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A Comparative Policy Analysis of Regulatory Sandboxes and Innovation in the Indian FinTech Landscape

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Abstract

Growth of the rapidly expanding FinTech sector is under threat, owing to a fragmented regulatory environment wherein three separate authorities oversee different FinTech sectors, namely RBI, SEBI, and IRDAI. Regulatory sandboxes are the future for providing controlled environments for FinTech firms to try out innovations. This paper examines the influence of sandboxes in fintech innovation through the frameworks of Diffusion of Innovation, Institutional Theory, and Resource-Based View Theory. The analysis comments on the differential approaches for each regulator. SEBI gives more extensive testing periods motivating complex innovation; RBI concentrates on conservative timelines scaring off risky innovation, while IRDAI mainly focuses on market-based outcomes. Fragmentation across sandboxes creates inefficiencies regarding cross-sector innovations, and a better need for coordination exists. Policy recommendations like tiered testing approaches and cross-sector collaboration can augment regulatory efficacy in support of innovation and enhance regulatory compliance. It supports balancing fintech growth and regulatory stability by fostering a sustainable, inclusive financial ecosystem in India.

Keywords: Regulatory Sandbox, Consumer Protection, Fragmentation, Trialability

Introduction

At the Global Fintech Festival (GFF) 2024, Reserve Bank of India (RBI) Governor Shaktikanta Das spoke about India becoming an economic powerhouse and attributed this transformation to the growth of the Indian fintech landscape (“RBI Governor Shaktikanta Das’ 5-point agenda for India’s financial future at GFF 2024”, 2024). The fintech industry in India has emerged as a significant player in the Asia-Pacific region, with a market size of \$584 billion in 2022 (Dhanuka, 2024). Industry analysts project this value to reach \$1.5 trillion by 2030, making it the second-largest fintech market in Asia-Pacific) (BCG, 2023). This growth is driven by increasing smartphone penetration, which reached 78% in 2023 (Kumar, 2023), and rising digital payment adoption, with UPI transactions exceeding 16.58 billion per month in October 2024 (Ibef, 2024). Very few industries have had as much of a revolutionary impact on the quickly changing world of modern finance as fintech, which has changed how people and companies handle their finances. While these developments can be appreciated, hurdles like regulatory uncertainty on the supply side and financial literacy on the demand side remain and cannot be ignored (MEDICI et al., 2020).

The regulatory environment of fintech in India operates under a multi-authority framework, each with distinct jurisdictions and approaches (Jain et al., 2024). The Reserve Bank of India (RBI) oversees payment systems, digital lending, and banking operations through the Payment and Settlement Systems Act, of 2007 (Reserve Bank of India, 2022). This includes supervision of credit bureaus, Payment Service Providers (PSPs), Non-Banking Financial Companies (NBFCs), and traditional banks. The RBI's jurisdiction extends to foreign exchange transactions through FEMA, 1999, and money market operations (Imam, 2024). That is why the RBI has jurisdiction over fintech industries like digital payments, digital lending, and digital or

neo-banks. Brokers and investment advisors are examples of intermediaries whose activities are regulated by the Securities and Exchange Board of India (SEBI). Therefore, its scope of practice includes services like stock broking and investment advisory. Insurance aggregators on the internet, corporate agents, third-party agents, insurers, etc. are all governed by the Insurance Regulatory and Development Authority of India (IRDAI) (Corridalegal, 2023).

This may allow the achievement of sector-specific expertise at the cost of increased fragmentation for fintech firms operating under different regulatory frameworks. Now the question that arises is if the fintech regulators get selected based on the service provided by the different segments (like Insurtech and wealth tech), then why is there uncertainty? This is because “It is simpler to identify the regulations applicable to a regulated entity than for tech companies providing facilitation services to regulated entities. A major reason for this is attributable to the fact that different tech companies have varied business models, which can create regulatory overlap or even lacuna in applicability” (Conventus Law, 2023). It becomes the responsibility of the corporation to determine what applies to them. If authorities do not assist FinTech innovators in negotiating the regulatory framework, entrepreneurs may be discouraged from launching their products in that jurisdiction. Moreover, every state has a unique perspective on the startup ecosystem, which makes it difficult for the majority of FinTech’s’ interstate, online-only business models to operate. Because of the conflicting opinions and overlap of legislation, the FinTech community is with unclear and ambiguous situations.

Many nations are establishing a variety of support measures to boost the competitiveness of fintech technology and promote the sector as it expands globally. One of the support systems is the fintech regulatory sandbox. The regulatory sandbox is a secure testing environment where participants can try their novel products, services, delivery methods, and business models

without instantly facing all the typical regulatory repercussions of their actions. This allows the regulator to create a tested framework that will ensure consumer protection and innovation promotion. This paper analyzes how fintech innovation under the regulatory sandboxes of different authorities in India is influenced, and the subsequent regulatory uncertainty and innovation adoption interplay in the light of Diffusion of Innovation (DOI) Theory, Institutional Theory, and Resource-Based View (RBV). To that end, global comparisons and industry examples will outline how India can update its regulatory practices and behavior to make them more effective in supporting innovation.

Theoretical Framework

Diffusion of Innovation

The DOI theory sheds much light on the regulatory impact of the spread of fintech innovation across different regulatory environments. One of the dimensions of this theory—trialability and observability—becomes very interesting when one brings it to bear on an analysis of sandbox structures. Trialability or the possibility of experimenting with innovation before its full adoption is, in fact, intrinsic to the conception of a sandbox. The approach that each regulator takes toward the testing periods and conditions affects how fintech firms will then test their innovations. For example, with a 36-month testing period from SEBI in India, detailed testing of complex financial innovations is allowed, thus increasing trialability.

The testing window under RBI is rather shorter at about 7-9 months, focusing on rapid validation but limiting the scope of experimentation for more complex innovations. Similarly, IRDAI's market-driven approach relies on observability through real-world performance metrics so that innovations can prove their value based on actual market adoption (Shashidhar, 2020). In

contradistinction with this, Singapore's regulatory sandbox led by MAS is a good example of a balanced approach where trialability matches very well with strong observability, and as a result, it has relatively high rates of innovation adoption (Jain et al., 2024).

Institutional Theory

The Institutional Theory framework goes on to depict how the fragmented regulations influence the behaviors and strategic choices of fintech firms. All the different regulatory bodies in India create different institutional norms, and the fintech firms have to surf through these different environments where the RBI stresses financial stability and consumer protection. They create an environment where fintech firms have to prioritize compliance and risk management (Corridalegal, 2023). This can sometimes hold back innovation, particularly in smaller or start-up firms lacking resources.

However, SEBI is balancing innovation and regulatory oversight, creating an environment more conducive to experimentation. IRDAI is market-driven, and there is emphasis placed on consumer impact and market validation (Jain et al., 2024). A fractured environment leads to inefficiencies. Reduced regulatory uncertainty and streamlined compliance will be present within this framework along with cross-sector innovations. As opposed to the UK's FCA sandbox, 75% of those who went through testing have been moved to market (Shashidhar, 2020).

Resource-Based View

Given the Resource-Based View (RBV) lens, there is an obvious way in which fintech firms are using their internal capabilities to navigate regulatory uncertainty. Each regulatory sandbox has different resource requirements. RBI's stringent requirements favor sizeable

financial and compliance resources as they can easily stifle smaller innovators (Aarnalaw, 2024). For example, to get into RBI's sandbox, fintechs need to have a minimum net worth of ₹25 lakhs and certain liquidity along with compliance requirements (*Enabling Framework for Regulatory Sandbox*, 2019)

On the other hand, SEBI's Innovation Sandbox provides a platform for firms that have strong technological resources but no regulatory experience. This approach encourages experimentation with the use of technology and innovation such as blockchain or AI applications that require advanced technical skills but do not require significant financial capital. In the same way, IRDAI's market-based approach favors firms with advanced market testing skills and strong engagement with customers, such as firms that focus exclusively on Insurtech (Shashidhar, 2020). These needs are therefore different for the sector, creating a challenge to companies trying to conduct business across sectors and hence calling for harmonized regulation.

Analysis using Comparative Analysis Methodology

Securities Exchange Board of India

SEBI's approach is the most experimental among the Indian regulators and provides up to 36 months as a testing period for complex innovations. This would mean an adequate amount of time for thorough experimentation with financial products such as blockchain-based securities trading platforms (Regulatory Sandbox Framework, n.d.). The Innovation Sandbox by SEBI is designed to provide dual-track testing, enabling regulatory experimentation as well as technological experimentation. It is open to entities registered under the SEBI Act, in addition to

fintech companies that are partnering with these entities, and creates an interactive environment between the start-ups and the established ones.

SEBI is one of the pioneering collaborations with fintech companies leading AI-based trading platforms; here, innovations in algorithmic trading have been well-tested within the SEBI sandbox. With this regulatory flexibility, firms were able to perfect their algorithms while ensuring that their innovations met SEBI's stricter market oversight, which ultimately led to successful market launches (Shashidhar, 2020).

Reserve Bank of India

This is more conservative in approach, having a testing period of 7-9 months and a minimum net worth of ₹10 lakhs (ETtech, 2024). It supports established firms over startups, thereby gagging early-stage innovation. “The RBI has said it will accept “innovative products/services” in the domains of money transfer services, marketplace lending, digital KYC, financial advisory services, wealth management services, digital identification services, smart contracts, financial inclusion products, and cybersecurity products” (Shashidhar, 2020). For instance, the first set of products and services that RBI launched under its sandbox was retail payments. This enabled innovation in digital wallets and mobile payments (Inc42, 2020).

According to critics, the RBI refuses to allow cryptocurrency innovations in the financial system. With an exclusionary sandbox that excludes startups involved in cryptocurrency or blockchain-related services, the RBI could be rendering itself incapable of adopting cutting-edge innovations in financial technology (Caindelhi & Caindelhi, 2022)

. This is in contrast with other countries such as Japan, which has embraced cryptocurrency innovations under regulatory supervision (Shashidhar, 2020).

Insurance Regulatory and Development Authority

IRDAI follows a more relaxed, market-approach variant of its regulatory sandbox. This is different from what is employed by SEBI and RBI, which had set distinct timelines for the testing this sandbox permits testing to be terminated once the product has demonstrated the expected defined market impact. Sandbox exit criteria include crossing customer thresholds or premium levels. The approach here is supportive of market validation and consumer impact ahead of mere timelines.

For example, an Insurtech firm developing a new peer-to-peer insurance product left the sandbox successfully when it gained 10,000 customers (*Exposure Draft on IRDAI (Regulatory Sandbox) Regulations*, 2019). This ease inspires firms to innovate and scale quickly, provided they can showcase market demand and customer adoption. But at the same time, while IRDAI uses market metrics, the sandbox's framework may not easily support companies with more experimental or niche products.

Policy Recommendations

The comparison of regulatory sandboxes in India indicates a spectrum from shared characteristics to divergent strategies for varied sectors. While every regulator shapes his sandbox in a way that suits his sector a more cohesive approach holds many advantages in fostering innovation and strengthening supervision. This should inspire India to frame an umbrella framework to leverage those models of fintech regulation:

- SEBI's Dual-Sandbox Model and IRDAI's Market-Driven Metrics: Adopting this model would enable both regulatory and technological experimentation, fostering a broader

range of innovations. Incorporating real-world testing metrics will ensure consumer relevance and applicability, providing a practical, market-centric approach.

- Data protection: RBI has followed up on the above to ensure that while consumer protection is at the top, data protection does not lag in comparison with a broader rubric of regulation. Common data protection in place for all sandboxes in the financial sector would help prevent friction for innovators and give assurance to consumers. The following can be included; It could set clear requirements for data localization stipulations on sandbox participants, probably with exemptions or requirements modified concerning testing phases. Provision of standardized data protection impact assessment for participants in the sandbox. That might also suggest a more cohesive consumer protection policy and clearer guidance for innovators that could, in part, reduce barriers to entry for domestic and international fintech firms.
- Tiered Approach: Using this approach for testing gives us rapid iteration and wide-scale coverage in parallel—both flexibility of the eligibility framework and testing duration. An umbrella framework could also tier its temporal approach: the complexity and the potential systemic impact of the innovation would then determine the testing duration. This will lead to the possibility for quick iterations in simple innovations as well as detailed examination of more complex products. For example,
 - Tier 1 - Low complexity/impact: 3-6 months
 - Tier 2 - Medium complexity/impact: 6-12 months
 - Tier 3: High complexity/impact: 12-36 months
 This can be supplemented by a graduated system where performance-based measures of IRDAI can allow early exits or extensions based on real-world performance data.

- Cross-Sector Innovation Protocols: Institute clear protocols with regard to multi-sectoral innovations, ensuring that regulation is coordinated with full use made of available expertise across regulatory bodies. An example of the same would be:

Stage 1-Concept Testing: Very low qualification criteria, technological feasibility.

Stage 2: Limited market testing is starting to become part of the financial and operational criteria in minimal capital requirements and basic governance structures.

Stage 3: More onerous market pre-conditions, with evidence of demonstrated market traction supported by sound risk management frameworks.

The staged approach can provide innovators of all stripes the opportunity to enter the sandbox with the certainty that only the very best and best-prepared innovations make it forward into wider market testing.

- Joint Committee: This would comprise of members from all the different regulatory bodies relevant to cross-sector innovations. This provides a single application process for innovations with applications across more than one sector; the application may be routed from one point of entry through to application routes in relevant regulatory bodies. While sector-specific aspects would remain, having one framework for the assessment of the potential for innovation and associated risks would ease the task both for regulators and applicants.
- Regulatory Passport: Introducing this system where the innovations that have proven to work seamlessly move to other regulatory domains. This means mutual recognition of testing results and approval processes are simplified to scale across sectors. Common joint sandboxes across cohorts or themes that contribute to cross-sector innovations,

including partnerships between an array of financial institutions and technology providers.

- Liability and consumer protection: A more general liability regime on sandboxed environments can support the building of consumer confidence, ensuring accountability. One integrated approach to applying liability would include:
 1. Spell out the roles and expectations of innovators, regulators, and consumers of the testing stage. Such disclosure requirements may include those applying to enter the sandbox or being transparent with consumers about risks.
 2. Agree on the special consumer protection structure that should apply in the sandbox. This would involve an enhanced monitoring system, rapid response systems once consumers complain, and efficient dispute resolution mechanisms.
 3. Create a collective compensation fund should there be incidences of losses by consumers during the test. This might be a collectively managed fund through regulating bodies and through contributions by participants in the sandbox. If it had designed a nurture stage of testing tiered liability system, then in less exposed stages, consumers would apply lighter liability to rule and encourage more innovation; meanwhile, in more exposed stages, consumers could afford to have more liability rules.
- Alignment to International Best Practices: Maintaining an ear to the local market condition, and aligning the framework with international standards would help attract global investment and further international cooperation.

Regulatory cooperation and cross-institutional involvement are tricky and to that end, an adequate regulatory regime would need to include:

1. Internal participants in the Task Force will be market regulator-centric; hence, the main representatives shall be drawn from the divisions: Legal, IT, Payment Systems, and Financial Stability. This, therefore, raises the awareness of regulators over emergent fintech innovations and their implications for the market. Strengthening internal capacity is a prerequisite for informed choices among various approaches to the regulation of new technologies and business models.
2. Inter-Agencies Committee: One cross-institutional committee may ensure consultation, collaboration, and coordination across institutions such as the central bank, the Ministry of Finance, securities and insurance regulators, consumer protection agencies, and the telecommunications regulator. It would "compile the knowledge of what works best in every sector to align efforts".
3. Sectoral-Stakeholder Forum: This forum would include the participation of representatives from financial sector providers, fintech companies, and relevant market players. It would enable the sharing of knowledge between regulators and industry participants.

Conclusion

Unprecedented growth driven by rapid advances in technology and an increasing demand for innovative financial services has brought focus on fintech in this country. This growth occurs against a backdrop that is increasingly broken into as many pieces as the pitches on which the tents of a circus are set, throwing many challenges at fintech firms while trying to pass through multiple frameworks governed by various authorities. While regulatory sandboxes are designed

to address some of these concerns, they are not all effective in the same manner and vary in terms of what measures bodies such as SEBI, RBI, and IRDAI adopt. Here again, the strengths and weaknesses of these three regulators decide the direction of innovation in their respective jurisdictions.

Considering theoretical lenses such as Diffusion of Innovation (DOI), Institutional Theory, and the Resource-Based View (RBV), this paper introduces the complexity of fintech innovation in India. Though sandbox by SEBI can extend the experimental sandbox for complex innovations, RBI sticks to traditional conservative methodologies with an eye on financial stability while giving away the broader domain of innovation. The IRDAI model is market-driven, with real-world validation wherein firms can prove their viability in markets through customer uptake. This fragmented approach to regulation creates inefficiencies, especially for fintech firms operating across sectors, and hence there is a need for a more harmonized framework.

Policy recommendations that would overcome the challenges of fragmented regulatory oversight are essential. These include adopting a tiered testing approach based on the complexity of innovation, establishing cross-sector coordination mechanisms, and promoting global regulatory sandbox collaboration frameworks. These measures would likely enable India to achieve the right balance in delivering the need for innovation with regulatory stability towards fostering an effective environment for the development of fintech in that country.

It is even more important for India to consider its future regulatory innovation requirement as the country continues to expand its fintech ecosystem. Roll out of the Digital Personal Data Protection Act 2023, coupled with increased discussions around Self-Regulating Organizations, indicates good direction toward a better-coordinated finance technology

regulation program. More is however needed to realize the full potential that fintech has to offer to India as regulators continue to innovate in their approaches: sectoral collaboration, consumer protection, and financial stability.

While the Indian fintech regulatory framework must represent a strategic balance between encouragement of innovation and appropriate protection for consumers and the integrity of the financial system, it also enables sustained growth momentum of fintech in the country by having coordinated oversight incorporating both sector-specific needs and cross-sector innovations as well as the evolution in technologies. The environment of regulation ought to be configured to transform and change as new fintech incites the process with financial inclusion and digital transformation.

All this essentially depends on the cohesive functioning of regulatory bodies in adapting old regulatory practices and forming a vibrant well-informed approach toward fintech. There should be regular interaction between the regulators, industry players, and consumers. The framework should be subject to a periodic review for it to be kept abreast of technological changes and market evolution. The general frame thus sets the path for the future of India as a frontier country to innovate in fintech. Better and coordinated regulatory functions will bring in international investment, stimulating further national innovation toward more inclusive and efficient financial services for Indian consumers. Yet, there are challenges: institutional inertia, diverging priorities across regulatory bodies, and skill building within the regulatory bodies. But the possible rewards—economic growth, financial inclusion, and technological leadership—make this effort well eminently worthwhile for India's regulators and policymakers.

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