



Embedded finance: A strategic outlook



Foreword from PwC

Innovation has long been a transformative force in the world of FS. From the earliest forms of currency exchanges to state-of-the-art complex banking systems, the financial landscape has evolved across the globe to meet the changing needs for businesses and consumers. Today, we find ourselves at the precipice of another monumental leap forward – the era of EmFi.

As the world becomes more interconnected, the boundaries between traditional FS and everyday customer experiences are beginning to blur. EmFi as a concept seeks to seamlessly integrate financial products and services into non-financial offerings, allowing financial transactions and decision making to occur efficiently. EmFi is not a new approach in India – for example, banking personnel at large electronics stores help finance the purchase of white goods. Furthermore, the current EmFi landscape offers scope for expanding use cases on a larger scale across industries.

The rise of EmFi has been driven by customer demands for convenience, personalisation and accessibility. This paradigm shift – fuelled by advancements in FinTech, AI and data analytics – is enabling the growth of a diverse array of applications and platforms using embedded financial products – from e-commerce and wealth management to ride hailing and healthcare. It is poised to transform the way we manage, move and multiply our money.

This report highlights some of the key platform models offering EmFi products, outlining their sector-wise use cases. It also discusses the impact and benefits of such models on key stakeholders in the EmFi ecosystem. Furthermore, the report looks at factors that could influence the EmFi landscape from both the technology and regulatory perspectives, providing certain considerations for stakeholders.

The vision for a responsible financial ecosystem built on the pillars of resilience, inclusivity and sustainability can only be realised through global collaboration. As we embark on this journey of embracing EmFi and its transformative potential, we will recognise that the opportunities will transcend multiple ecosystems and domestic borders, and hence, our solutions must take that into consideration. This collaborative endeavour will shape the future of finance and pave the way for a more just, resilient and equitable world for generations to come.

We would like to extend our gratitude to the NPCI, PCI and FCC for organising the Global FinTech Festival 2023 and inviting PwC India to be a knowledge partner.

Vivek Belgavi

Partner

FinTech, Alliances and Ecosystem Leader

PwC India



Executive summary

EmFi, the seamless integration of FS into the customer journeys of non-financial businesses, has become a disruptive force in the financial industry. This report explores the landscape, opportunities, challenges, technology and regulatory considerations in this dynamic field. By integrating FS into diverse industries, all stakeholders can tap into new customer segments, thus driving customer acquisition, engagement and loyalty.

However, despite all these advantages, EmFi comes with its share of challenges. The rising importance of security and privacy necessitates effective safeguards against data breaches and fraud. Additionally, there could be complexities involved in aligning diverse business models and regulatory requirements across industries and stakeholder partners.

Technology development has been crucial to EmFi's success. Scalable APIs, advanced analytics and AI can be used to deliver seamless integration and customised financial solutions, improving customer experiences.

A robust regulatory environment is necessary to promote the growth of the EmFi sector. Thus, in order to protect the consumers, the stakeholders and regulatory bodies could work in a collaborative manner to determine the ideal balance between innovation and compliance.

Below are some key recommendations to further facilitate the growth of EmFi:

Promote collaboration: Encourage collaborations between FIs and non-FS businesses that can foster innovation and resource sharing.

Prioritise security: Implement 'security-first' principles through the establishment of strict security controls and compliance protocols to protect private financial information and foster consumer confidence.

Invest in technology: Allocate resources to develop cutting-edge technologies, such as secure APIs and advanced analytics, enabling seamless integration and personalised services.

Regulatory harmonisation: Encourage cross-industry discussions to standardise regulations, establishing clear standards for EmFi without restricting innovation.

Consumer education: Educate consumers about EmFi's advantages and risks, thus enabling them to make well-informed decisions, enhance adoption and help safeguard the brand image of the embedders.

Embracing EmFis may put companies at the forefront of innovation and revolutionise the FS industry for a future that is more inclusive, efficient and customer-focussed. Businesses may succeed in this dynamic environment by participating in strategic collaborations, prioritising security, investing in technology and maintaining regulatory compliance.

Glossary

Sr. no.	Abbreviation	Expanded form
1	AA	Account aggregator
2	AI	Artificial intelligence
3	AML	Anti-money laundering
4	API	Application program interface
5	B2B	Business to business
6	B2C	Business to customer
7	BaaS	Banking as a service
8	BNPL	Buy now pay later
9	C2C	Customer to customer
10	CAGR	Compounded annual growth rate
11	CBN	Central Bank of Nigeria
12	CCPA	California Consumer Privacy Act
13	CDR	Consumer Data Right
14	CFPB	Consumer Financial Protection Bureau
15	CMN	National Monetary Council
16	CX	Customer experience
17	DPDPB	Digital Personal Data Protection Bill
18	EmFi	Embedded finance
19	EMI	Equated monthly instalment
20	ESG	Environmental, social and governance
21	FCC	Fintech Convergence Council
22	FI	Financial institution
23	FMCG	Fast-moving consumer goods

Sr. no.	Abbreviation	Expanded form
24	FS	Financial services
25	G2C	Government to customer
26	GDPR	Global Data Protection Regulations
27	GFF	Global FinTech Fest
28	IRDAI	Insurance Regulatory and Development Authority of India
29	KYB	Know your bank
30	KYC	Know your customer
31	MSME	Micro, small and medium enterprises
32	NBFC	Non-banking financial company
33	NPCI	National Payment Corporation of India
34	OCEN	Open Credit Enablement Network
35	ONDC	Open Network for Digital Commerce
36	P2P	Peer to peer
37	PBOC	People's Bank of China
38	PCI	Payments Council of India
39	PFRDA	Pension Fund Regulatory and Development Authority
40	PoS	Point of sale
41	PSD2	Payment Services Directive Two
42	RBI	Reserve Bank of India
43	RE	Regulated entity
44	SEBI	Securities and Exchange Board of India
45	SME	Small and medium-sized enterprise
46	UPI	Unified Payments Interface



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An overview of the global EmFi landscape

EmFi, which involves the integration of FS into non-FS providers' platforms and the customer transaction journey, has seen rising adoption in recent years. This has resulted in a marked shift from conventional customer acquisition and distribution by FIs. By incorporating offerings such as payments, lending, banking, investment and insurance through APIs, this innovation has become a significant catalyst for the expansion of both the FS industry and non-FS platforms or service providers.

EmFi presents immense opportunities to enhance financial inclusion, user experience and revenue diversification for both FS manufacturers and non-FS platforms. FS providers benefit from the reduced customer acquisition cost when acquiring customers through non-FS service provider platforms. On the other hand, non-FS providers enjoy enhanced customer experience and stickiness by delivering customised and composite value propositions to customers at contextually relevant touchpoints, thereby expanding revenue streams. EmFi acts as a medium for end users to access FS in a frictionless manner on a single platform removing the need to go through multiple platforms and service providers.

When integrating FS into a broader customer journey or workflow, it is pertinent to individualise the offering in accordance with the context. This means that key factors such as the use case context, value of the transaction or even the preferred communication language of the customer become pertinent while embedding the FS. By tailoring embedded FS to the relevant context, more seamless and effective integration can be achieved. Additionally, providing a seamless user interface or experience could be advantageous in minimising the likelihood of drop-off and ensuring customer acceptance.

The benefits derived by EmFi players have driven the widespread emergence of use cases and the overall growth of the global EmFi market. Estimated at USD 66.8 billion¹ in 2022, the market is projected to experience a CAGR of 25.4%² from 2023 to 2032. The US leads in EmFi revenues, with USD 26.5 billion³ in 2022, followed by the UK, Germany and Canada.

EmFi use cases have predominantly gained traction in sectors such as consumer platforms, e-tailers, lifestyle products and services – offering seamless payments, lending and sachet insurance services at the point of consumption. Emerging use cases are also being witnessed in industries such as food delivery, travel booking, ride-hailing platforms, supply chain management, payroll and employee benefits management for offerings such as BNPL, insurance and payment propositions.

BNPL – a significant trend in EmFi, particularly in e-commerce – enhances transactional ease and convenience, empowers customers to make higher-ticket purchases, and drives sales for product manufacturers. BNPL has potentially contributed to increased conversion rates on e-commerce platforms by providing seamless credit at point of consumption. As of 2022, the global BNPL market size was estimated to be USD 4.2 billion,⁴ and it is expected to grow by a CAGR of 30.4%⁵ from 2023 to 2032. PoS lending serves as an alternative to BNPL, primarily catering to larger-ticket purchases like furniture and electronic appliances, and also offers customers the convenience of credit at checkout points as well as attractive interest rates such as zero EMI products, as applicable.

1 <https://www.bloomberg.com/press-releases/2023-07-03/embedded-finance-market-to-reach-622-9-billion-globally-by-2032-at-25-4-cagr-allied-market-research>

2 <https://www.bloomberg.com/press-releases/2023-07-03/embedded-finance-market-to-reach-622-9-billion-globally-by-2032-at-25-4-cagr-allied-market-research>

3 <https://www.statista.com/statistics/1388790/embedded-finance-revenue-by-country/#:~:text=It%20was%20estimated%20that%20the,U.S.%20dollars%20worth%20of%20revenue>

4 <https://www.bloomberg.com/press-releases/2023-07-06/e-commerce-buy-now-pay-later-market-to-reach-57-8-billion-globally-by-2032-at-30-4-cagr-allied-market-research>

5 <https://www.bloomberg.com/press-releases/2023-07-06/e-commerce-buy-now-pay-later-market-to-reach-57-8-billion-globally-by-2032-at-30-4-cagr-allied-market-research>



the last few years as SMEs face challenges in getting access to credit from FIs and banks face challenges in underwriting SMEs due to limited credible data. Multiple players in the B2B embedded lending space offer user friendly propositions to enhance the experience of the users and fast risk assessment to reduce the disbursement time.

BaaS supports non-banks, challenger and neo-banks in implementing EmFi solutions or capabilities by offering white-labelled or co-branded solutions and services through API integration with licenced banking partners. Open banking further empowers contextual and bespoke banking services to non-banks by enabling access to customers' financial data held by FIs.

The potential drivers of global EmFi adoption include demand from consumers for a seamless and superior experience while being offered a composite value proposition. Factors such as internet penetration, digital and financial literacy, demand from non-FS platforms to provide FS products and services integrated in the customer's transaction journey, increased adoption of open banking frameworks, and the growing digitisation and API usage have fuelled the innovation and adoption of EmFi use cases in recent years.

India outlook

Over the last decade, India has undergone significant digital transformation owing to the rapid digitisation of FS. This acceleration has been enabled through the founding blocks of India Stack including UPI, Aadhaar (biometric-enabled identification), e-sign (KYC), account aggregator frameworks (consent-driven data sharing and interoperability), ONDC and OCEN.

These digital public goods and rails have catalysed innovation by private sector players and improved the way in which customers interact with their financial service providers – be it banks or other FIs. EmFi is taking this to the next level, where customers can access a range of financial products as part of their digital transaction journey, with minimal to no interaction with the service providers. Thus, EmFi products have greatly benefited due to the proliferation of digital FS and their increased consumption.

Figure 1: Factors driving growth of EmFi in India



Source: ET BFSI; IMAI Kantar Report; Mint

The Indian EmFi ecosystem is expected to grow at a CAGR of 30.4% over the period of 2022–29, thereby increasing its revenues generated through EmFi propositions from USD 4.8 billion in 2022 to USD 21.12 billion in 2029.⁶

Opportunities

The most prevalent use cases of EmFi in the FS landscape in India include:

- embedded payments (online payment options at points of consumption)
- embedded insurance (real-time bundling of insurance at points of consumption)
- embedded investments (API-based integrations into investment and/or brokerage platforms)
- embedded cards (cards-as-a-service offering)
- embedded lending (BNPL at points of consumption).

This section explores some of these opportunities that can be capitalised on by the players.

⁶ <https://www.prnewswire.com/news-releases/india-embedded-finance-market-report-2022-market-will-increase-from-4-801-8-million-in-2022-to-reach-21-127-5-million-by-2029--301603346.html>

Opportunities for EmFi customers

Access to FS: EmFi advances financial inclusion by making FS available to underserved groups. EmFi can offer access to banking, insurance and investment products and services in India – where a sizeable portion of the population is still unbanked – through pre-existing distribution channels including vernacular social media platforms and e-governance portals.

Seamless user experience: Integrating FS within consumer-facing platforms enhances convenience and improves user experience. EmFi enables users to do transactions seamlessly without switching between different applications or platforms, increasing adoption and engagement.

Opportunities for business growth

New revenue streams: Businesses can diversify their revenue streams by integrating FS. For example, non-FS businesses may capitalise on their current infrastructure, data and customer base to offer FS products thereby increasing revenue through sourcing and distribution and also enhancing customer experience and loyalty.

Partnerships and collaborations: FinTech start-ups and established FIs can work together to offer cutting-edge and customised financial solutions. These partnerships promote an ecosystem that accelerates market growth.

Challenges

While there are multiple opportunities for the ecosystem to drive EmFi propositions and capabilities, there are a few challenges that remain to be addressed. PwC has identified the following major challenges to the EmFi ecosystem.⁸

Data privacy and security: EmFi, typically, necessitates the exchange and transfer of sensitive financial data among multiple stakeholders. Hence, it becomes crucial to safeguard the data being transferred from cybersecurity threats and data breaches. In 2023, India has released the DPDPB with the core tenet to harmonise data privacy in the country. The bill is a step towards developing comprehensive security measures and data governance practices for EmFi ecosystems to remain a trusted medium.

Consumer protection and trust: With the integration of FS into non-FS customer journeys, consumer trust becomes increasingly significant. Therefore, it is crucial to ensure transparency, ethical business practices, and efficient customer grievance redressal mechanisms in order to safeguard consumers and maintain trust in EmFi offerings.

Digital divide: Although India has witnessed significant growth in digital adoption, there is still a digital divide, particularly in rural areas and among underprivileged communities. Therefore, addressing infrastructure gaps, improving digital literacy and increasing internet connectivity to underserved regions are important to ensure equitable access to EmFi.

Competition and market fragmentation: As EmFi gains momentum, competition too shall intensify, saturating the market with multiple players offering similar services. Therefore, to ensure sustained success, it will be vital for organisations to differentiate offerings and create unique value propositions.

Regulatory environment: Embedding FS requires businesses to navigate complex regulatory frameworks. Furthermore, ensuring compliance with financial regulations and data privacy laws can be challenging for both technology companies and traditional FIs. Thus, adherence to regulatory guidelines and a supportive policy environment are crucial to foster the growth of EmFi.

Brand impact: EmFi requires customer-facing entities to be more aware of their offered services and propositions, so that there is no mismatch in terms of FS offerings and the brand image of the firm. Mismatches in offerings may cause confusion and hamper customer adoption. Therefore, managing customer grievances through established redressal mechanisms is important to manage the brand value.

7 <https://www.pwc.com/gx/en/industries/financial-services/publications/managing-embedded-finance-risks.html>



Overall, EmFi presents immense opportunities to enhance financial inclusion, user experience and revenue diversification in India. However, addressing regulatory complexities, data security and fostering consumer trust are crucial for its successful implementation.

2.1. EmFi business models and archetypes

The EmFi ecosystem in India encompasses various business models at the intersection of the customers they serve, and the FS products or solutions being offered – for example, a B2B EmFi proposition for supply chain finance integrated in a logistics or commerce platform for businesses.

2.1.1. Platform models

B2B models

With the integration of EmFi, B2B platforms can offer value-added FS for their business customers.

Examples	Supply chain financing B2B platforms can provide embedded lending solutions, allowing businesses to access working capital, enable invoice financing, manage cash flow and improve supplier relationships.	Trade finance By integrating with FIs, B2B platforms can streamline trade finance processes, such as letters of credit, and import/export financing.	Payment gateway solutions Embedded payment gateways within B2B platforms enable secure and efficient transactions between businesses, facilitating seamless fund transfers and reconciliations, thus enhancing customer experience.
	Embedded insurance solutions Integration of sachetised insurance offerings in B2B transaction journeys such as logistics, supply chain and B2B e-commerce. Examples of such offerings could be renter's insurance on commercial property management platforms and logistics insurance for cargo protection.		
	Insurance on SaaS platform To enhance the value proposition of their cloud-based SaaS platform, a company that helps small businesses manage their inventory and supply chain through features like real-time inventory tracking, automated restocking and supplier management, partners with an insurance provider specialising in supply chain risk management and logistics coverage to provide insurance coverage integrated directly into the platform's interface. This allows the small businesses that sign up for the platform to choose insurance coverage from a range of options, presented as part of their subscription. The data available on the platform is shared through APIs to the provider to aid real-time calculation of insurance premiums.		

B2C models

EmFi enhances B2C platforms by integrating FS in the customer's journey, creating more value for their customers and increasing customer loyalty and retention

Examples	E-commerce financing B2C platforms can offer embedded lending options, enabling consumers to access installment-based financing or credit facilities for purchasing products predominantly through BNPL platforms. By partnering with merchants and FIs, BNPL platforms integrate financing options directly at the point of sale, simplifying the payment process and enhancing affordability for consumers. EmFi enables seamless credit evaluations, instant loan approvals and flexible repayment options, driving higher conversion rates and boosting sales for businesses.	Wallet service Integrating digital wallets within B2C platforms allows users to make seamless payments, store value and access various FS like fund transfers and bill payments.	Embedded insurance B2C platforms can offer embedded insurance products like purchase protection on e-commerce platforms, travel insurance on travel aggregator platforms and subscription-based insurance on fitness apps.
	Investment management Digital FS aggregator application with EmFi integrations help individuals to track expenses, manage investments and gain insights into their financial health. This allows for value propositions like automated loose change savings and investments into liquid funds and gold instruments through rule-based rounding up of financial transactions.		
	Automobile loans and embedded insurance A logistics company based out of India partnered with an embedded insurance platform, a P2P lending player, a credit solutions provider and an insurance software firm to provide its driver partners with short-term loans and embedded insurance. The company's platform also enables FIs in the evaluation of loans through the supply of their revenue data.		

C2C models

Non-FS C2C platforms such as P2P vehicle hiring platforms or P2P commerce platforms can facilitate interactions between individual consumers. Embedding financial services within these platforms enhances trust, security and financial capabilities.

Examples	P2P lending C2C platforms can integrate lending functionalities, connecting borrowers and lenders directly, with embedded risk assessment and loan management features.	Payments Embedding mobile payment solutions within C2C platforms enables users to securely transfer funds, split bills and make payments to other individuals, promoting P2P transactions.	Savings and investment platforms C2C platforms can provide embedded savings and investment features. This could include offerings like social media platforms and online trading communities with embedded investment tools to take inputs and advices from others on the platform.
	Digital wallets Digital wallet enable users to store funds, make payments and perform financial transactions with other users across multiple C2C platforms by being embedded on each. Users can link their bank accounts or cards to the digital wallets for easier access to funds.		
	P2P payments for shared expenses A P2P expense management platform in India allows its consumers to split expenses with their contacts. This allows for multiple users to create expense entries which can be shared either separately or in a group. The app also provides embedded payment options through UPI to the users for settling their expenses.		

G2C models

G2C platforms serve as intermediaries between Government entities and citizens, delivering public services and benefits. EmFi within G2C platforms enhances efficiency and accessibility.

Examples

Tax and utility payments

By embedding payment gateways, G2C platforms can enable citizens to conveniently pay taxes, utility bills and Government fees within the platform, streamlining the overall process.

Financial inclusion initiatives

G2C platforms such as the National Government Services portal and Mudra in India could integrate EmFi services, providing access to basic banking services, microloans and sachetised insurance products to the underserved segment.

Case study

Income tax filing and payment portal

The income tax portal of India enables filing of income tax returns. The portal provides detailed information fetched through APIs (annual information statement, taxpayer information summary) for customers to file income tax seamlessly and comprehensively. The portal also embeds payment options such as UPI, net banking and credit/debit cards, for end consumers to settle their overall tax liabilities.



2.1.2. Sector-wise applications of EmFi

EmFi is transforming various sectors by integrating FS directly into existing platforms and workflows and providing customers a composite value proposition within their journeys and interactions on platforms. The table below highlights case studies where EmFi is being implemented across sectors such as e-commerce, mobility and logistics, health and insurance, real estate and property, EdTech and agriculture.

E-commerce and retail	Transportation, mobility and logistics	Healthcare and insurance	Real estate and property	Education and EdTech	Agriculture and rural development
<p>Case study: E-commerce platforms enabling embedded lending solutions for MSMEs⁸</p> <p>One of India's largest e-commerce platforms' B2B marketplace partnered with FIs to offer embedded lending solutions to MSMEs. By analysing MSMEs' transaction history and sales data, it facilitated instant financing options at the point of consumption. This EmFi solution is allowing MSMEs to access BNPL loans, enabling inventory expansion, improving cash flow and driving business growth.</p>	<p>Case study: Seamless payments and micro-insurance integration in ride-hailing apps⁹</p> <p>A digital wallet service by one of the largest ride-hailing platforms in India, expanded its services to offer EmFi in their customer journey. Users can now make payments for rides, book cabs and opt for ride insurance that covers accidents/mishaps during the trip. EmFi integration is streamlining the payment process, eliminating the need for cash transactions and enhancing user convenience.</p>	<p>Case study: Optional add-on travel insurance offered by Indian Railways while booking tickets online¹⁰</p> <p>India's leading platform for securing railway tickets offers optional add-on insurance to all Indian citizens at the time of purchasing tickets. The premium of the insurance per passenger at the time of writing this report stood at INR 0.35 per passenger and covered hospitalisation, disability and death. EmFi is enabling a cost-efficient means of insuring the underinsured.</p>	<p>Case study: Integrated payments and home loan services on real estate aggregator platforms¹¹</p> <p>A leading real estate aggregator platform that allows users to search for properties to buy, sell or rent, integrated EmFi features to streamline transactions and enable FS. Users can pay rent, book home services and avail home loans through the platform. EmFi integration is simplifying payment processes, securing transactions and facilitating seamless access to home loan services.</p>	<p>Case study: Personalised education finance solutions by EdTech companies¹²</p> <p>A prominent EdTech company that allows users to search and take up online courses is providing EmFi solutions through partnerships with FIs. It allows users to access student loans, pay course fees and manage educational expenses. EmFi integration is enabling seamless education finance, reducing financial barriers and supporting learning continuity.</p>	<p>Case study: AgriTech platforms offering integrated finance for farmers¹³</p> <p>A leading agriTech start-up in India that provides an end-to-end solution for farmers through a mobile platform designed to connect them with agri products and services, is offering EmFi. This will enable farmers to access credit and insurance and purchase agricultural inputs through the platform. EmFi integration is simplifying credit access, reducing paperwork, facilitating timely procurement and enhancing farm productivity.</p>
Other solutions					
<ul style="list-style-type: none"> • BNPL • Digital wallets and payment gateways • Embedded insurance • Inventory and working capital financing 	<ul style="list-style-type: none"> • Fleet management financing • Freight factoring and invoice financing 	<ul style="list-style-type: none"> • Integrated health insurance • EMI for medical expenses • Prescription financing 	<ul style="list-style-type: none"> • Home loan and mortgage services • Rental insurance • Real estate investment 	<ul style="list-style-type: none"> • Student loan and financing • Scholarship and grant disbursement • Course subscriptions and micro-learning payments 	<ul style="list-style-type: none"> • Credit and crop financing • Insurance coverage for farmers

8 <https://www.thehindubusinessline.com/companies/flipkart-wholesale-and-rupifi-partner-to-offer-embedded-bnpl-to-msmes/article37094227.ece>

9 <https://www.olamoney.com/olamoney-hospicash/index.html>

10 <https://contents.irctc.co.in/en/InsuranceTermCondition.pdf>

11 https://www.nobroker.in/home-loan?utm_source=google&utm_medium=cpc&utm_campaign=Performance_Max_Internal_HomeLoan&gclid=CjwKCAjwqZSIBhBwEi-wAfoZUIOh0xD_6oZC1k8Bj12ZxJIO-CBvIbG9z6zpx6wjsmYZRwB-Zp8mFxoCxRUQAvD_BwE

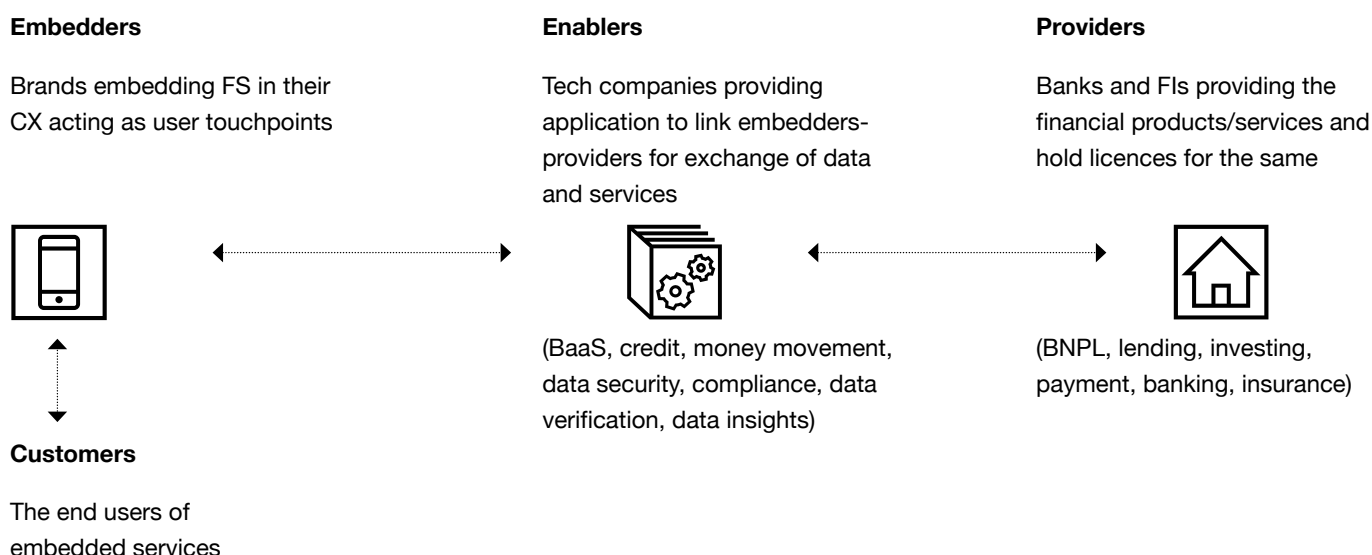
12 <https://www.getshopse.com/byjus/>

13 <https://www.corporate.agrostar.in/>

EmFi stakeholders

The key stakeholders in EmFi are the embedders, enablers, providers and consumers. The chart below illustrates the relationship between them.

Figure 2: Relationship between different EmFi stakeholders



Source: Mitsui

EmFi brings together all stakeholders to create a smooth and interconnected ecosystem where FS can be accessed and utilised more conveniently and efficiently within non-financial platforms. This integration enhances the overall user experience and expands the reach of FS to a broader customer base.

Embedders

Embedders are players or platforms that provide non-FS services and integrate financial products or services from providers (FS manufacturers and licenced entities) into their own platform and their customer's transaction journeys. These can be e-commerce platforms, mobile applications, social media networks, platforms for gig workers or any other firm that wants to offer FS to its customers without having to establish themselves as a full-fledged FI.

The APIs from FS providers are integrated by embedders to embed financial products and services into their existing customer journey. This makes the overall customer experience more seamless while also offering a composite value proposition.

For example, a retail e-commerce platform can integrate a BNPL service from a lending provider, allowing customers to finance their purchases directly through the e-commerce platform without leaving the website.

Providers

Providers are FIs, FinTech firms or other companies that provide financial products and services like banking, payments, lending, insurance or investing. The licences and regulatory permission required to provide these offerings are typically held by the providers. Providers in the EmFi space make their APIs available to facilitate integration with third-party platforms and applications.

For example, a bank might offer an API that allows a retail app to offer its customers the option to open a savings account directly within the app, or a payment service provider might offer an API that enables a ride-hailing app to process payments seamlessly.

In the context of EmFi, it is also possible for providers to build orchestration platforms and take up the role of the embedder – offering embedded solutions on the platform.

Enablers

Enablers refer to companies that have the necessary infrastructure and/or build applications which support the interaction between embedders and providers. They act as the connecting entity between the two for the exchange of data and information. Enablers provide the digital architecture for BaaS, embedding credit cards, payments and reconciliation, data security, data connectivity, verification, compliance and data insight generation. In simple terms, these firms provide APIs to the embedders, so that the companies can extend FS to the customers without having to develop all of them in-house. Therefore, these firms are required to maintain robust security measures and seamless operability.

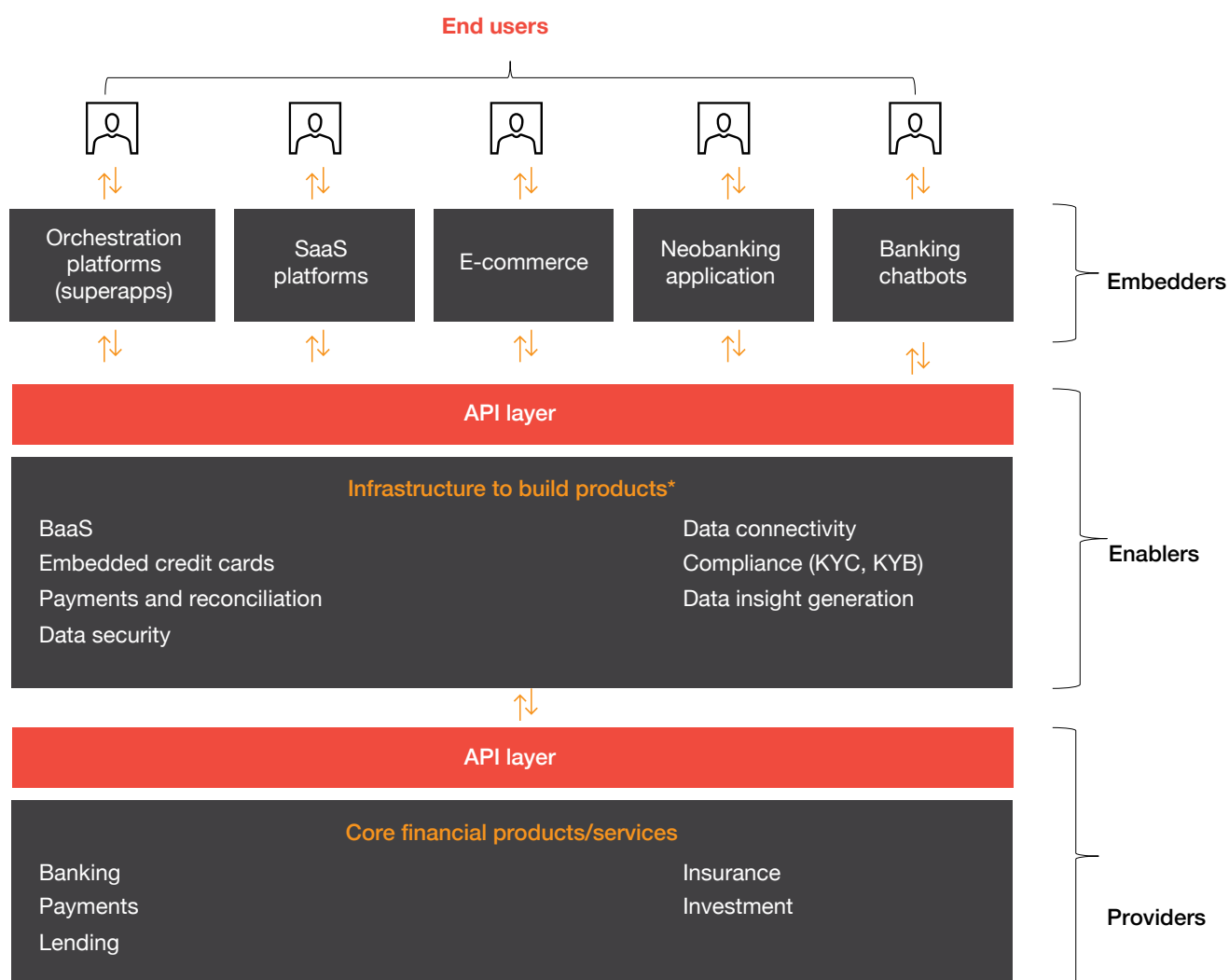
In certain cases, it is also possible for providers to directly take up the role of enablers. One such example could be a bank that offers netbanking APIs to embedders.

Consumers

Consumers are the end users of the EmFi services. They are the customers of the embedders who interact with and use the integrated financial products and services within the platform or application. EmFi aims to improve convenience, accessibility and user experience for consumers by offering FS directly within the context of the services they are already using.

For example, a consumer of a ride-hailing application might have the option to pay for their service using various payment methods, access loyalty programmes or even opt for insurance coverage for their ride – all within the same app.

Figure 3: Illustrative view of communication between each stakeholder in EmFi



3.1. Opportunities for collaboration

EmFi offers a plethora of opportunities for collaboration between traditional FIs and non-FS businesses, which opens up routes to provide immense value to all stakeholders involved. Partnering with non-FS business offers FIs potential access to new customer segments, which can lead to increased customer acquisitions and improved engagements. Similarly, non-financial businesses can enjoy the benefits of enhanced customer loyalty, new revenue streams and offer their customers improved experiences.

Businesses can benefit from other businesses by sharing skills and expertise through the formation of strategic partnerships and alliances. This can help in creating an ecosystem that adds value for all stakeholders and fosters innovation, driving customer-focused solutions which propel the industry forward. Collaborations in the EmFi space could prove to be essential in determining the direction of the FS industry as customer expectations evolve.

According to the 2016 PwC Global FinTech Survey, 42% of banks engaged in partnerships with FinTechs.¹⁴ This figure has more than doubled as of 2023, where over 90% of FS firms are bullish on improving their revenues through partnerships with FinTechs.¹⁵ According to a global business perspectives survey on EmFi, of the 1,000 leaders at non-financial companies around the world, a majority of the participants (70%) that have already implemented EmFi solutions mentioned that they leveraged partnerships for obtaining and licencing products as part of their EmFi approach.¹⁶ Additionally, businesses may have multiple incentives to opt for these alliances and collaborations, including the value that incumbent FIs bring to the table in terms of managing money movement, which is subject to complexity and regulations.

Typically, enablers simplify the process of incorporating FS into non-FS value propositions. They manage the challenges associated with establishing a partnership with the providers and developing APIs, which enable embedders to swiftly integrate FS products and services into their existing customer journeys within mere weeks or months. This significantly reduces the time taken to build such capabilities from scratch. Therefore, partnerships between ecosystem players have become the go-to mode for offering EmFi offerings, owing to their inherent advantages for stakeholders.

3.2. Benefits for stakeholders

3.2.1. Stickiness (embedders)

Integrating FS and non-FS helps embedders improve user experience by providing personalised, contextual and targeted recommendations on products and services. A prolonged positive customer experience through frictionless digital journeys leads to increased trust in the embedded platforms. This increases user lock-in on the platform, and hence translates to a higher share of loyal customers.

3.2.2. Improved data analytics for better consumer insights (providers)

EmFi provides opportunities for FS players to access customer transactional data and identify consumption behaviours which can be used to design personalised FS products and optimise existing customer journeys on the embedder platform – for example, using data from e-commerce platforms to offer tailored BNPL offers, targeted rewards, personalised credit limits, and integrated savings and investment options. The bi-directional ecosystem integration helps FS players to capitalise on this opportunity by implementing targeted analytics strategies to personalise and contextualise their product offerings.

3.2.3. Expansion of revenue streams

EmFi can provide several avenues for revenue to their stakeholders involved in the ecosystem. Some of the key revenue streams for the stakeholders are discussed below.

Providers

Transaction fee: Each financial transaction made through a provider's API may be charged a transaction fee. For example, any payment processed through the embedder's platform can be subject to a small fee, paid to the payment service provider.

Interest/fee on loans and credit: Providers can earn interest and fees on the loans extended to the embedder's customers for the lending and credit services offered to them.

¹⁴ <https://www.pwc.com/gx/en/financial-services/fintech/assets/fin-tech-banking-2016.pdf>

¹⁵ <https://www.innreg.com/blog/bank-fintech-partnerships-examples-and-evolution>

¹⁶ <https://assets.ctfassets.net/ss5kfr270og3/3aWnLyVDCcwuNOdID1aOC/baec2f07bd09549f40eb7858a710e50c/Embedded-Finance-FINAL.pdf>

Enablers

Licencing fee: By providing access to FS APIs to the embedders, enablers can generate revenue. This can either be charged as a one-time setup fee or in the form of ongoing licencing fees.

Revenue sharing: In certain instances, enablers and embedders may agree on revenue-sharing agreements, so the enabler receives a portion of the generated revenues from the FS offerings on the platform.

Embedders

Commission/referral fee: Embedders can earn referral fee or commissions from the providers for every customer they refer who utilises the FS offered by the embedder's platform. For example, an e-commerce platform might receive a commission for each user who uses the site to apply for a credit card or loan.

Premium services and upgrades: Customers of the embedders' platform can be offered premium FS or value-added features for a fee.

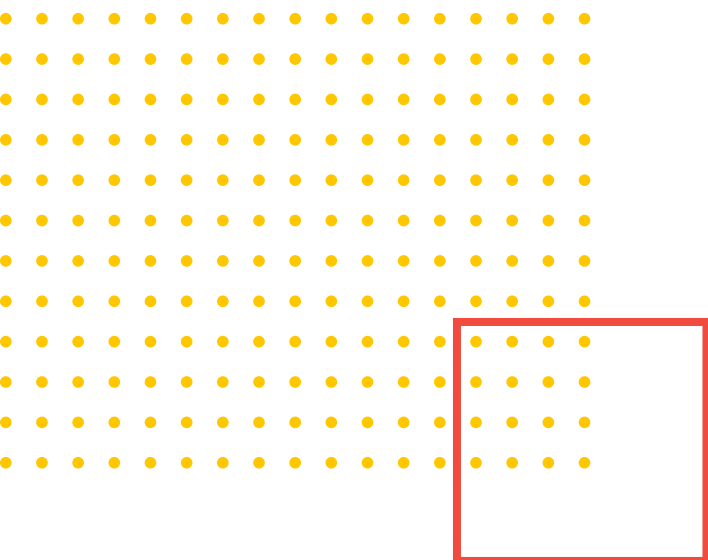
Data monetisation: Embedders can analyse user data and offer insights to providers or other businesses for a fee. These insights can be valuable in improving financial products and services.

It's important to note that the revenue streams are dependent on the nature of FS offered, the region, and the agreements between the parties involved. New revenue modes and opportunities may begin to emerge for the different stakeholders, as EmFi continues to grow and evolve.



3.2.4. Frictionless and personalised experiences to consumers

In order to help customers choose the best product or service at the point of contextual relevancy, embedded FS may offer them frictionless, hyper-personalised experiences in the form of tailored nudges and recommendations during their exploration and purchase journeys. One example of this could be a personal finance management application that partners with various FIs to offer a wide range of banking and FS, which are personalised in nature. This could be done by analysing the customer transaction data from partner platforms to identify spending behaviour and offer propositions like real-time savings suggestions, automated smart investments through partners – including loose change investment options through rule-based rounding up of transactions and micro loan offerings through partner FIs that can use the existing customer data for underwriting.



Technology considerations and navigating the regulatory landscape

4.1. Technology point of view – integrating FS into non-FS customer journeys

The growth of embedded FS opens up new possibilities alongside a set of considerations and challenges. According to 33% of FS CEOs surveyed as part of 26th Annual Global CEO Survey: India perspective in 2023, one of the top risks anticipated over the next five years is cyber risks.¹⁷ This concern is particularly relevant for EmFi as the integration of FS into non-FS platforms and applications introduces new avenues for cyber threats and vulnerabilities. There are several technology considerations when implementing EmFi solutions. Some of the key considerations are discussed below:

API integration: API integration allows for multiple systems to securely communicate and share data in real time, which is essential to offer seamless information exchange between FS providers and non-FS players. This enables functionalities like payments, lending and savings, which is a core tenet of EmFi offerings.

Security and compliance: Security is paramount when handling sensitive financial data of consumers. To protect customer data, robust security measures such as encryption, two-factor authentication and regular security audits could be implemented. Compliance with pertinent financial regulations such as KYC and AML requirements is also crucial.

Scalability: EmFi solutions may experience rapid growth, and the underlying technology should be scalable to handle increasing user demand and transaction volumes. Technologies that follow cloud native architecture and microservices architecture with support for a hybrid cloud implementation can support scalability effectively.

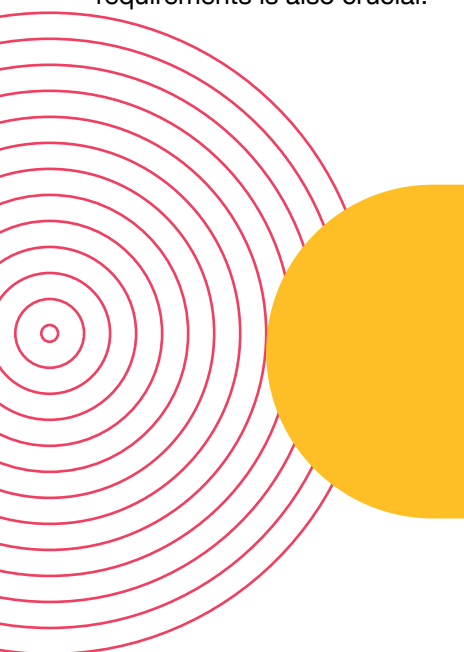
Omnichannel experience: Providing a consistent and user-friendly experience across various customer-facing channels, such as mobile apps, website, social media channels and in-person interactions, is essential for EmFi. Technologies and analytics approaches that enable the consumer to access FS services seamlessly and frictionlessly through each of these channels are important.

Risk management: To identify and reduce risk of fraud, EmFi platforms require robust risk management systems. To analyse user behaviour and transaction patterns for early fraud detection, machine learning algorithms can be deployed.

Real-time data and analytics: EmFi platforms with capabilities such as real-time data processing and advanced data analytics would be required to provide contextually relevant and personalised FS offerings and insights to customers. Access to real-time financial data enables dynamic decision making and improves user engagement.

Customer support: In the FS domain, customer trust and reliable support is essential. The overall CX in EmFi can be elevated considerably through the implementation of reliable customer support mechanisms (e.g. vernacular chatbots) to address queries, complaints and grievances promptly.

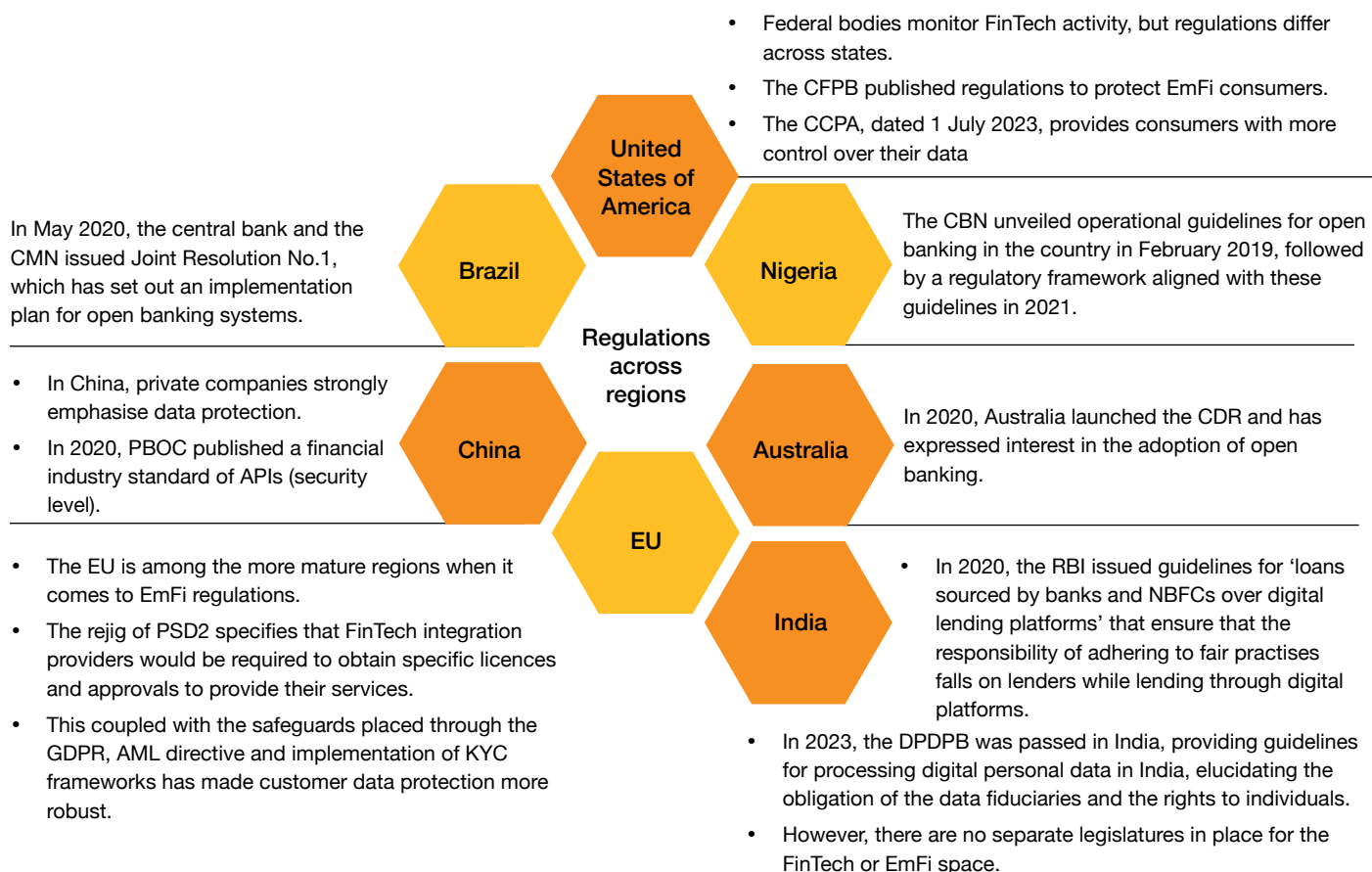
Overall, technology considerations for EmFi revolve around scalability, providing an omni-channel experience, customer support and improving data processing capabilities. Companies could look into these considerations to build successful EmFi offerings and bridge the customer trust gap.



¹⁷ <https://www.pwc.in/publications/ceo-survey/ceo-survey-2023.html>

4.2. Regulatory considerations for EmFi in the current FS landscape

Figure 4: Summary of EmFi regulatory practices across multiple geographies



The growth and evolution of EmFi in recent years has made it pertinent to have certain regulatory considerations to ensure the protection of consumer data, financial stability and provide a level playing field for all stakeholder concerned. Regulators face unique challenges with the growth of innovations in the EmFi space. From India's standpoint, it is reassuring that the RBI, in its Payments Vision 2025 document¹⁸ has affirmed exploring guidelines on payments involving BNPL services. Keeping the above in mind, here are some key regulatory considerations for EmFi:

AA access: In the Indian context, only REs from four financial sector regulators (RBI, SEBI, IRDAI, PFRDA) are allowed to access data from the AA network. This data is leveraged largely to make credit easily and formally accessible to the customers. Since EmFi players – such as e-commerce entities, who are focused on providing customer-first services – have a large market to cater to, these customers' need for credit products, access to the data from the AA network (with strict customer consent) may prove to be a welcome step in ensuring:

- better analysis of a customer's credit history (with access to consented customer data) before tailored EmFi products are offered to them
- smooth and increased disbursement of credit to end customers
- seamless customer journey.

Regulators across the globe could also consider providing such data access through centralised databases to EmFi players, offering credit-like products.

18 <https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/PAYMENTSVISION2025844D11300C884DC4ACB8E56B7348F4D4.PDF>

Data protection and privacy: As EmFi requires exchange of sensitive financial data between multiple stakeholders, stringent privacy and data protection regulations are necessary. The DPDPB in India provides data owners with the following rights/data principles:

- Right to provide and withdraw consent on data usage
- Right to access information about personal data
- Right to correction of personal data
- Right to erasure
- Right of grievance redressal

Thus, regulators worldwide could impose similar measures to protect customer data, prevent data breaches and ensure that customer provides their consent for sharing financial information.

Fraud and security: To prevent fraud, money laundering and cyberattacks in EmFi, regulators may consider establishing relevant measures. One such consideration could be implementing real-time monitoring and reporting mechanisms that can help in identifying and preventing illegal activities.

Risk management: Lack of proper risk-management capabilities may result in compromised consumer trust, inoperable products, data leaks and breaches, and fraudulent activities. With increasing number of non-FS players entering the FS space through EmFi, regulators may consider creating frameworks to evaluate unique risks associated with EmFi and manage those risks accordingly.

Fair competition and access to market: In the EmFi market, regulators could ensure fair competition and prevent anti-competitive practices. This includes considering open access to APIs and fostering an environment where all participants have an equitable chance of success under relevant regulatory oversight.

Interoperability and standards: It is crucial to consider establishing interoperability and common regulatory standards across multiple industries to enable seamless integration of FS into existing non-FS customer journeys. To ensure a smooth and secure CX, regulators can play a role in fostering partnerships and establishing sector-wide standards.

Cross-border regulations: EmFi can go beyond international boundaries, making cross-border regulatory collaboration and cooperation essential. The DPDPB allows for cross-border transfer of data if the geography to which the data is being transferred is unrestricted by the Government of India. To manage international transactions and data flows, regulators can work together across jurisdictions and harmonise regulatory frameworks to reduce overlap and promote innovation.

Consumer education and grievance redressal: With the advent of technology-backed FS products, consumer protection has remained a primary goal of the regulators across geographies. To this end, in addition to considering collaboration with industry participants to educate consumers about EmFi offerings (including its benefits, risks and rights), regulators must ensure that EmFi players establish robust customer grievance redressal mechanisms in place. Consumers who are well informed are better able to make wise financial decisions to protect themselves from potential fraud. Parallely, since EmFi involves multiple stakeholders coming together to provide multiple services under one umbrella, a robust grievance redressal framework can help customers have a clear understanding of the escalation matrix in case of any issues during the course of a transaction.

Innovation and sandboxes: Regulators can consider creating sandboxes to promote innovations in EmFi. These regulated environments enable start-ups and FinTech companies to evaluate novel ideas and products in a constrained setting while receiving regulatory oversight and assistance.

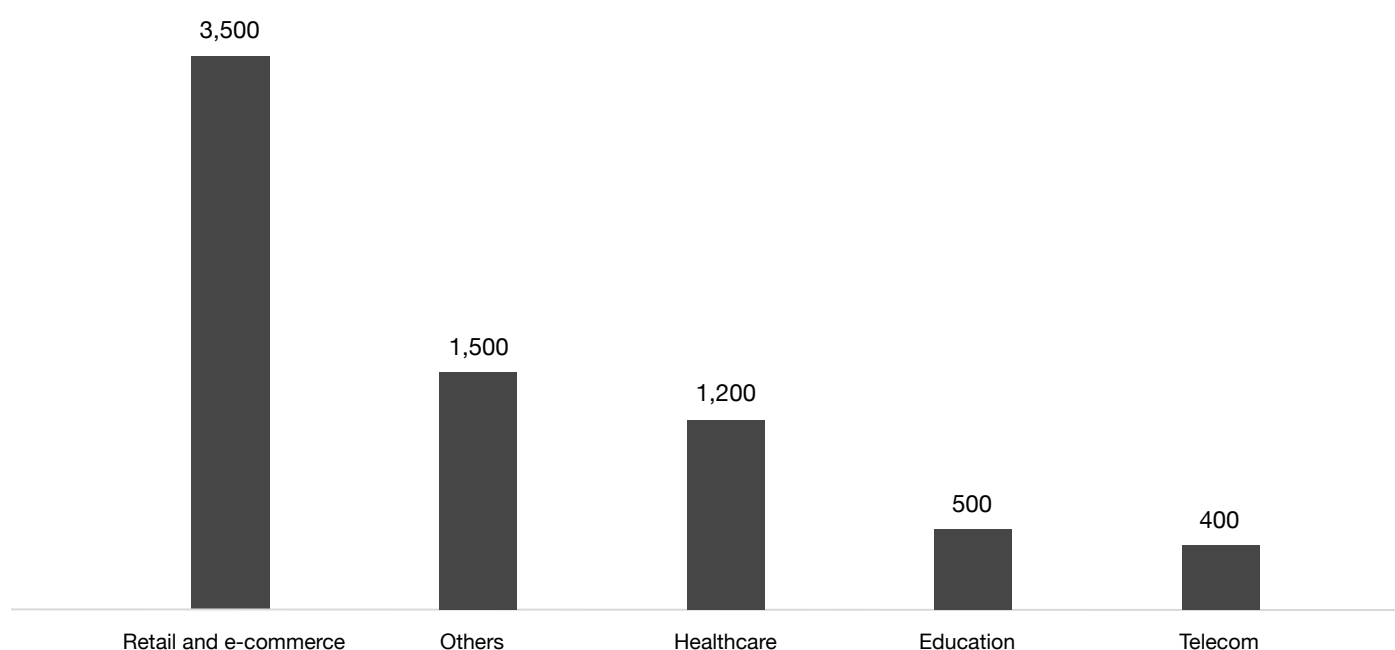
The integration of FS in non-FS customer journeys and transactions has enormous potential, but also necessitates robust oversight from regulatory entities. To strike the right balance between inculcating innovation, ensuring customer protection, and preserving the stability and integrity of the financial system, an adaptive, forward-thinking approach to regulating EmFi is required.

Moving towards a resilient, sustainable and inclusive EmFi ecosystem

Embedded payments, embedded cards and embedded lending have demonstrated a diverse range of use cases across multiple industries, consumers and platforms. However, there exist unexplored opportunities in embedded insurance and embedded WealthTech. Projections suggest that embedded insurance could potentially constitute 16% of global insurance distribution in terms of gross written premiums by 2032.¹⁹ Similarly, embedded wealth solutions are estimated to generate USD 100 billion in revenue in the form of fees globally.²⁰

Figure 5: EmFi opportunities across sectors by the end of 2030

EmFi opportunities by 2030 (in USD billion)



Source: Fintech News Switzerland

By 2030, retail and e-commerce are predicted to dominate 49%²¹ of the EmFi market, followed by sectors like healthcare, education, telecom, real estate, hospitality, travel, media and entertainment, energy, and pharmaceuticals. Within retail and e-commerce, the key opportunities lie in providing embedded product insurance, consumer financing at the point of sale, working capital solutions and supply chain financing.²²


Case in point: A Bengaluru-based FinTech offers lending-as-a-service offerings for SMEs. The platform works with B2B marketplaces to help merchant partners with embedded working capital solutions. It has empowered over 50,000 retailers and SMEs across FMCG, electronics and general merchandise.

19 <https://static1.squarespace.com/static/610ab08e1f9a3b01a739c67b/t/63775c9a1ad4e54f7c78f66e/1668766881783/Embedded+Insurance+2.0+-+Incumbent+Strategy+-+International+Peer+Group+Report+-+June+2022.pdf>

20 <https://www.additiv.com/insights/embedded-wealth-download/>

21 <https://fintechnews.ch/fintech/embedded-finance-total-market-value-could-reach-us7-2t-by-2030/52074/>

22 <https://www.rupifi.com/>

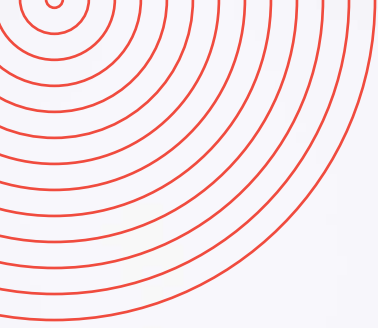


EmFi can bridge the gap for underserved populations, benefiting SMEs, migrants, farmers and gig workers. Microfinance institutions can extend lending and banking services to rural communities and low-income households through EmFi. These microfinance institutions can partner with multiple players like agri supply chain platforms (to provide loans for input purchases, crop insurance and fair pricing mechanisms), telecom and mobile money operators (to offer mobile-based FS to individuals in remote areas), and energy and utilities platforms (to offer financing solutions for clean energy products like solar home systems) significantly enhancing financial inclusion and access for underserved populations. EmFi can help in reducing the credit gap of SMEs in India which is estimated to be around USD 530²³ billion as of 2023.

To tap into EmFi's potential, technical and operational capabilities, standardisation of APIs for open banking and BaaS, effective partnerships among ecosystem players, defining composite value propositions and being compliant with regulations are crucial.

EmFi has begun to transform the FS landscape by seamlessly integrating financial offerings into non-FS platforms and has the potential to transform multitudes of industries. Additionally, further enablement through investment in robust technological infrastructure, collaboration among ecosystem players and standardised regulatory frameworks can catalyse the growth of EmFi propositions. As the FS market continues to evolve, businesses that embrace EmFi are poised to thrive in the digital economy, delivering greater value to customers and staying at the forefront of financial innovation.

²³ <https://www.financialexpress.com/industry/sme/msme-fin-530-billion-massive-credit-gap-in-indias-msme-sector-out-of-819-billion-addressable-demand-report/3031372/>





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Contact us



Vivek Belgavi
Partner, FinTech, and Alliances and
Ecosystems Leader
vivek.belgavi@pwc.com



Vivek Patil
Partner, Financial Services
Advisory
vivek.v.patil@pwc.com



Avneesh Singh Narang
Director, FinTech and Alliances and
Ecosystems
avneesh.narang@pwc.com



Raghav Aggarwal
Associate Director, FinTech and
Innovation Strategy
raghav.aggarwal@pwc.com

Authors

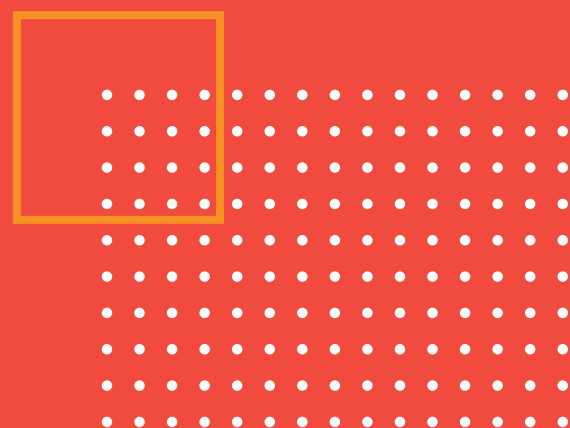
Avneesh Narang	Shirin Patil
Raghav Aggarwal	Rudra Pratap Tomar
Vignesh Venkataraman	Arham Jain

Editorial support

Rashi Gupta
Dion D'Souza

Design

Shipra Gupta





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