especially in rural areas, is essential to increase the reach of fintech products and services.

Trust and security concerns also play a vital role in fintech adoption. Pavlou and Fygenson (2006), in their seminal work *"Understanding and Predicting Electronic Commerce Adoption: An Extension of the Theory of Planned Behavior,"* found that trust is a key factor influencing consumers' willingness to adopt new technologies. In the Indian context, Sharma and Kukreja (2020) in their paper *"The Role of Trust in Fintech Adoption: A Study of Indian Consumers,"* similarly emphasize that building consumer trust through secure platforms and transparent practices is necessary to overcome the barrier of risk perception.

Technological advancements, such as mobile technology and internet penetration, are considered significant enablers of fintech adoption. Singh, Kumar, and Sharma (2020), in their paper *"Impact of Mobile Technology on Fintech Adoption in India,"* note that the increasing availability of smartphones and internet access has accelerated the adoption of digital financial services, particularly among the younger population. Globally, Arner, Barberis, and Buckley (2015), in *"The Evolution of Fintech: A New Post-Crisis Paradigm?"* argue that technological innovations have not only enhanced the accessibility of financial services but have also enabled new business models within the financial sector.

However, despite these enablers, several barriers still impede the widespread adoption of fintech in India. One of the primary challenges is the digital divide, particularly between urban and rural populations. Mittal, Dube, and Banerjee (2019), in their paper *"Fintech and the Digital Divide in India,"* highlight those infrastructural limitations, such as lack of reliable internet connectivity and digital infrastructure in rural areas, create significant obstacles for fintech adoption. Risk perception is another significant barrier. According to Dugstad, Eikebrokk, and Olsen (2018) in *"Barriers to Fintech Adoption: A Systematic Review,"* consumers' concerns regarding data privacy, fraud, and the misuse of personal information prevent them from fully embracing fintech solutions.

In recent years, researchers have started to explore the interrelationship between these enablers and barriers using advanced analytical techniques. ISM and MICMAC analysis have gained traction as effective tools for modelling these relationships. For instance, Goyal and Kumar (2020), in their paper *"Application of ISM-MICMAC in Understanding Fintech Adoption Drivers,"* demonstrate how these methods can be used to categorize the various factors based on their driving and dependence power, offering valuable insights for both policymakers and practitioners.

While much of the literature has focused on individual factors influencing fintech adoption, there is a growing need to integrate these factors into a comprehensive framework. This study aims to fill that gap by analysing the enablers and barriers of fintech adoption in India using Interpretative Structural Modelling (ISM) and Cross-Impact Multiplication Applied to

Classification (MICMAC) analysis, providing a holistic understanding of how these factors interact.

The research on various sectors of fintech adoption is expanding; however, there is still a lack of comprehensive research papers compiling the key enablers and barriers to fintech adoption in India. Studies have been conducted on individual factors such as regulatory frameworks, technological advancements, and financial literacy, but few attempts have been made to classify these enablers and barriers overall using ISM and MICMAC analysis. Recognizing these gaps, the current research seeks to build a systematic framework to understand the factors that drive and hinder fintech adoption in India.

Consequently, the main objectives of this research are as follows:

- **RO1**: To identify the significant enablers that motivate the adoption of fintech in India.
- **RO2**: To create a structural relationship model among the exposed enablers and barriers.
- **RO3**: To classify and analyse these factors based on their dependence and driving power.

To talk about the first objective, a "systematic literature review" was conducted together with expert opinions. Only experts with greater than 10 years of experience in the fintech field were interviewed. To find the structural relationships for the second and third objectives, ISM (Interpretative Structural Modelling) and MICMAC (Cross-Impact Matrix Multiplication Applied to Classification) techniques were practiced to classify these factors based on their driving and dependence power.

With the help of a literature review and expert opinion, the following elements were determined in order to close the gaps and accomplish the goals of the study shown in (Table 1).

2.1. Enablers to Fintech Adoption in India

2.1.1 Technological Adoption

Technological adoption refers to the process through which users accept and integrate new technologies into their routines. Influenced by organizational willingness and infrastructure, technological adoption is a crucial enabler for fintech development (Davis, 1989; Venkatesh et al., 2003; Alsmadi et al., 2023). This enabler highlights the importance of robust technological infrastructure and the readiness of organizations to embrace new digital tools.

2.1.2 Social Influence

Social influence encompasses the impact of societal norms, peer behaviour, and the consumer environment on the adoption of technology. This factor plays a significant role in shaping individuals' attitudes towards fintech by leveraging societal and peer pressure (Fishbein & Ajzen, 1975; Rogers, 2003; Alhajjaj & Ahmad, 2022). The growing social acceptance of fintech solutions contributes to their wider adoption.

2.1.3 Regulatory/Government Support

Government support and regulatory frameworks are pivotal in facilitating the adoption of fintech. Effective policies, regulations, and incentives provided by the government can promote fintech growth by addressing regulatory and economic barriers (Venkatesh et al., 2012; Chwelos et al., 2001; Ferrari et al., 2022). These factors ensure a conducive environment for fintech innovation and adoption.

2.1.4 Trust

Trust in fintech solutions involves users' confidence in the security, reliability, and integrity of the technology. This enabler is crucial for encouraging adoption, as individuals are more likely to use technology they trust (Mayer, Davis, & Schoorman, 1995; McKnight et al., 2002; Hasyim et al., 2023; Khatri et al., 2020). Building and maintaining trust is essential for the successful deployment of fintech services.

2.1.5 Attitude/Intention to Use

An individual's attitude and intention to use fintech technology significantly impact adoption rates. Positive attitudes and a strong intention to use technology can drive higher adoption levels (Ajzen, 1991; Venkatesh & Davis, 2000; Putri et al., 2023). Understanding and addressing user attitudes are vital for promoting fintech usage.

2.1.6 Financial Literacy

Financial literacy is the understanding of financial concepts and its impact on technology adoption in financial services. Users with higher financial literacy are more likely to adopt fintech solutions as they can better appreciate their benefits and functionalities (Lusardi & Mitchell, 2011; Atkinson & Messy, 2012). Enhancing financial literacy can lead to increased fintech adoption.

2.1.7 Security

The security of fintech technologies, including data protection and privacy measures, is crucial for adoption. Users' concerns about the safety of their personal and financial information can influence their decision to use fintech services (Pavlou, 2003; Bélanger et al., 2002; Sharma & Mishra, 2022). Ensuring robust security measures can alleviate these concerns and boost adoption.

2.1.8 Perceived Ease of Use

Perceived ease of use refers to the extent to which users believe that using fintech technology will be straightforward and require minimal effort. This factor is essential for user acceptance, as simpler technologies are more likely to be adopted (Davis, 1989; Venkatesh & Bala, 2008; Verissimo, 2016; Perwitasari, 2022). Making fintech solutions user-friendly can facilitate their broader acceptance.

2.1.9 Perceived Usefulness

Perceived usefulness is the degree to which users believe that fintech technology will enhance their performance or efficiency. Technologies that are seen as beneficial and improving productivity are more likely to be adopted (Davis, 1989; Venkatesh et al., 2003; Hasyim et al., 2023; Putra et al., 2020). Demonstrating the practical advantages of fintech can drive its adoption.

2.1.10 Risks

Perceived risks involve the potential uncertainties and negative consequences associated with fintech usage. Users' perceptions of these risks can affect their willingness to adopt new technologies (Featherman & Pavlou, 2003; Stone & Stone, 1993; Alshari & Lokhande, 2022). Addressing and mitigating perceived risks is important for increasing user confidence and adoption.

2.1.11 Perceived Value

Perceived value is the user's evaluation of the overall benefit of fintech technology compared to its costs and risks. A positive perceived value can drive adoption as users see a clear advantage in using the technology (Zeithaml, 1988; Sweeney & Soutar, 2001). Highlighting the value proposition of fintech solutions can encourage their adoption.

Enablers to Fintech Adoption in India

Enablers	Authors	Description
Technological Adoption	Davis (1989), Venkatesh et al. (2003), Alsmadi et al. (2023)	Refers to the process through which users accept and use technology, influenced by organizational willingness and infrastructure.
Social Influence	Fishbein & Ajzen (1975), Rogers (2003), Alhajjaj and Ahmad (2022)	The impact of societal norms, peer influence, and consumer environment on technology adoption.
Regulatory /Government Support	Venkatesh et al. (2012), Chwelos et al. (2001), Ferrari et al. (2022)	Governmental policies, regulations, and incentives that support technology adoption, including regulatory and economic factors.
Trust	Mayer, Davis, & Schoorman (1995), McKnight et al. (2002), Hasyim et al. (2023), Khatri et al. (2020)	The user's confidence in the security, reliability, and integrity of technology, influencing adoption decisions.
Attitude /Intention to Use	Ajzen (1991), Venkatesh & Davis (2000), Putri et al. (2023)	The individual's readiness or intention to use technology based on their attitude towards it.
Financial Literacy	Lusardi & Mitchell (2011), Atkinson & Messy (2012)	The user's understanding of financial concepts and its impact on technology adoption in financial services.
Security	Pavlou (2003), Bélanger et al. (2002), Sharma and Mishra (2022)	How well a technology protects user data and ensures privacy, influencing its adoption.
Perceived Ease of Use	Davis (1989), Venkatesh & Bala (2008),	The degree to which users believe that using technology will be simple and require little effort.

	Verissimo (2016), Perwitasari (2022)	
Perceived Usefulness	Davis (1989), Venkatesh et al. (2003), Hasyim et al. (2023), Putra et al. (2020)	The extent to which users believe that technology will enhance their performance or efficiency.
Risks	Featherman & Pavlou (2003), Stone & Stone (1993), Alshari and Lokhande (2022)	The perceived uncertainty and potential negative consequences associated with using a technology.
Perceived Value	Zeithaml (1988), Sweeney & Soutar (2001)	The user's evaluation of the technology's overall benefit compared to its costs and risks.

Table 1: Enablers to Fintech Adoption in India
Source: Author's Composition

Irregular income and cash flow uncertainties are significant barriers to financial inclusion, especially for lower-income populations. This instability prevents many from accessing formal financial services due to unpredictable and insufficient funds (Chauhan, 2013). Addressing this barrier requires innovative solutions to accommodate fluctuating income patterns.

2.2.2 Technology

The challenge of making individuals tech-savvy and ensuring robust data security is a major hurdle for fintech adoption. Ensuring that technology is accessible and secure is essential for increasing user engagement and trust in fintech solutions (Bhuvana & Vasantha, 2016; Deepika, 2015). Improving digital literacy and cybersecurity measures can facilitate greater fintech integration.

2.2.3 Trust

Trust in financial institutions is crucial for fintech adoption. Many individuals, especially in rural areas, lack confidence in formal financial entities due to past experiences or perceived risks (Chauhan, 2013; Bhuvana & Vasantha, 2016). Building and maintaining trust through transparency and reliable service is key to overcoming this barrier (Global Findex Report, 2014).

2.2.4 High Cost

High costs associated with accessing financial institutions pose a significant barrier to financial inclusion. These costs include transaction fees, travel expenses, and other charges that can deter individuals from utilizing fintech services (Bhuvana & Vasantha, 2016; Deepika, 2015). Reducing these costs is essential for making fintech more accessible.

2.2.5 Distance

Distance to financial institutions, particularly in rural areas, remains a critical barrier. The high cost of transportation and the time required to travel to the nearest branch can limit access to financial services (Chauhan, 2013; Bhuvana & Vasantha, 2016; Deepika, 2015).

Addressing this barrier may involve expanding mobile and online banking services to reach underserved areas.

2.2.6 Financial Illiteracy

Financial illiteracy restricts individuals' ability to understand and utilize financial products and services effectively. Limited knowledge about financial tools and concepts can prevent people from engaging with fintech solutions (Chauhan, 2013; Bhuvana & Vasantha, 2016; Gupta, 2015). Enhancing financial education and awareness is crucial for increasing fintech adoption.

2.2.7 Policy Regulation

Policy and regulatory barriers, including complex documentation requirements and stringent regulations, can hinder access to financial services. Regulatory frameworks need to be streamlined to facilitate easier access and foster fintech growth (Chauhan, 2013; Bhuvana & Vasantha, 2016; Gupta, 2015). Simplifying regulations can help overcome these obstacles.

2.2.8 Gender

Gender disparities in accessing financial services are evident, particularly for women who may need male assurance to obtain credit or access banking services (Gupta, 2015; RBI Report, 2008). Addressing gender-specific barriers and promoting gender equality in financial services is essential for inclusive fintech adoption.

2.2.9 Age Factor

Older individuals often face difficulties with fintech services due to a focus on younger, more tech-savvy populations. Financial institutions must consider the needs of older adults to ensure they are not excluded from digital financial services (Gupta, 2015; RBI Report, 2008). Tailoring fintech solutions to be more age-friendly can help address this barrier.

2.2.10 Legal Identity

Lack of legal identity documents, such as ID cards or election cards, restricts access to financial services for many individuals, including refugees and migrant workers (Gupta, 2015; RBI Report, 2008; Global Findex Report, 2014). Streamlining the process for obtaining and verifying legal identities can help reduce this barrier.

2.2.11 Language

Language barriers can impede the adoption of fintech services, particularly for those who do not speak the dominant language. Providing multilingual support and localized interfaces can help overcome these barriers and make fintech more accessible (Haridh, 2022).

2.2.12 Physical Environment

Poor physical infrastructure and environmental conditions can affect the accessibility and usability of fintech services. Ensuring that fintech solutions are adaptable to varying physical environments is important for broadening their reach (SMITH & ZYL, 2021; ZYL, 2020).

2.2.13 Regulatory Challenges

Complex and evolving regulatory environments can pose significant challenges for fintech adoption. Navigating these regulatory hurdles requires clear guidelines and supportive policies to facilitate innovation and integration (Yadav & Spandana, 2023; Haritha et al.,

2022). Addressing these challenges can promote a more favourable environment for fintech growth.

2.2.14 Lack of Awareness

Limited awareness and understanding of fintech services can prevent individuals from using them. Increasing awareness through targeted education and marketing campaigns is essential for boosting fintech adoption (Priya & Anusha, 2019; Kumar et al., 2022). Effective communication strategies can help bridge this gap.

2.2.15 Socio-cultural Issues

Socio-cultural factors, including traditional beliefs and social norms, can impact the adoption of fintech solutions. Understanding and addressing these cultural barriers is important for promoting wider acceptance and use of fintech services (Bhuvana & Vasantha, 2016; Ferrari et al., 2022).

2.2.16 Cyber Attacks/Frauds

Concerns about cyber-attacks and fraud can deter users from adopting fintech solutions. Ensuring robust security measures and educating users about safe practices are crucial for mitigating these risks (Kumar et al., 2022; Sharma & Mishra, 2022). Enhancing cybersecurity can build confidence in fintech services.

2.2.17 Low Internet Penetration

Limited internet access in certain areas restricts the effectiveness and reach of fintech services. Expanding internet infrastructure and providing affordable connectivity options are essential for increasing fintech adoption (Kandpal & Mehrotra, 2019; Haritha et al., 2022). Improving internet access can help overcome this barrier.

2.2.18 Lack of Government Support

Insufficient government support and incentives for fintech initiatives can hinder their development and adoption. Providing targeted support and incentives can encourage growth and integration of fintech solutions (Haritha et al., 2022; Yadav & Spandana, 2023). Government backing is crucial for fostering a supportive environment for fintech innovation.

2.2.19 Cybersecurity

Effective cybersecurity measures are vital for protecting users' data and maintaining trust in fintech services. Addressing vulnerabilities and implementing robust security protocols can reduce the risk of cyber threats and increase user confidence (Ferrari et al., 2022; Sharma & Mishra, 2022). Ensuring strong cybersecurity is key to promoting fintech adoption.

Barriers to Fintech Adoption in India

Barrier	Authors	Description
Irregular Income	Chauhan (2013)	Irregular income and uncertainties in cash flow are primary causes of financial exclusion among poor people.
Technology	Bhuvana & Vasantha (2016); Deepika (2015)	Challenges in making people tech-savvy and ensuring data security are barriers to fintech adoption.

Barrier	Authors	Description
Trust	Chauhan (2013); Bhuvana & Vasantha (2016); Global Findex Report (2014)	Lack of trust in formal financial institutions, especially among unbanked rural populations, hinders financial inclusion.
High Cost	Bhuvana & Vasantha (2016); Deepika (2015)	High costs associated with accessing financial institutions create significant obstacles for financial inclusion.
Distance	Chauhan (2013); Bhuvana & Vasantha (2016); Deepika (2015); Global Findex Report (2014)	The distance to financial institutions, especially in rural areas, is a significant barrier due to high transportation costs.
Financial Illiteracy	Chauhan (2013); Bhuvana & Vasantha (2016); Gupta (2015)	Lack of understanding about financial services and products limits the ability to effectively utilize financial technologies.
Policy Regulation	Chauhan (2013); Bhuvana & Vasantha (2016); Gupta (2015)	Regulatory and policy-related barriers, including documentation requirements, limit access to financial services.
Gender	Gupta (2015); RBI Report (2008)	Gender disparities, such as the need for male assurance for women to access credit, impact financial inclusion.
Age Factor	Gupta (2015); RBI Report (2008)	Older individuals often find it challenging to engage with financial services due to a focus on younger, more active populations.
Legal Identity	Gupta (2015); RBI Report (2008); Global Findex Report (2014)	Absence of legal identity documents, such as identity cards or election cards, restricts access to financial services for various groups.
Language	Haridh (2022)	Language barriers adversely affect the usability of fintech services for non-English speakers.
Physical Environment	SMITH & ZYL (2021); ZYL (2020)	Poor physical infrastructure and environmental factors can impede the accessibility and effectiveness of fintech services.
Regulatory Challenges	Yadav & Spandana (2023); Haritha et al. (2022)	Complex regulatory environments and challenges can hinder fintech adoption and implementation.
Lack of Awareness	Priya & Anusha (2019); Kumar et al. (2022)	Limited awareness and knowledge about fintech services and their benefits reduce their adoption.
Socio-cultural Issues	Bhuvana & Vasantha (2016); Ferrari et al. (2022)	Cultural norms and social attitudes can negatively impact the adoption of fintech solutions.
Cyber Attacks/Frauds	Kumar et al. (2022); Sharma & Mishra (2022)	Fear of cyber-attacks and fraud can deter users from engaging with fintech services.

Barrier	Authors	Description
Low Internet Penetration	Kandpal & Mehrotra (2019); Haritha et al. (2022)	Limited internet access in certain areas restricts the reach and effectiveness of fintech services.
Lack of Government Support	Haritha et al. (2022); Yadav & Spandana (2023)	Insufficient government support and incentives for fintech adoption can hinder its growth and effectiveness.
Cybersecurity	Ferrari et al. (2022); Sharma & Mishra (2022)	Concerns about cybersecurity and data protection can deter users from adopting fintech solutions.

Table 2: Barriers to Fintech Adoption in India
Source: Author's Composition

The adoption of fintech in India is influenced by a variety of enablers and barriers. Key enablers include technological adoption, which involves integrating digital tools into daily practices and requires robust infrastructure and organizational readiness (Davis, 1989; Venkatesh et al., 2003; Alsmadi et al., 2023). Social influence and government support further enhance fintech adoption by leveraging societal norms and providing a conducive regulatory environment (Fishbein & Ajzen, 1975; Venkatesh et al., 2012). Trust, perceived ease of use, and perceived usefulness also play crucial roles; users are more likely to adopt technologies they trust and find beneficial (Mayer, Davis, & Schoorman, 1995; Davis, 1989). However, several barriers impact fintech adoption, including irregular income and financial illiteracy, which hinder users' ability to engage with digital financial services (Chauhan, 2013). High costs, distance to financial institutions, and lack of access to technology and internet connectivity further restrict adoption (Bhuvana & Vasantha, 2016; Kandpal & Mehrotra, 2019). Regulatory challenges, gender disparities, and socio-cultural issues also impede progress (Yadav & Spandana, 2023; Bhuvana & Vasantha, 2016). Addressing these barriers while leveraging the enablers can foster greater fintech integration and promote financial inclusion across diverse demographics in India.

3.0 Research Methodology Used

3.1 Identification of Variables

In this study a rigorous approach is used to explore the enablers and barriers of fintech adoption in India by integrating both primary and secondary data sources. An extensive literature review and expert opinions form the cornerstone of this research (Ali, 2022; Gupta & Singh, 2022; Toke & Kalpande, 2019). The review identified 11 key enablers and 19 barriers impacting fintech adoption.

To validate and refine these variables, a group interview was conducted with over 15 experts, each possessing more than a decade of academic experience. The experts evaluated each pair of variables, providing insights into their interrelationships.

Using **ISM** and **MICMAC** analysis, the study identified a structural relationship among the located factors. This methodological approach facilitated the creation of a conceptual

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framework that delineates the key drivers and dependent variables influencing fintech adoption.

ISM-MICMAC analysis is mainly effective in decision-making contexts across several fields, together with project management, strategic planning, and marketing. It analyses the interdependencies among variables, finding both direct and indirect impacts, which traditional methods may oversee. By mapping out these complex connections, ISM-MICMAC provides a complete understanding of the system dynamics, assisting in the prioritization of interventions and decision-making actions.

The ISM-MICMAC analysis distinguishes among the driving and dependent aspects, enabling stakeholders to assign resources efficiently and aim the most influential variables for effective outcomes. The method's versatility and systematic approach make it adaptable to diverse contexts, enhancing organizational performance and resilience. The analytical process and its outcomes are illustrated in Figures 1 and 2, which depict the relationships and impact of the enablers and barriers identified in the study.

Process Adopted for ISM

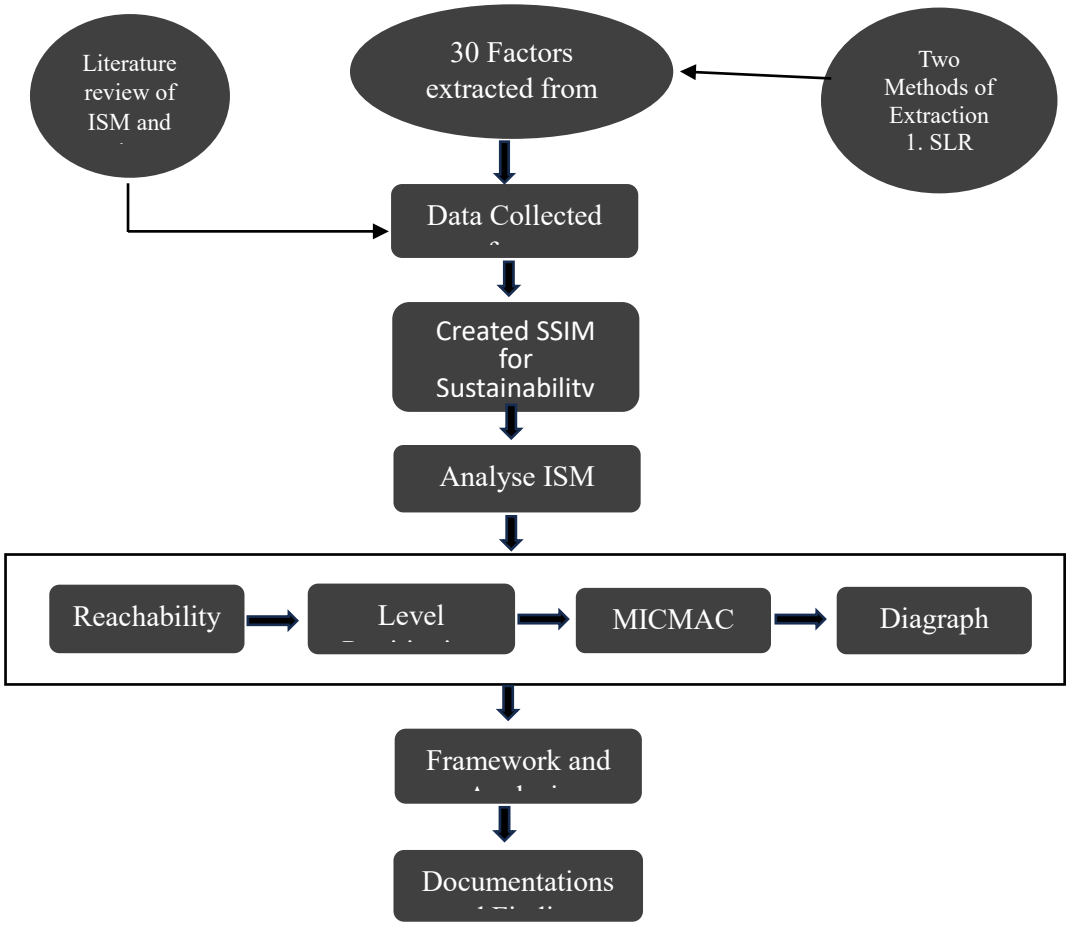

Figure 1: Process Adopted for ISM

4. Results and Analysis

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4.1 Structural Self-Interaction Matrix

After choosing the factors, subsequently develop a conceptual framework to discover the connection among them. With the help of expert opinion, the factors were paired in SSIM (Self-structural interaction matrix), The relationship among two variables was represented by four symbols that indicated its nature and direction.

(1) V – Variable I will assist in accomplishing variable J;
(2) A – Variable J will assist in accomplishing variable I;
(3) X –Both will lead to each other and
(4) O- Both variables are unrelated to each other

In Table 3, the symbols used: V, A, X and O are also referred as VAXO. Here, Variable 1 (TA*) influences Variable 11 (PV*), represented by V; both Variables 2 (TA*) and 11 (PV*), represented by X, are leading to each other; similarly, Variable A indicates that J variables lead to I variable, and O in the matric indicates that these two Fintech Enablers variables have no relationship; similarly, Variable 1 (EI*) influences Variable 19 (CS*), represented by O; neither Variable 2 (EI*) nor Variable 19 (CS*) are leading to one another in the Fintech Barrier Case (Table 8).

4.2 Reachability matrix

The SSIM was then transformed into a binary matrix, called the initial reachability matrix, by substituting the values of V, A, X, and O (Table 3) and (Table 8) with 1, 0, and 0 corresponding to the relevant situations.

(1) Mark V as 1 when I leading J and 0 in the opposite cell;
(2) Mark A as 0 when I leading J and 1 in the opposite cell
(3) Mark X as 1 regardless of direction of the variable.
(4) Mark O as 0 regardless of direction of the variables

Once the matrix has been converted to a binary table, flip Table so that Variable 11 is become Variable 1 and so forth. Then, locate the driving power (row-wise) by adding all of the values of a specific variable; similarly, determine the dependence power (column-wise) by adding all of the values of a specific variable. Moving on to the Table of final reachability matrix (Transitivity), where we substitute 1 for the 0. we have a new matrix with distinct driving power and dependency values (Table 4). A similar procedure was used for fintech barriers which includes conversion of (Table 8).

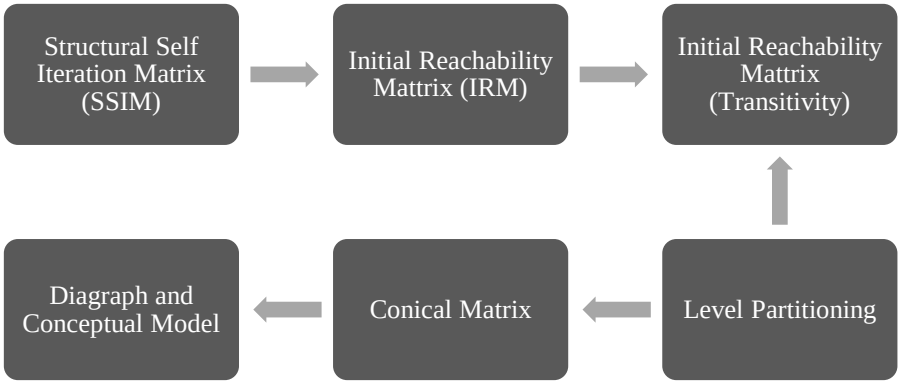

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Figure 2: Steps followed for ISM

Fintech Enablers

	Perceived Value	Risks	Perceived Usefulness	Perceived Ease of Use	Security	Financial Literacy	Intention to Use	Trust	Regulatory Support	Social Influence	Technological Adoption
Technological Adoption	X	X	A	A	X	A	X	X	A	X	
Social Influence	X	V	A	A	X	A	X	V	A		
Regulatory Support	V	A	V	V	V	O	O	V			
Trust	A	O	V	V	A	A	V				
Intention to Use	A	O	A	A	A	A					
Financial Literacy	O	O	V	V	O						
Security	X	V	V	V							
Perceived Ease of Use	V	V	V								
Perceived Usefulness	V	O									
Risks	O										
Perceived Value											

Variables	1	2	3	4	5	6	7	8	9	10	11
Technological Adoption		X	A	X	X	A	X	A	A	X	X
Social Influence			A	V	X	A	X	A	A	V	X
Regulatory Support				V	O	O	V	V	V	A	V
Trust					V	A	A	V	V	O	A
Intention to Use						A	A	A	A	O	A
Financial Literacy							O	V	V	O	O
Security								V	V	V	X
Perceived Ease of Use									V	V	V
Perceived Usefulness										O	V
Risks											O
Perceived Value											

Table 3: Structural Self-Interaction Matrix for Fintech Enablers

Symbols to define relationships:

V → row variable influences corresponding column variable
A → row variable is influenced by corresponding column variable
X → row and correspnding column variable infulence each other
O → row and correspnding column variable have no relationship

Reachability Matrix(RM)

Variables	1	2	3	4	5	6	7	8	9	10	11	Driving Power
Technological Adoption	1	1	0	1	1	0	1	0	0	1	1	7
Social Influence	1	1	0	1	1	0	1	0	0	1	1	7
Regulatory Support	1	1	1	1	0	0	1	1	1	0	1	8
Trust	1	0	0	1	1	0	0	1	1	0	0	5
Intention to Use	1	1	0	0	1	0	0	0	0	0	0	3
Financial Literacy	1	1	0	1	1	1	0	1	1	0	0	7
Security	1	1	0	1	1	0	1	1	1	1	1	9
Perceived Ease of Use	1	1	0	0	1	0	0	1	1	1	1	7
Perceived Usefulness	1	1	0	0	1	0	0	0	1	0	1	5
Risks	1	0	1	0	0	0	0	0	0	1	0	3
Perceived Value	1	1	0	1	1	0	1	0	0	0	1	6
Dependence Power	11	9	2	7	9	1	5	5	6	5	7	

Table 4: Reachability Matrix for Fintech Enablers

4.3 Level Partitioning

The Reachability Set and Antecedent Set were identified from the final Reachability Matrix in (Table 4). Those variables having a value of 1 are the part of the Reachability Set (row). Similarly, the Antecedent Set (column) excludes variables with zero values and only includes those variables having a value of 1. Then, the intersection of these sets is determined. Those variables that have the similar set in reachability along with in intersection set like V1, V2, V3, V4, V5, V7, V8, V9, V10 and V11 for fintech enablers and V1, V2, V3, V4, V5, V6, V7, V10, V11, V12, V13, V14, V15 V16, V17, V18 and V19 will be specified the top level in the hierarchy in fintech Barriers. Once the preceding variable and intersecting variables have been deleted, begin the second iteration (Table 4) and Table (9) of the matrix. The procedure will continue with the third iteration (Table 5) and (Table 10) until we obtain the final matrix (Table 6) and (Table 11), which includes all variables with their set level, as indicated in the tables below.

Level Partitioning Iterations

Elements(Mi)	Reachability Set R(Mi)	Antecedent Set A(Ni)	Intersection Set R(Mi)∩A(Ni)	Level
1	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11,	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,	1
2	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11,	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,	1
3	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11,	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,	1
4	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11,	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,	1
5	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11,	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,	1
6	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11,	6,	6,	
7	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11,	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,	1
8	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11,	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,	1
9	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11,	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,	1
10	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11,	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,	1
11	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11,	1, 2, 3, 4, 5, 7, 8, 9, 10, 11,	1

1 2

Table 5: Level Partitioning for Fintech Enablers

4.4 Building the Isometric Model

A diagraph is used to construct relationships between various components once the levels have been segmented. Each variable must have its own node, and arrows connecting them must point in the direction of their associations. The diagraph is then converted into an ISM model after first being evaluated and verified for transitivity in accordance with the approach.

4.5 MICMAC Analysis

The variables are categorised into four categories, as shown in Figure 3and Figure 5 based on the driving power and dependency power of the variables, which are evaluated using MICMAC.

(1) Autonomous (1st Quadrant): Also referred to as isolated variables, these variables should be eliminated if they appear in this quadrant due to their low driving and dependant power.

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(2) Dependent (2nd Quadrant) – None of the variables is lying in this quadrant, showing purely dependent variables, which can also be seen in the isometric model.
(3) Linkage (3rd Quadrant): This quadrant represents the mediating factors for fintech enablers (V1, V2, V3, V4, V5, V7, V8, V9, V10, and V11), as well as the mediating variables for fintech obstacles (V2, V3, V4, V5, V6, V7, V19, V11, V12, V13, V14, V15, V16, V17, and V18).
(4) Driving factors (4th Quadrant): This quadrant contains fully independent variables, such as V6 (Financial Literacy) for fintech enables and V8 and V9 for fintech barriers. Table 6 was used to create Figure 4 and Table 11 was used to create Figure 5 in case of fintech barriers respectively.

Final Reachability Matrix(FRM)

Variables	1	2	3	4	5	6	7	8	9	10	11	Driving Power
Technological Adoption	1	1	1*	1	1	0	1	1*	1*	1	1	10
Social Influence	1	1	1*	1	1	0	1	1*	1*	1	1	10
Regulatory Support	1	1	1	1	1*	0	1	1	1	1*	1	10
Trust	1	1*	1*	1	1	0	1*	1	1	1*	1*	10
Intention to Use	1	1	1*	1*	1	0	1*	1*	1*	1*	1*	10
Financial Literacy	1	1	1*	1	1	1	1*	1	1	1*	1*	11
Security	1	1	1*	1	1	0	1	1	1	1	1	10
Perceived Ease of Use	1	1	1*	1*	1	0	1*	1	1	1	1	10
Perceived Usefulness	1	1	1*	1*	1	0	1*	1*	1	1*	1	10
Risks	1	1*	1	1*	1*	0	1*	1*	1*	1	1*	10
Perceived Value	1	1	1*	1	1	0	1	1*	1*	1*	1	10
Dependence Power	11	11	11	11	11	1	11	11	11	11	11	

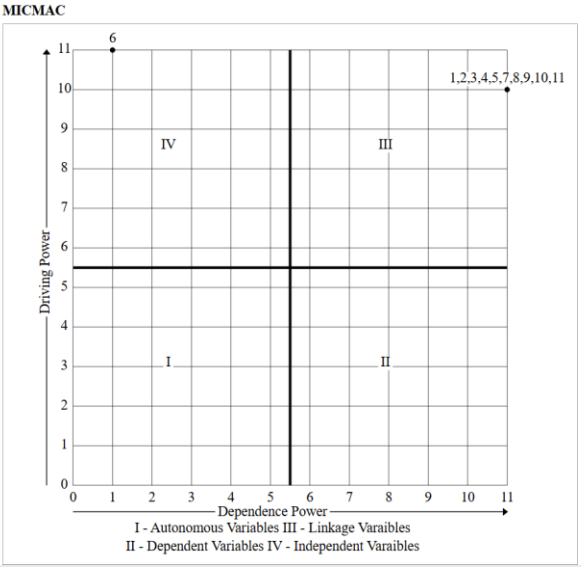

Table 6: Final Reachability Matrix for Fintech Enablers Figure 3: Fintech Enablers MICMAC Analysis

4.6 Conceptual Model/Digraph

A digraph, or directed graph, is a visual depiction of the interactions between items utilising nodes for elements and arrows for directed connections; together, they comprise the ISM model. A conceptual model is an organized representation of the relationships between elements

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Conical Matrix(CM)

Variables	1	2	3	4	5	7	8	9	10	11	6	Driving Power	Level
1	1	1	1*	1	1	1	1*	1*	1	1	0	10	1
2	1	1	1*	1	1	1	1*	1*	1	1	0	10	1
3	1	1	1	1	1*	1	1	1	1*	1	0	10	1
4	1	1*	1*	1	1	1*	1	1	1*	1*	0	10	1
5	1	1	1*	1*	1	1*	1*	1*	1*	1*	0	10	1
7	1	1	1*	1	1	1	1	1	1	1	0	10	1
8	1	1	1*	1*	1	1*	1	1	1	1	0	10	1
9	1	1	1*	1*	1	1*	1*	1	1*	1	0	10	1
10	1	1*	1	1*	1*	1*	1*	1*	1	1*	0	10	1
11	1	1	1*	1	1	1	1*	1*	1*	1	0	10	1
6	1	1	1*	1	1	1*	1	1	1*	1*	1	11	2
Dependence Power	11	11	11	11	11	11	11	11	11	11	1		
Level	1	1	1	1	1	1	1	1	1	1	2		

Digraph

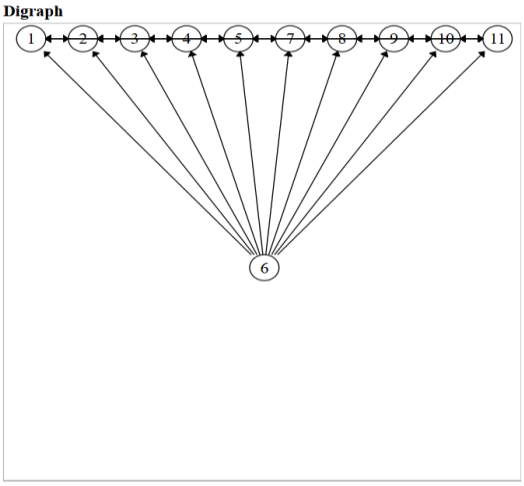

Table 7: Conical Matrix for Fintech Enablers

Figure 4: Conceptual Model/Digraph for Fintech Enablers

Fintech Barriers

	Cybersecurity	Lack of Government Support	Low Internet penetration	Cyber Attacks/Frauds	Socio-cultural Issues	Lack of Awareness	Regulatory Challenges	Physical Environment	Language	Legal Identity	Age Factor	Gender	Policy Regulation	Financial Illiteracy	Distance	High Cost	Trust	Technology	Irregular Income
Irregular Income	O	A	O	O	A	A	A	O	O	O	A	A	A	A	A	O	O	A	
Technology	V	O	X	V	O	O	V	X	A	A	A	A	X	A	X	X	V		
Trust	X	A	O	A	A	A	A	A	A	A	A	A	X	A	A	A			
High Cost	O	A	V	O	O	O	A	A	O	O	O	O	X	O	A				
Distance	O	V	V	O	V	O	O	V	V	O	O	O	X	O					
Financial Illiteracy	O	A	O	V	O	X	V	A	V	V	A	A	V						
Policy Regulation	O	V	O	X	A	O	X	X	A	V	O	O							
Gender	O	O	O	O	V	O	O	V	O	O	O								
Age Factor	O	O	O	O	V	V	O	V	O	O									
Legal Identity	A	V	V	V	O	O	X	A	A										
Language	O	O	O	V	V	V	V	V											
Physical Environment	O	X	X	X	X	V	X												
Regulatory Challenges	A	A	V	A	X	A													
Lack of Awareness	V	A	A	X	V														
Socio-cultural Issues	O	O	O	O															
Cyber Attacks/Frauds	V	A	V																
Low Internet penetration	O	X																	
Lack of Government Support	O																		
Cybersecurity																			

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Irregular Income		A	O	O	A	A	A	A	A	O	O	O	A	A	A	O	O	A	O
Technology			V	X	X	A	X	A	A	A	A	X	V	O	O	V	X	O	V
Trust				A	A	A	X	A	A	A	A	A	A	A	A	A	O	A	X
High Cost					A	O	X	O	O	O	O	A	A	O	O	O	V	A	O
Distance						O	X	O	O	O	V	V	O	O	V	O	V	V	O
Financial Illiteracy							V	A	A	V	V	A	V	X	O	V	O	A	O
Policy Regulation								O	O	V	A	X	X	O	A	X	O	V	O
Gender									O	O	O	V	O	O	V	O	O	O	O
Age Factor										O	O	V	O	V	V	O	O	O	O
Legal Identity											A	A	X	O	O	V	V	V	A
Language												V	V	V	V	V	O	O	O
Physical Environment													X	V	X	X	X	X	O
Regulatory Challenges														A	X	A	V	A	A
Lack of Awareness															V	X	A	A	V
Socio-cultural Issues																O	O	O	O
Cyber Attacks/Frauds																	V	A	V
Low Internet penetration																		X	O
Lack of Government Support																			O
Cybersecurity																			

Table 8: Structural Self-Interaction Matrix for Fintech Barriers

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Reachability Matrix(RM)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Driving Power
Irregular Income	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Technology	1	1	1	1	1	0	1	0	0	0	0	1	1	0	0	1	1	0	1	11
Trust	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	3
High Cost	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	5
Distance	1	1	1	1	1	0	1	0	0	0	1	1	0	0	1	0	1	1	0	11
Financial Illiteracy	1	1	1	0	0	1	1	0	0	1	1	0	1	1	0	1	0	0	0	10
Policy Regulation	1	1	1	1	1	0	1	0	0	1	0	1	1	0	0	1	0	1	0	11
Gender	1	1	1	0	0	1	0	1	0	0	0	1	0	0	1	0	0	0	0	7
Age Factor	1	1	1	0	0	1	0	0	1	0	0	1	0	1	1	0	0	0	0	8
Legal Identity	0	1	1	0	0	0	0	0	0	1	0	0	1	0	0	1	1	1	0	7
Language	0	1	1	0	0	0	1	0	0	1	1	1	1	1	1	1	0	0	0	10
Physical Environment	0	1	1	1	0	1	1	0	0	1	0	1	1	1	1	1	1	1	0	13
Regulatory Challenges	1	0	1	1	0	0	1	0	0	1	0	1	1	0	1	0	1	0	0	9
Lack of Awareness	1	0	1	0	0	1	0	0	0	0	0	0	1	1	1	1	0	0	1	8
Socio-cultural Issues	1	0	1	0	0	0	1	0	0	0	0	1	1	0	1	0	0	0	0	6
Cyber Attacks/Frauds	0	0	1	0	0	0	1	0	0	0	0	1	1	1	0	1	1	0	1	8
Low Internet penetration	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	1	0	5
Lack of Government Support	1	0	1	1	0	1	0	0	0	0	0	1	1	1	0	1	1	1	0	10
Cybersecurity	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	4
Dependence Power	11	11	17	7	3	6	11	1	1	7	3	12	12	8	8	9	9	6	5	

Table 9: Reachability Matrix for Fintech Barriers

Elements(Mi)	Reachability Set R(Mi)	Antecedent Set A(Ni)	Intersection Set R(Mi)∩A(Ni)	Level
1	1,	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19,	1,	1
2	2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19,	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19,	2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19,	2
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9	9,	9,	9,	3
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Table 10: Level Partitioning for Fintech Barriers

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Final Reachability Matrix(FRM)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Driving Power
Irregular Income	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Technology	1	1	1	1	1	1*	1	0	0	1*	1*	1	1	1*	1*	1	1	1*	1	17
Trust	1*	1*	1	1*	1*	1*	1	0	0	1*	1*	1*	1*	1*	1*	1*	1*	1*	1	17
High Cost	1*	1	1	1	1*	1*	1	0	0	1*	1*	1*	1*	1*	1*	1	1*	1*	1*	17
Distance	1	1	1	1	1	1*	1	0	0	1*	1	1	1*	1*	1	1*	1	1	1*	17
Financial Illiteracy	1	1	1	1*	1*	1	1	0	0	1	1	1*	1	1	1*	1	1*	1*	1*	17
Policy Regulation	1	1	1	1	1	1*	1	0	0	1	1*	1	1	1*	1*	1	1*	1	1*	17
Gender	1	1	1	1*	1*	1	1*	1	0	1*	1*	1	1*	1*	1	1*	1*	1*	1*	18
Age Factor	1	1	1	1*	1*	1	1*	0	1	1*	1*	1	1*	1	1	1*	1*	1*	1*	18
Legal Identity	1*	1	1	1*	1*	1*	1*	0	0	1	1*	1*	1	1*	1*	1	1	1	1*	17
Language	1*	1	1	1*	1*	1*	1	0	0	1	1	1	1	1	1	1*	1*	1*	1*	17
Physical Environment	1*	1	1	1	1*	1	1	0	0	1	1*	1	1	1	1	1	1	1	1*	17
Regulatory Challenges	1	1*	1	1	1*	1*	1	0	0	1	1*	1	1	1*	1	1*	1	1*	1*	17
Lack of Awareness	1	1*	1	1*	1*	1	1*	0	0	1*	1*	1*	1	1	1	1*	1*	1	1	17
Socio-cultural Issues	1	1*	1	1*	1*	1*	1	0	0	1*	1*	1	1	1*	1	1*	1*	1*	1*	17
Cyber Attacks/Frauds	1*	1*	1	1*	1*	1*	1	0	0	1*	1*	1	1	1	1*	1	1	1*	1	17
Low Internet penetration	1*	1	1*	1*	1*	1*	1*	0	0	1*	1*	1	1*	1	1*	1*	1	1	1*	17
Lack of Government Support	1	1*	1	1	1*	1	1*	0	0	1*	1*	1	1	1	1*	1	1	1	1*	17
Cybersecurity	1*	1*	1	1*	1*	1*	1*	0	0	1	1*	1*	1	1*	1*	1*	1*	1*	1	17
Dependence Power	19	18	18	18	18	18	18	1	1	18	18	18	18	18	18	18	18	18	18	

Table 11: Final Reachability Matrix for Fintech Barriers

MICMAC

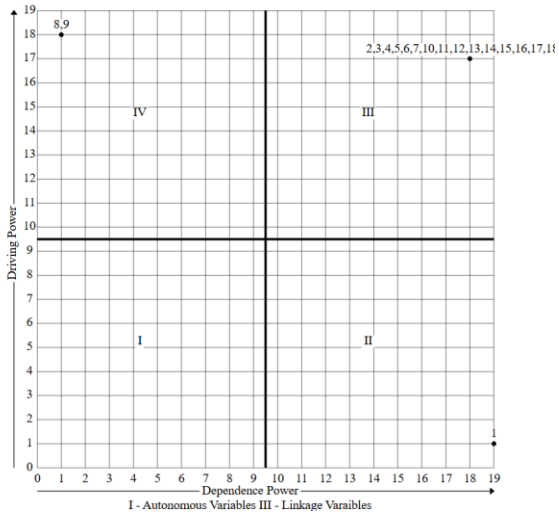

Figure 5: Fintech Barriers MICMAC Analysis

Variables	1	2	3	4	5	6	7	10	11	12	13	14	15	16	17	18	19	8	9	Driving Power	Level
1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
2	1	1	1	1	1	1*	1	1*	1*	1	1	1*	1*	1	1	1*	1	0	0	17	2
3	1*	1*	1	1*	1*	1*	1	1*	1*	1*	1*	1*	1*	1*	1*	1*	1	0	0	17	2
4	1*	1	1	1	1*	1*	1	1*	1*	1*	1*	1*	1*	1*	1	1*	1*	0	0	17	2
5	1	1	1	1	1	1*	1	1*	1	1	1*	1*	1	1*	1	1	1*	0	0	17	2
6	1	1	1	1*	1*	1	1	1	1	1*	1	1	1*	1	1*	1*	1*	0	0	17	2
7	1	1	1	1	1	1*	1	1	1*	1	1	1*	1*	1	1*	1	1*	0	0	17	2
10	1*	1	1	1*	1*	1*	1*	1	1*	1*	1	1*	1*	1	1	1	1*	0	0	17	2
11	1*	1	1	1*	1*	1*	1	1	1	1	1	1	1	1*	1*	1*	1*	0	0	17	2
12	1*	1	1	1	1*	1	1	1	1*	1	1	1	1	1	1	1	1*	0	0	17	2
13	1	1*	1	1	1*	1*	1	1	1	1*	1	1*	1	1*	1	1*	1*	0	0	17	2
14	1	1*	1	1*	1*	1	1*	1*	1*	1*	1	1	1	1	1*	1*	1	0	0	17	2
15	1	1*	1	1*	1*	1*	1	1*	1*	1	1	1*	1	1*	1*	1*	1*	0	0	17	2
16	1*	1*	1	1*	1*	1*	1	1*	1*	1	1	1	1*	1	1	1*	1	0	0	17	2
17	1*	1	1*	1*	1*	1*	1*	1*	1*	1	1*	1	1*	1*	1	1	1*	0	0	17	2
18	1	1*	1	1	1*	1	1*	1*	1*	1	1	1	1*	1	1	1	1*	0	0	17	2
19	1*	1*	1	1*	1*	1*	1*	1	1*	1*	1	1*	1*	1*	1*	1*	1	0	0	17	2
8	1	1	1	1*	1*	1	1*	1*	1*	1	1*	1*	1	1*	1*	1*	1*	1	0	18	3
9	1	1	1	1*	1*	1	1*	1*	1*	1	1*	1	1	1*	1*	1*	1*	0	1	18	3
Dependence Power	19	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	1	1		
Level	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3		

Table 12: Conical Matrix for Fintech Barriers

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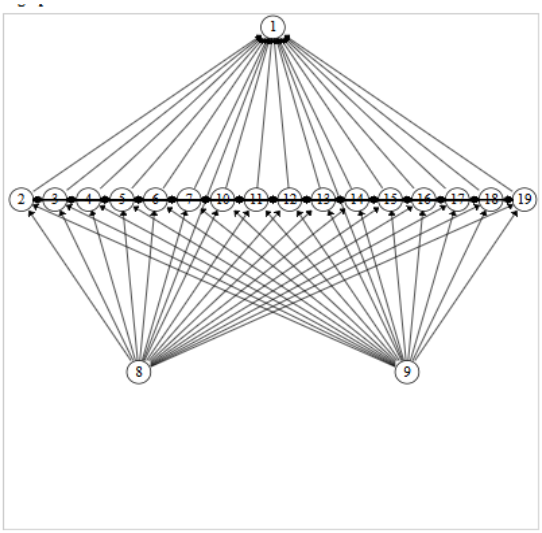

Figure 6: Conceptual Model/Digraph for Fintech Barriers

5. Discussion

The aim of this study is to determine the main enablers and barriers of fintech adoption in India. Although a number of studies have examined different fintech enablers and barriers independently, but no prior study has looked into their interactions. Further, there is a lack of research conducted on classifying the enablers and barriers based on the MICMAC analysis. The ISM-based model offered here is a useful tool that facilitates understanding of the relationship framework for both practitioners and academicians.
Important findings of the study are:

1. Eleven key enablers of fintech adoption in India were identified, including technological adoption, social influence, regulatory support, trust, and financial literacy.
2. Nineteen barriers were identified, such as irregular income, lack of financial literacy, high costs, and cybersecurity concerns.
3. Financial literacy emerged as a significant driving factor for fintech adoption.
4. Regulatory support and digital literacy were identified as linkage or mediating variables, influencing both enablers and barriers.
5. Driving factors like ease of use and technological innovation have substantial influence on other variables.
6. Dependent factors such as risk perception and trust are heavily influenced by other variables.
7. The ISM and MICMAC analysis provided a hierarchical framework, showcasing interdependencies and classifications of variables into driving, dependent, and linkage categories.
8. Addressing core enablers like financial literacy and regulatory support is critical to overcoming barriers and fostering adoption.

6. Conclusion

The study offers a structured framework for understanding the enablers and barriers to fintech adoption in India. By employing ISM and MICMAC analysis, the research revealed the complex interrelationships among variables, highlighting key drivers and dependent factors. Financial literacy, regulatory support, and digital literacy were emphasized as pivotal elements

for fostering fintech adoption. Policymakers, government and businesses should focus on these drivers to enhance the fintech ecosystem and promote financial inclusion.

7. Limitations and future scope

Every study has some limitations too, which need to be focused:

1. The researchers have only been able to examine a small number of factors due to a lack of time and resources. Future studies can examine more enablers and barriers.
2. There are also financial constraints.
3. One significant drawback is that this study incorporates the opinions of several experts, which are dynamic and subject to change over time.
4. Other software, such as the SPSS (Statistical Package for the Social Sciences), CB-SEM (Covariance-based structural equation modelling), and PLS-SEM (Partial least squares and structural equation modelling), can also be used to conduct primary research by taking same variables or merging new variables with the given variables of this paper.
5. The fintech landscape is rapidly evolving due to technological advancements, regulatory changes, and shifting consumer preferences. The relationships and dependencies identified in this study may change over time, potentially limiting the long-term applicability of the findings. Continuous updates and follow-up research are needed to maintain relevance.
6. The findings of this study are based on data and insights specific to the Indian context, influenced by local demographics, regulations, and socio-economic conditions. Thus, these results may not be directly applicable to other regions or sectors without considering the unique variables and conditions present in those environments.

Future Scope

Future research could expand on this study by incorporating a broader range of variables and perspectives, potentially through quantitative methods that provide robust data for analysis. Longitudinal studies examining how these relationships evolve over time would also enhance understanding. Additionally, investigating the impact of emerging technologies and changing regulatory frameworks on fintech enablers and barriers could yield valuable insights for practitioners and policymakers. This continuous exploration will ensure that strategies remain relevant and effective in the fast-paced fintech environment.

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