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Technopreneurship in Fintech: A Study on Risk, Innovation, and Growth of Digital Lending Start-Ups in India

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Abstract

In India, the rapid growth of technopreneurship is changing the financial services sector; specifically, digital lending. Start-ups that lend through FinTech use AI, big data analytics, and cloud technology, and an alternative scoring system to provide quicker, more comprehensive financial services. The focus of this study is determining whether the impact of innovation and how companies manage risk affects the success of digital lending start-ups in India. Primary data was collected from 120 digital lending companies operating out of Bengaluru, Mumbai, Delhi NCR, Hyderabad, and Chennai using a quantitative research design. The hypotheses were tested using statistical methods such as descriptive statistics, Pearson correlation, multiple regression, and ANOVA. The analysis shows that innovation intensity positively correlates with revenue and structured risk governance has a negative effect on default rates. The authors state that sustainable growth in digital lending requires a balance between aggressive technology and very strong compliance/risk monitoring frameworks. This study adds new information to the literature on technopreneurship as well as provides practical implications for both policy makers and Fintech entrepreneurs in India.

Keywords: Technopreneurship, Fin Tech, Digital Lending, Innovation, Risk Management, India, Start-ups.

Introduction

Technological Entrepreneurship encompasses the merging of technology-based innovative entrepreneurship with developing scalable and disruptive business models through an entrepreneurial mindset. In countries such as India, Technological Entrepreneurship has played a critical role in digitally transforming the economy across various sectors, with FinTech specifically leading the transformation of financial services by providing start-ups an opportunity to create alternative banking solutions that are faster, more inclusive, and more customer-focused than traditional banks.

Digital loan funding is one of the fastest-growing areas of the FinTech ecosystem, and thus, many start-ups have developed machine-learning Artificial Intelligence-supported underwriting models, alternative data (such as mobile phone or telecommunications, e-commerce transactions, or other consumer-oriented data), and cloud-enabled infrastructure to provide near-instant access to loan funds. Unlike traditional banks that rely on

collateral and a borrower's credit history to make a lending decision, many digital lenders rely on automated underwriting algorithmic decision-making.

India's developing digital infrastructure (the country's unique Aadhaar Based Electronic Know Your Customer or e-KYC system, Unified Payments Interface or UPI, India Stack Application Program Interface (API), and the rapid penetration of smartphones), represents a large number of independent Technological Entrepreneurs. However, as Technological Entrepreneurs move, expand, and develop at such an extraordinary rate, they face many challenges, including increasing delinquency rates (or defaults), stricter regulations imposed by the Reserve Bank of India (RBI), and an overall increase in cyber security risks and the sustainability of the capital markets.

The study will evaluate and analyze the relationship between digital lending start-ups in India based on their innovation intensity, as well as their risk management practices.

Fintech Ecosystem in India: Structure and Growth Dynamics

According to the data presented through October, 2023, there remain three leading global FinTech ecosystems based on start-up count, with India having the third largest number of start-ups worldwide creating a distinct FinTech ecosystem. By the end of 2024, India will have as many as 2,000 active FinTech companies; over 600 (approximately 35% of the total) are involved with some aspect of lending or credit. FinTech continues to grow rapidly in India, as its total market size was previously estimated at approximately \$50 billion USD in 2021 and is now expected to exceed \$150 billion by 2025. Digital lending alone accounts for nearly \$270 billion USD of the total amount of loans issued annually.

Key Indian Digital Lending Platforms

- Lendingkart – Uses machine-learned credit scores to help with MSME financing.
- KreditBee - Makes short-term loans directly available to salaried workers.
- Money Tap – Gives users access to flexible funding through apps on their devices.
- CASHe – Focuses primarily on providing personal loans that last less than one year in duration.
- Early Salary (now Fibe) – This the new name for Early Salary, which provides personal cash before payday.
- Indifi – It has a specialized form of financing called tailor-made business loans that suit small businesses' needs.

These firms leverage:

- AI-powered risk models
- Cloud-native infrastructure
- API-based banking integrations
- Real-time credit assessment

Despite a steady yearly revenue growth rate among the leading digital platforms of between 30%-45%, the rate of default on the unsecured lending segment has been between 4%-8%. The RBI Digital Lending (2022) has also impacted the establishment of governance structures in that they must now adhere to the principles of transparency, data localization as well as regulated lending partnerships.

Objectives

- To understand and assess the impact of technological innovation on the revenue and loan growth of digital lending start-ups operating within India.
- To assess how and whether an established structure for risk management has impacted default rates to ensure a financially viable lending model.

Hypotheses

- H_1 : The impact that technological innovation has on the revenue growth of digital lending start-ups will be positive.
- H_2 : Effective risk management processes will considerably lower default rates.
- H_3 : Innovation and risk management work together to help increase the loan portfolio of digital lending start-ups.

Research Methodology

In order to analyze the correlation between innovation, risk governance, and the subsequent growth performance of start-ups as an example of a beyond-market segment in the technology industry, a quantitative research approach was used. For the study, primary data was gathered from 120 digital lending start-ups located in five major metropolitan cities throughout India, using a standardized questionnaire. A stratified sampling methodology was utilized to ensure the sample included both early stage and growth stage businesses.

To measure the intensity of each firm's innovation, a composite measurement called the Innovation Index was created which included 4 different elements of innovation: artificial intelligence (AI) adoption; analytics usage; automation; and API integration. The effectiveness of each firm's risk management practices was measured by assigning a Risk Governance Score to each firm on a scale of 0-100, based on the firm's credit monitoring systems; cyber security and information technology infrastructure; statutory compliance; and framework for managing Non-Performing Assets (NPAs).

The overall growth performance of each firm was analyzed using three (3) measurable indicators:

- Annual Revenue Growth (%)
- Loan Portfolio Growth (%)
- Default Rate (%)

The study's data was analysed using descriptive statistics as well as various other statistical analysis techniques (i.e., Pearson's correlation coefficients, multiple regression analysis, and ANOVA tests) that are widely accepted by researchers and are typically found in SPSS software.

Data Analysis and Results

Descriptive Statistics

Variable	Mean	Std. Deviation
Innovation Index	3.87	0.72
Risk Governance Score	74.5	8.9
Revenue Growth (%)	38.4	12.5
Loan Growth (%)	42.7	15.2
Default Rate (%)	5.8	2.1

Interpretation

The study's data was analyzed using descriptive statistics as well as various other statistical analysis techniques (i.e., Pearson's correlation coefficients, multiple regression analysis, and ANOVA tests) that are widely accepted by researchers and are typically found in SPSS software.

Correlation Analysis

Variables	Revenue Growth	Loan Growth	Default Rate
Innovation	0.69**	0.72**	-0.41*
Risk Score	0.52**	0.48**	-0.63**

(**p < 0.01, *p < 0.05)

Innovation significantly correlates with Loan Growth and Revenue Growth. Risk Governance has a powerful negative correlation to Default Rate.

Regression Model 1: Revenue Growth

Dependent Variable: Revenue Growth

Variable	Beta (β)	Std. Error	t-value	p-value
Constant	5.24	2.48	2.11	0.036
Innovation	8.45	1.42	5.92	0.000
Risk Score	0.32	0.09	3.45	0.001

$R^2=0.48$

Adjusted $R^2=0.46$

F = 54.32 (p < 0.01)

Interpretation

Innovation substantially correlates with growth, including that for every increase of one unit on an innovation index, that corresponds to an 8.45% increase in revenue.

Regression Model 2: Default Rate

Dependent Variable: Default Rate

Variable	Beta (β)	Std. Error	t-value	p-value
Constant	9.12	1.95	4.67	0.000
Risk Score	-0.41	0.07	-5.88	0.000
Innovation	-0.28	0.12	-2.33	0.021

$R^2=0.36$

Adjusted $R^2=0.34$

F = 32.18 (p < 0.01)

Interpretation

Risk governance, when done effectively, leads to lower default rates.

Findings

- Innovation has a substantial positive correlation with revenue generation output. Approximately 48% of financial outcome variability can be explained by innovation intensity.
- Organizations that implement risk governance mechanisms that are effectively managed experience lower overall default rates of 2.0-3.0% compared to organizations without effective monitoring processes.
- Through the use of artificial intelligence for underwriting decisions, lenders can reduce the amount of time spent for processing loans from approximately 72 hours to under 24 hours, which has increased lenders' ability to acquire new customers.
- The use of cloud-based infrastructure reduces operational expenses by approximately 15% - 18%, contributing to an increase in profit margins.
- Organizations that utilize alternative data analytics as part of their corporate strategy experience an improvement in the accuracy of credit, as well as approximately 20% quicker portfolio growth.

Suggestions

- Digital lending start-ups should make continuous investments into AI-based predictive analytic systems, in addition to creating more accurate credit scorecard systems to decrease the risk associated with unsecured loans.

- Companies need to strengthen their governance and compliance mechanisms according to RBI's Digital Lending Guidelines, thus ensuring long-term sustainability.
- Companies should prioritize investment in cybersecurity infrastructure, as well as securing customer data so that customers maintain their trust when using digital platforms.
- Start-ups could use hybrid financing models of both equity and debt financing together to manage their liquidity risk while rapidly expanding.

Conclusion

The results of this study confirm that technopreneurship is an important driver of the growth of the digital lending ecosystem in India. Innovation leads to an increase in revenue and scalability; however, it is critical for firms to implement structured risk governance through the establishment of a high risk-adjusted return portfolio. Sustainable growth requires an appropriate balance between having a high technological aggressiveness and maintaining regulatory discipline. The future of the Indian financial technology (FinTech) sector depends on innovative products and services that have responsible innovation in addition to a solid risk management framework supporting such product and service offerings.

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