CELENT

HDFC BANK: CONNECTING LEGACY AND INNOVATION WITH PAYZAPP

Winner of the 2024 Celent Model Bank Award for Payments Innovation

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CASE STUDY AT A GLANCE

FINANCIAL INSTITUTION

INITIATIVE Connecting Legacy and Innovation with PayZapp

SYNOPSIS HDFC Bank redesigned and relaunched PayZapp, its mobile payments app, to challenge incumbent nonbank payment leaders, which command ~85% of the 11.5 billion a month UPI transaction volume.

TIMELINES
- **September 2021:** Project launch
- **March 2023:** Go live

KEY BENEFITS **To clients:**
- A range of innovative features, enhanced security.
- A seamless, intuitive user experience that enables the completion of common payments tasks faster.
- Adopted by over 5.6 million customers since launch without a major marketing push; three million of those signed up in the first five months.

To HDFC Bank:
- Data and customer ownership
- Digital platform for growth
- Pivotal project for the bank's digital transformation

KEY VENDORS AND PARTNERS

CELENT PERSPECTIVE

Taking on tech giants at their own game

In a payments market dominated by a few large players, it would be excusable to sound a defeatist note and focus elsewhere. However, HDFC Bank was not prepared to sit back and watch its customers leave for competitors. Instead, it successfully took them head-on by launching a bank version of an innovative payments superapp with powerful features and a seamless and intuitive user experience.

A platform for growth

While the starting point is payments, HDFC views PayZapp as much more than a payments app for its own customers. Although the app indeed offers a more digitally native user experience for existing bank customers, it is already attracting new customers as well—about 35% of PayZapp users are new to the bank. Most importantly, PayZapp is serving as a platform for the bank to integrate offerings beyond payments and start cross-selling other products, such as loans and savings accounts, via digital-native channels.

A cornerstone of the bank's digital transformation

HDFC Bank is undergoing technology transformation, building a digital bank of the future, and PayZapp is an integral part of that transformation. In partnership with Zeta, the bank developed a successful operating model for agile product launches and demonstrated how new cloud-based SaaS banking solutions can integrate effectively with legacy on-premises systems.

For all those reasons, HDFC Bank is a deserving winner of Celent's Model Bank 2024 award for **Payments Innovation**.

DETAILED DESCRIPTION

Introduction

HDFC Bank is the largest Indian private bank by assets and the world's fifth-largest bank by market capitalisation as of August 2023. It was among the first to receive approval from the Reserve Bank of India (RBI) to set up a private sector bank in 1994; now, due to its size, it has been categorized as a Domestic Systemically Important Bank (D-SIB). As of December 2023, the bank's distribution network had reached 8,086 branches and 20,688 ATMs/cash recycler machines across 3,836 towns in India.

HDFC Bank's retail business is targeted at individuals; salaried professionals; micro and small businesses, such as kirana stores; self-help groups (SHGs); and nonresident Indians (NRIs). The bank caters to this segment by customising its products and services. It enjoys a strong position in the auto and personal loan businesses and a leadership position in the payments business. The bank also offers wealth management services to high-net-worth individuals.

Post the merger with HDFC Limited, HDFC Bank has secured a strong home finance brand. HDFC Limited was a pioneer in the housing loan finance market in India and over the years built a strong brand equity. The bank also has a commercial business, serving large and multinational corporations as well as government institutions. For these customers, the bank provides a wide range of commercial and transactional banking services, including working capital finance, trade services, transactional services, and cash management.

Table 1: HDFC Bank Snapshot

Year Founded	1994
Assets (2023)	₹25.3 lakh crore (US$320 billion)
Revenue (2023)	₹2.05 lakh crore (US$26 billion)
Headquarters	Mumbai, India
Number of employees (1 July 2023)	177,000
Relevant Technologies and Partners	Zeta

Source: HDFC Bank

Opportunity

HDFC Bank launched the first version of PayZapp in 2015 as a simple digital wallet designed to support merchant and bill payments. However, the payments landscape in India has changed dramatically since then. Consumer payments in India are now dominated by three apps from nonbank players which drive ~85% of 11.5 billion monthly UPI (Unified Payments Interface) transactions, with Google Pay, the market leader, alone commanding 50% share. UPI is India's real time payment rail, which has resulted in financial inclusion for hundreds of

millions of Indians and revolutionised payments in the country since its launch in 2016.

Leveraging a strong 'high convenience with zero fees' product proposition, brand recall, and cash rewards, these nonbanks have changed mass user behaviour and today cater to 300+ million consumers and 500+ million merchants. This exponential growth has been fuelled by multiple rounds of funding from marquee global investors. Given the early mover advantage, technological prowess, and financial backing, these nonbank apps are indeed the 'incumbents' in the Indian retail payments market.

Indian banks today see more than 95% of their users' UPI transactions originating via these nonbank apps. Having gained a foothold in real time payments, these apps are now attempting to further disintermediate banks by offering other financial products. While some leading banks do offer user-facing payment apps, their adoption is very low. This is primarily due to a below par user experience and features when compared to these nonbanks' apps. Moreover, getting users to switch from their primary payment app to a different one is an uphill battle, as cash rewards are unsustainable and there are limited avenues to building a truly differentiated product in the commoditised payments space.

HDFC is a leader in India in terms of physical distribution; however, it knew that it needed to have a strong digital distribution capability as well. The bank saw the opportunity to revamp its digital and payments proposition by rebuilding PayZapp from the ground up. The objective was not only to better serve its existing customers in payments, but also to reach new customers—engage them in payments first, then take the relationship forward by cross-selling products and services. The executive sponsor for this initiative was Mr. Parag Rao, Group Head, Cards and Payments.

Solution: PayZapp v2.0

PayZapp v2.0 is a modernised payments app, built on a modern, cloud-native stack. It aims to provide customers with a seamless and intuitive user experience while ensuring enhanced security features. According to HDFC, the user experience is market-leading and is the only such offering by a bank in the Indian market.

Figure 1: PayZapp Features: Set Up Account, Send Money, Pay Bills
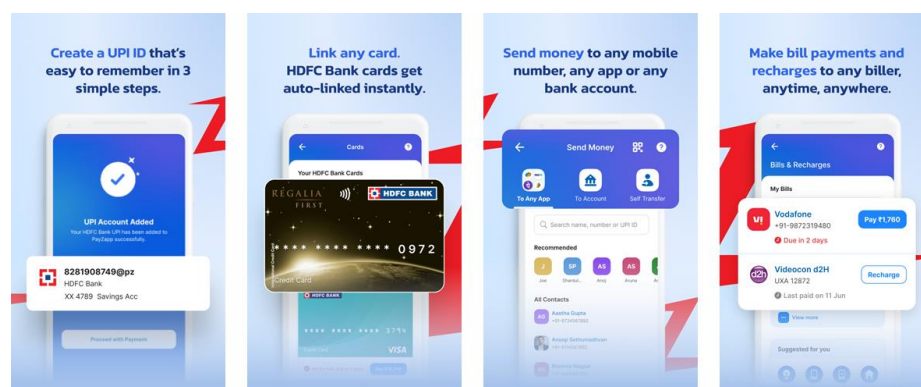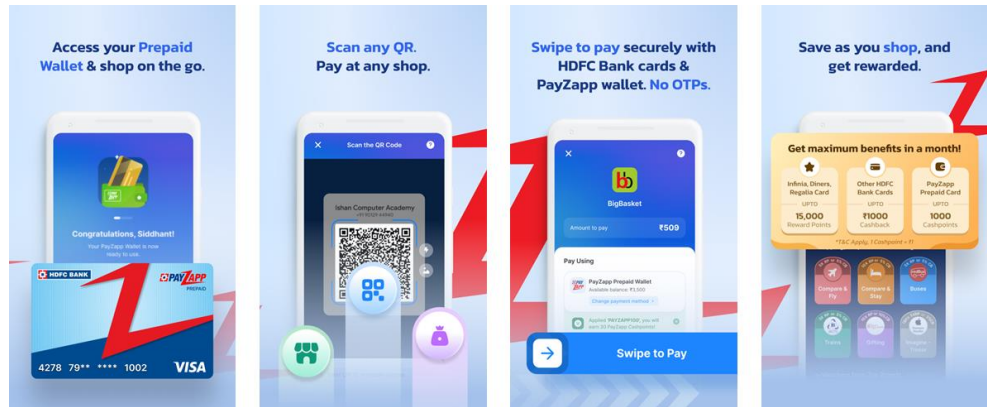

Source: HDFC Bank

PayZapp's key features include:

- **Instant linking** of HDFC Bank checking, savings, debit, and credit card accounts.
    - When the new customer onboards with PayZapp, they can simply open a prepaid wallet account, fund it, and start using it. However, because of UPI's popularity, most customers choose to link to an HDFC or other bank account. Finally, the customer can link any of their payment cards. Then, whenever a payment request is initiated, the customer can choose one of these instruments to make the payment. (**Error! Reference source not found.**)
    - While many Indian banks have mobile banking apps, they tend to mirror the experience of banking in branches, i.e., they enable and support basic transactions but do not offer true digital-first experiences. The vision for PayZapp is to become a one-stop shop for HDFC's larger retail customer base to manage almost every single relationship with the bank.
- **Access to real time payments (UPI)**, offering a competitive alternative to fintech apps.
- **Merchant integrations:** HDFC Bank is the largest merchant acquiring bank in India, with a 48% market share. It also offers SmartBuy, an integrated shopping platform with 200+ discounted brand vouchers and a credit card rewards 'earn and burn' portal. PayZapp facilitates a seamless checkout and payments experience for all these merchant websites and acts as a mobile app for SmartBuy.
    - The **Pay with PayZapp** option is enabled for thousands of online merchants, including marquee e-commerce players across food delivery, fashion, travel, and shopping categories. It triggers an alert on the client's PayZapp app, asking them to log in to verify and approve the payment.
- **Swipe 2 Pay:** With this innovative feature, customers can authenticate all online transactions using PayZapp prepaid or any HDFC bank credit or debit card with a single swipe on PayZapp—no one-time passcodes (OTPs) required.
- **Tap and Pay:** This feature for the PayZapp Visa prepaid card was launched with great fanfare at a recent Global Fintech Fest in Mumbai. PayZapp now allows tap and pay, not just for PayZapp prepaid, but for all HDFC-linked credit and debit cards. Tap and Pay is already live for Visa and is expected to be live for Mastercard and Discover soon, making PayZapp the only bank app in India to offer this capability for the three leading card networks.
- **QR Codes:** Customers can also pay by scanning a QR code, either at the physical merchant or online.
- **Instant issuance** of a variety of credit instruments.
- **RuPay Credit Cards on UPI:** PayZapp is one of the first apps to be enabled with RuPay credit cards for UPI payments.
- **Non-payment features:** Seamless onboarding, profile management, limit management, and cross-sell integrations. Also, rich transaction statements with features such as notes and autocategorisation of spending.

- **Trust:** PayZapp carries HDFC Bank's seal of security, which matters a lot in the Indian market.

Figure 2: PayZapp Features: Pay for Shopping

Source: HDFC Bank

Overall, PayZapp allows for eight types of payment sources, eight types of payment destinations/merchants, and 13 payment methods (see Figure 3). Of course, not every possible permutation is a valid combination, so in total, PayZapp supports 23 payment combinations. To help achieve this flexibility, the bank had to build its own UPI switch from the ground up.

Figure 3: PayZapp: Universal Payments
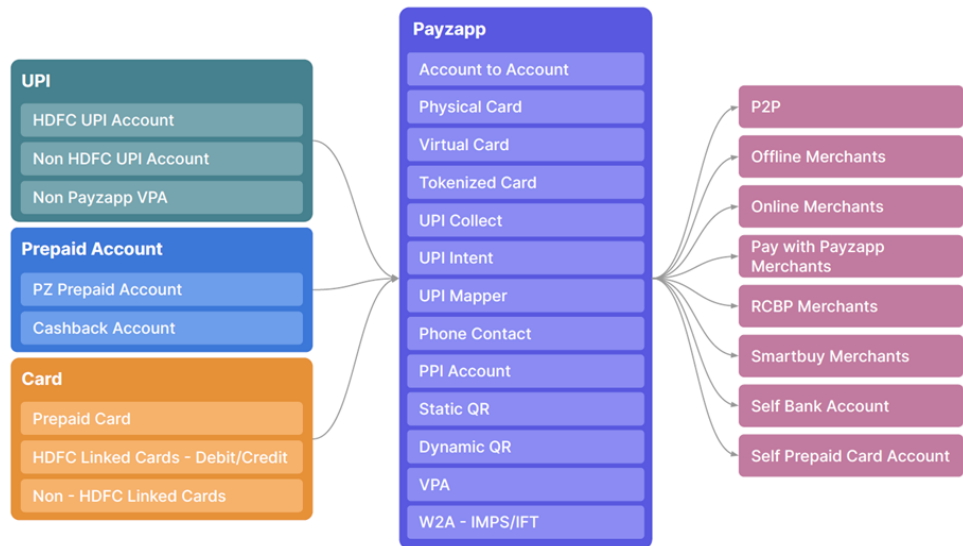
Source: HDFC Bank

Implementation

Technology

Even at the simplest level of abstraction, the PayZapp architecture required to achieve universal payments includes 20+ large system entities with multiple subsystems, over 1,300 microservices, and 40+ integrations. All of these systems and microservices have been brought together using multiple integration mechanisms, such as REST APIs, webhooks, file exchanges, message queue endpoints, and visitable streams and jobs.

The foundation for this large-scale initiative was laid by establishing a true digital foundry by bringing together leaders and experts in product management, technical architecture, solutioning, and data engineering.

To help navigate the technical complexity, the bank partnered with Zeta, a provider of a cloud-native next-gen banking technology platform called Tachyon. While the new architecture leveraged several HDFC legacy systems, the bank and Zeta both had to develop many new systems and components (Figure 4). SaaS platform implementation, end-to-end mobile app product management, analytics, and engineering are managed by the bank's technology partner, with governance and strong participation from the bank's product and business groups. This amalgamation of a modern, cloud-native, microservices-based prepaid processing SaaS core and other SaaS components with HDFC's legacy core systems was one of the project's innovation highlights.

Figure 4: Bridging Legacy and Innovation with PayZapp
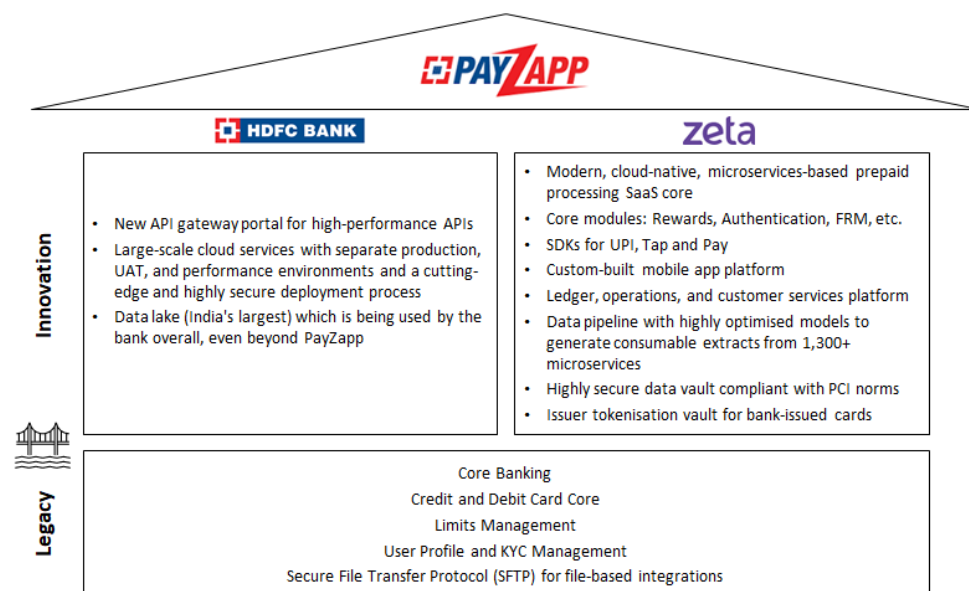
Sources: Celent, HDFC Bank

In addition to the inherent complexity of the core system, the setup of cloud infrastructure further added to the challenge. All of the 1,300+ microservices from the technology partner and their integrations with HDFC and third party systems had to be deployed and productionised in a cloud environment.

The PayZapp services have been set up in an HDFC-owned cloud infrastructure, where Zeta as a SaaS provider is using HDFC as an infrastructure-as-a-service (IaaS) provider. HDFC in turn procures the cloud infrastructure from AWS. HDFC provisioned a subaccount for Zeta with all of the peripheral controls, such as identity and access management, owned by HDFC. The technology partner in turn owns all the deployments, operations, and management.

The definition and setup of network architecture and processes for data management, deployments, and incident management were also extremely intricate.

People and Process

HDFC, along with Zeta, its technology partner, deployed a team of over 500 people, comprising various engineering functions, product management, and business and program managers, all of whom came together to launch PayZapp and build a truly industry-leading product. The core team of 30 members was a joint team of leaders and key personnel from all of the functions in Figure 5.

Figure 5: Adequate Resourcing of PayZapp: One of the Key Success Factors
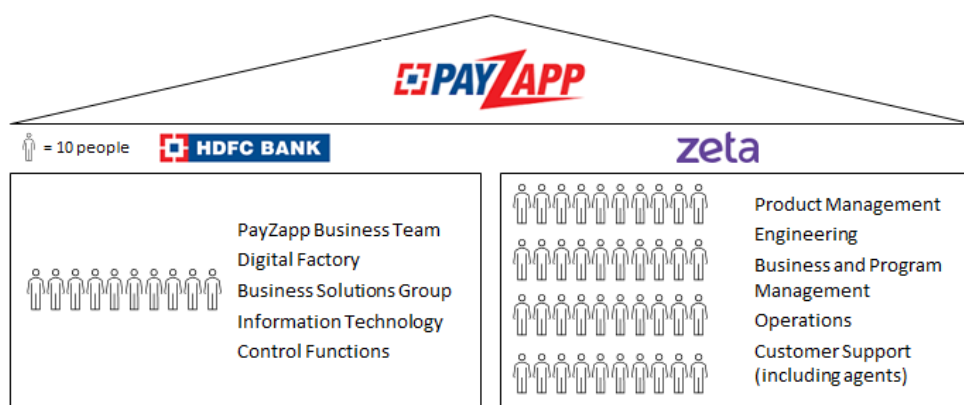
Sources: Celent, HDFC Bank

HDFC Bank is one of the three systemically important banks in India and has a duty to its customers, its shareholders, and the regulator to follow all due processes and be at the forefront of regulatory compliance. Stringent governance mechanisms and fully compliant access controls were a Day 0 requirement. The project team had a mandate to comply against various information security, compliance, and regulatory checklists totalling more than 1,000 points, with each point representing an RBI or HDFC internal controls requirement.

Extensive submissions were made against each point, and they were reviewed by various control and quality functions of the bank. The effort was managed by the central Programme Management Office (PMO), along with dedicated pods for each control area. These pods consisted of functional owners, programme managers, and subject matter experts (SMEs). The teams from the tech partner helped create detailed artefacts against each requirement. These artefacts included in-depth write-ups, schematic technical diagrams, testing evidence, and system logs for each of the 1,000+ points. In addition to artefact submissions, detailed walkthrough sessions and question and answer (Q&A) sessions were conducted with various bank functions.

Also, multiple audits were conducted by third parties—the big four professional services firms—for specific features, such as UPI, Tap and Pay, and payment gateway integrations. Despite being a first-of-its-kind large-scale cloud infrastructure setup for the bank and the complexities involved, PayZapp was compliant with all existing regulatory and bank guidelines right from Day 0 of launch.

The successful execution of PayZapp as a project required creating and maintaining a balance between the need to be compliant and the need for product innovation at a fast pace by allowing for flexibility. HDFC Bank was able to achieve this balance by working in an agile manner with its technology partner, making this project truly transformative. This was possible on the back of a well-defined and rigorous process, which is being further refined as PayZapp is now maturing from the earlier 'build' phase into the 'run' phase. Each phase in Figure 6 is a waterfall step; however, within each step, the teams work in an agile manner.

Figure 6: The Development Process Combining Waterfall and Agile Methodologies
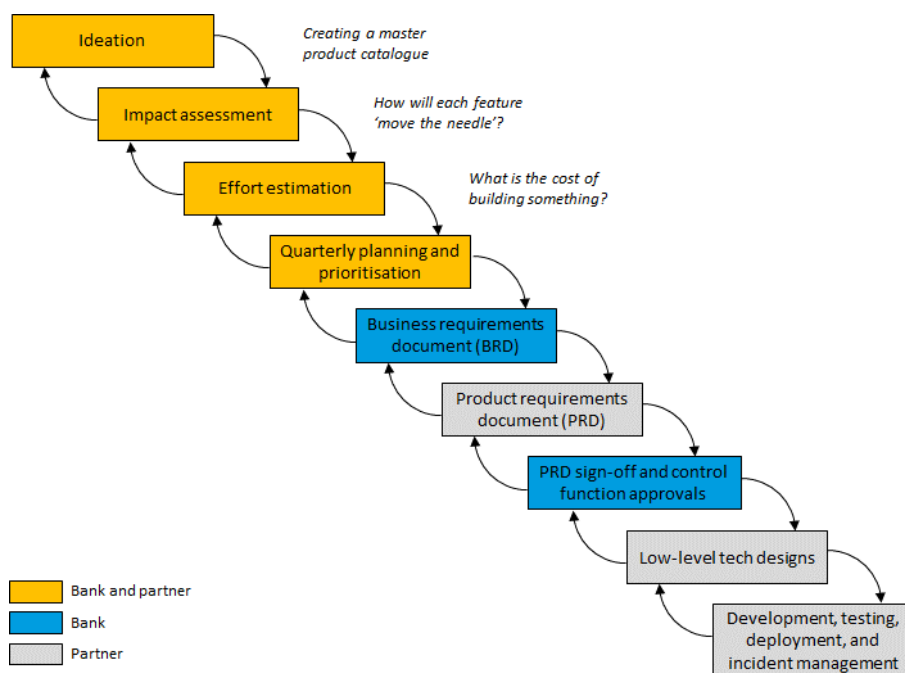
Sources: Celent, HDFC Bank

Timelines

The bank began the strategic discussions in 2020 and kicked off the project in September 2021. After several interim milestones, PayZapp v2.0 was successfully launched in March 2023 (Figure 7). Incidentally, the whole project was executed remotely because of Covid lockdowns—the team working on the project did not physically meet until the solution went live!

Figure 7: PayZapp Project Key Milestones

September 2021	July 2022	October 2022	December 2022	March 2023
Project launch	CUG* 1 launch (50k users) *Closed User Group	First reward amount transaction	CUG 2 launch (150k users)	Go live!
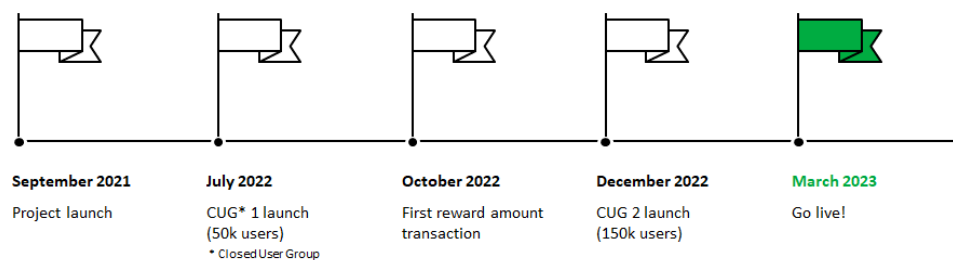
Sources: Celent, HDFC Bank

Results, Lessons Learned, and Future Plans

Benefits to Customers and Bank

In the months since its launch in March 2023 and with limited marketing push, PayZapp has been adopted by over 5.6 million customers. With over 1.3 million users making 16.7 million monthly transactions and spending US$377 million, PayZapp v2.0 has already broken into the top 20 UPI apps by volume, surpassing the business volumes of the previous PayZapp version. It has a 4.7+ Android/iOS rating and is already the number two payments app in the country.

Customers benefit not only from all the innovative functionality and enhanced security features, but also from an improved user experience that is seamless and intuitive and enables the completion of common payment tasks faster.

The bank also benefits. PayZapp helps HDFC Bank in **three** major ways:

1. **Data and customer ownership.** PayZapp is HDFC Bank's answer to incumbent fintechs as well as a first-of-its-kind play by any bank in India. It helps the bank to:

   — **Reduce the risk of disintermediation**, as the bank owns the customer relationship directly by offering a differentiated value proposition.

   — **Drive insights through data:** Usage data derived from PayZapp is being merged with the bank's existing data lake to create a single unified view of all customers. This allows the bank to launch segmented offerings and new product constructs, among various other benefits.

   — **Personalise customer experience:** Deep analytics combined with larger bank data enable the bank to deliver hyper-personalised experiences and 'serve the customer right'.

2. **Digital platform for growth.** PayZapp is acting as a customer servicing and user acquisition platform and is helping the bank cross-sell traditional banking products on both the assets and liabilities sides.

   — **Payments app for India:** With a product offering which caters to a wide range of customer segments—prime, mass affluent, and mass market— HDFC Bank views PayZapp as the 'payments app for India'. PayZapp enables the bank to offer instantly issued digital cards with rich features and capabilities via their own app, which not only serves existing customers, but drives acquisition of new customers.

   — **Beyond payments:** PayZapp is serving as a platform for the bank to integrate offerings beyond payments and sell other products via digital-native channels. The bank is already experimenting with cross-selling products, such as credit cards, personal loans, fixed deposits, and savings accounts, with more native cross-sell journeys being envisaged.

   — **Speed to market:** PayZapp is powered by an underlying next-gen banking stack which allows for rapid product innovation, enabling the bank to experiment with building seamless, native experiences for both assets and liabilities products. For example, PayZapp was the only bank app to launch a credit line on UPI at the Global Fintech Fest in Mumbai in 2023.

   — **Cost savings:** PayZapp will help reduce the costs of user acquisition as the bank expects its reliance on third party channels to decrease over time. PayZapp is intended to achieve a flywheel motion, where the bank acquires more users, and that helps to sell more products, and so on.

3. **Pivotal project for HDFC Bank's digital transformation.** HDFC Bank is undergoing technology transformation which focuses on building a digital bank of the future. One of the pillars to achieving this goal is to provide improved platforms and customer experiences, and PayZapp 2.0 is an integral part of that. The project developed a successful operating model for agile product launches and demonstrated how new cloud-based SaaS banking solutions can work effectively with legacy on-prem systems.

Lessons Learned and Key Factors for Success

HDFC Bank was able to achieve outsized outcomes in a short period after launch. According to the bank, the following were the key factors that led to success:

- **Decisive leadership.** HDFC Bank's leadership ensured that people were empowered to quickly take decisions with respect to the rollout of features. This greatly shortened the go-to-market (GTM) cycle, ensuring the bank was able to quickly respond to market changes and not get bogged down by endless approval chains.

- **Choice of technology.** HDFC Bank's choice of technology allowed it to be nimble in its GTM strategy. The microservices-based approach allowed the bank to push out new features, optimise marketing efforts, and fix any issues without cumbersome release cycles. In addition, the scalable nature of the cloud-native technology allowed the bank to elastically respond to increases in demand.

- **'One team' model.** The bank piloted a new way of working: bank business, product, solutioning, IT, and information security teams worked together as an integrated unit with counterparts from the technology partner. This allowed far more agility than the traditional 'bank–vendor' relationship.

- **Complementary organisational cultures.** By working with Zeta, HDFC Bank, a custodian of market risk as a systemically important financial institution, was able to acquire the agility of a startup. In turn, Zeta also matured greatly by partnering with a major regulated financial services entity.

Implementing 1,300+ microservices with 40+ integrations and setting up a cloud environment in parallel is a highly complex undertaking. According to the bank,

its technology partner's expertise proved to be highly valuable in taking this product live. Specifically, the bank identified two major lessons:

1. **Foresight precedes mitigation:** Working with multiple systems and coordinating with multiple third parties means that inherent risks are involved. A robust technology design as well as best-in-class development practices and information security policies are key to minimise project delays. Zeta religiously followed a 'Shift-Left' approach,[1] which helped to launch such a large and complex project as quickly as possible.

2. **Balancing functional with nonfunctional requirements:** It is easy to focus on features which can be seen and felt. However, for a heavily regulated entity like HDFC, which prides itself on being fully compliant, getting the fundamentals of security and compliance right is supremely important. The technology partner was able to provide full support in this regard and helped achieve all nonfunctional requirements without a single exception.

PayZapp is a critical pillar of HDFC Bank's overall digital transformation journey. With PayZapp established as a serious player in the mobile payments space, HDFC Bank has a slew of asset and liability product launches lined up which will help propel PayZapp to a one-stop shop for all banking needs. HDFC is a deserving winner of the Celent Model Bank 2024 award for **Payments Innovation**.

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[1] Identifying and eliminating bugs as early as possible in the development cycle via rigorous testing

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