

The sandbox sentinel: Echoes of innovation

August 2024



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Foreword

It is my pleasure to bring to you the latest edition of our newsletter.

In this edition, we delve into the workings of the innovative hardware known as the ‘soundbox’ for accepting UPI and other modes of payments, by providing a comprehensive understanding of the device, and listing the benefits and challenges associated with the adoption of the same. We have also conducted a survey of merchants, understood their pain points and discussed ways of tackling the issues faced by them with respect to soundboxes.

I hope you find this newsletter to be a useful and insightful read.

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Table of contents

01

Introduction:
Soundbox

02

How are soundboxes revolutionising
payments in India?

03

Survey
outcomes

04

Potential use cases
and innovations

05

Challenges in
adoption

06

Conclusion

In the rapidly evolving landscape of digital payments, innovation continues to transform how transactions are conducted and authenticated. One such groundbreaking development is the quick response (QR) soundbox which is designed to enhance payment experience for merchants and consumers alike.

The soundbox is a compact, audio-enabled portable device integrated into a payment system that confirms payment transactions through audible alerts. It is typically used by merchants to receive a real-time audible confirmation of successful transactions. This immediate auditory feedback helps merchants quickly and easily verify whether transaction has been completed and payment received without having to check their mobile device applications for payment confirmation.

This not only simplifies the payment process but also adds a layer of security and transparency in the transaction process.

This is a unique innovation from India to the world which hasn't been adopted at scale globally. India is amongst the first to develop, implement and innovate this hardware.

Salient features of the soundbox

1. Instant confirmation and merchant satisfaction:
The primary advantage of a soundbox is its ability to provide instant confirmation of the transaction. As soon as the payment is made, the soundbox plays an audio, ensuring both the merchant and

customer are immediately made aware of the transaction's success.

2. Increased security: Soundboxes are designed to add an extra layer of security to verify payments in real time. This reduces errors associated with traditional methods of payments where the confirmation might be completely missed or delayed, therefore effectively reducing the number of disputes.
3. Portability: Soundboxes are very versatile and portable devices, which makes them suitable for various business environments – ranging from brick-and-mortar stores to market stalls and mobile vendors. The ease of use, set up and integration with existing payment systems causes minimal disruption.
4. Cost-effective solution: Compared to other systems such as the point of sale (PoS) devices, soundboxes are generally more affordable and suitable – especially for small- to medium-sized businesses looking to improve their payment processing capabilities without significant investment.
5. Value-added services (VAS): Soundbox providers give value added services (VAS) like offering loans to merchants against their transaction base.
6. Fraud reduction: With real-time audio validation of the payment, erstwhile fraud practices like pasting a dummy or a different QR code by fraudsters to receive money in their bank account have become obsolete now.

Benefits to merchants

Soundboxes add value to merchants in following ways:

- provide the convenience of auditory feedback
- improve credibility
- foster strong merchant–customer relationship
- streamline payment verification
- facilitate ease of integration with existing systems
- cater to diverse range of customers such as ones with visual impairments or language barriers
- eliminate the need for manual checks and cash handling, allowing employees to focus on core business operations and requirements – i.e. serve the customers and manage inventory
- provide detailed transaction data, helping merchants analyse total sales, identify sales patterns, and plan for future growth
- available in regional languages (currently 11 languages)
- audio payment confirmations for up to 3,000 transactions in a single charge
- single-click replay for previous transactional message
- dedicated terminal management system (TMS) to configure (activate/deactivate) the soundbox.

Benefits to acquirers

Soundboxes offer numerous value propositions for acquirers – namely, banks and FinTechs. By collecting valuable transaction data, soundboxes enable FinTechs to gain insights into merchants and customer behaviour, allowing them to offer personalised financial products and services.

Collaborations and partnerships between banks and FinTechs result in leveraging FinTech innovation and banking experience to expand market reach and serve a wider network of merchants and customers. These partnerships can enhance revenue streams through transaction fees and subscription services, while also offering cross-sell opportunities and facilitating opening of new accounts by merchants of all scales (small, medium etc.) nationwide.



02 How are soundboxes revolutionising payments in India?



India is shaped and characterised by the dynamic shift in the digital payments ecosystem, wherein the soundbox is a transformative force from a technology standpoint. The soundbox is being explored in a multi-faceted mode by catalysing the shift in the payments ecosystem by transcending traditional boundaries and finding new use cases across various verticals and demographic spectrums across India. There are multiple innovations and upgradations that have already been inculcated in a soundbox such as a longer battery life, ensuring better connectivity with 4G and credit cards for UPI payments.

Key developments in soundboxes

Soundbox ads: A notable advancement in soundbox technology is the feature of soundbox ads. Leading FinTechs and payment service providers (PSPs) are conducting audio collaborations with fast moving consumer goods (FMCG) and consumer service brands, featuring 4-5 seconds of audio spots that are played after a transaction. Advertisements played on the soundbox will reach in-store audiences, thus promoting targeted opportunities based on state, language and pin code.

To encourage merchants to participate, incentives such as discounted device rentals are provided. Successful implementation of this development will open revenue-sharing opportunities between merchants and advertisers, highlighting the evolving use of soundbox devices beyond payments.¹

Compact soundboxes with playback features:

Another soundbox innovation includes a pocket-size compact soundbox with playback capabilities to strengthen its payment business and retain merchants.²

Soundbox enabled with near-field communication (NFC) and card payments:

A leading PSP has introduced a new soundbox capable of processing both mobile and card payments across all the largest card networks, including PIN entry for transactions that require a two-factor authentication. This development will enable wider acceptance and usage of soundboxes. Another provider has introduced NFC-based contactless payments which will enable both UPI and tap-and-pay card payments at shops.³

Soundboxes with dynamic QRs: A leading unicorn introduced the dynamic soundbox, transforming retail payments by addressing traditional inefficiencies. It streamlines UPI payments by integrating seamlessly with existing systems or POS machines, providing audio and visual confirmation. By generating dynamic QR codes directly on the device, it accelerates the billing process, making it an essential tool for businesses aiming to optimise retail payment experiences.



Commercial model

In the realm of digital payments in India, the soundbox technology is reshaping customer experience by leveraging a variety of subscription models tailored to meet diverse needs. These models include fixed price-based and recurring-fee-based models which are used in combination with discount modes and lucrative cashbacks, which are employed as strategic initiatives by the soundbox provider.

1 <https://economictimes.indiatimes.com/tech/technology/phonepe-paytm-eye-soundboxes-for-audio-advertisements/articleshow/108981132.cms?from=mdr>

2 <https://economictimes.indiatimes.com/tech/technology/paytm-continues-to-bet-big-on-soundbox-launches-new-use-cases/articleshow/102285182.cms?from=mdr>

3 <https://www.financialexpress.com/business/industry-soundbox-devices-face-adoption-challenge-3247693/>

The most common commercial models in soundbox are as follows:

Monthly fixed price: A predetermined amount is charged by the soundbox providers to the merchants periodically such as monthly or annually, regardless of usage and the volume of transactions processed.

Transaction fee: In addition to a fixed fee, a recurring payment is charged based on usage matrix such as transaction volume or value. This model allows scaling of business based on the cost incurred on the actual usage of the soundbox.

In addition, there are some strategies employed by soundbox providers for improving merchant retention and enabling enhanced usage of the soundbox.

Discount: Soundbox providers incentivise merchants to use digital payments by providing discounts so as to reduce transaction fees. These discounts are generally applied as a percentage of the transaction amount and encourage merchants to opt for digital payments over cash.

Cashback: Soundbox providers offer cashbacks as a percentage of the transaction amount to merchants as a reward for using soundboxes. Cashbacks are usually credited to merchants' accounts or added in the form of vouchers for future use.

These discounts or cashbacks make digital payments more attractive and affordable. Further, predictability of costs and ability to scale ensure that businesses can adapt their payment solution. To summarise, soundboxes not only facilitate seamless transactions but also empower merchants with choices that improve convenience, enhance security and enable financial management, thereby contributing to a broader shift towards a digital economy.



03 Survey outcomes



PwC's Payments transformation team conducted a survey focusing on soundbox users (merchants). The survey mainly dealt with multifaceted actors influencing soundbox adoption rates and usage patterns across diverse sectors and geographical regions.

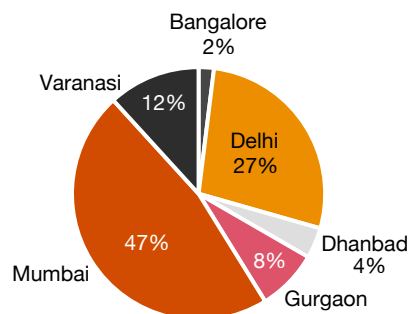
From satisfactory responses due to enhanced transaction efficiency and security features to concerns over technical reliability and interoperability with existing infrastructure, our findings revealed several intriguing insights pointing at a nuanced landscape, and technological readiness dominated by market dynamics and consumer preferences. The findings highlight a compelling blend of enthusiasm and scepticism amongst merchants and consumers alike on the use of soundbox, underscoring the pivotal role that soundbox devices play in transforming the digital payment ecosystem.

Snapshot of results:

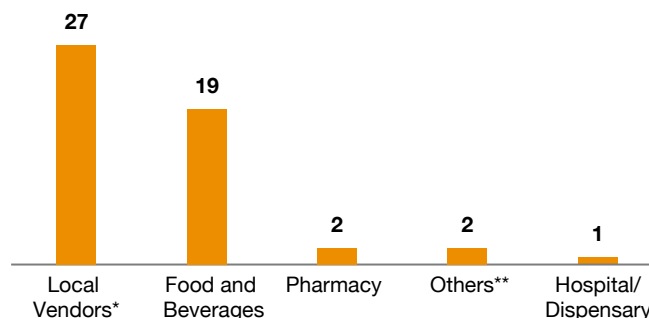
Demography

Number of merchants covered in the survey: **51**

Geographies covered



Business type/domain



*Local vendors cover retail stores, kirana stores, general stores and other local vendors.

**Others cover jewellers and petrol pumps.

Overall rating

- Approximate number of daily transactions per merchant that we interviewed in our survey (range): **250**
- Average rating for onboarding experience (1 [lowest] to 5 [highest]) which includes factors such as time and ease for ordering soundbox, delivery and set-up related turnaround time: **4.7**
- Overall soundbox experiences (1 [lowest] to 5 [highest]) such as usage, battery life, performance and ease of using the device: **4.61**

Fees

The installation cost which is borne by the merchant to get a soundbox deployed for their business purpose ranges between INR 0–1,500, with the average cost being approximately around INR 400.

In a few cases, high-value merchants who receive a very large number of average daily transactions pay zero installation cost to soundbox providers.

The monthly recurring fees charged to merchants for using a soundbox falls in a range between **INR 0–400**, with the average fees being approximately around **INR 125 per month**. Additionally, some providers charge zero fee, if the merchant receives more than 600 monthly transactions.





Benefits

About **92%** of merchants feel that installing a sandbox is worth investing in to support their business. Some of the key reasons for the use of sandbox highlighted by the merchants were as follows:

- instant payment confirmation
- payment confirmation without requiring physical presence of the owner
- ability to handle payments during peak hours by approximately 50–60% due to ease in acceptance of digital payments, and a reduction in turnaround time (TAT) for serving customers due to cashless payments and instant payment confirmation.

Issues faced

51% of merchants face operational issues while operating sandboxes. Some of the major issues faced were:

- low battery life of the device
- transaction notifications getting skipped during peak hours.

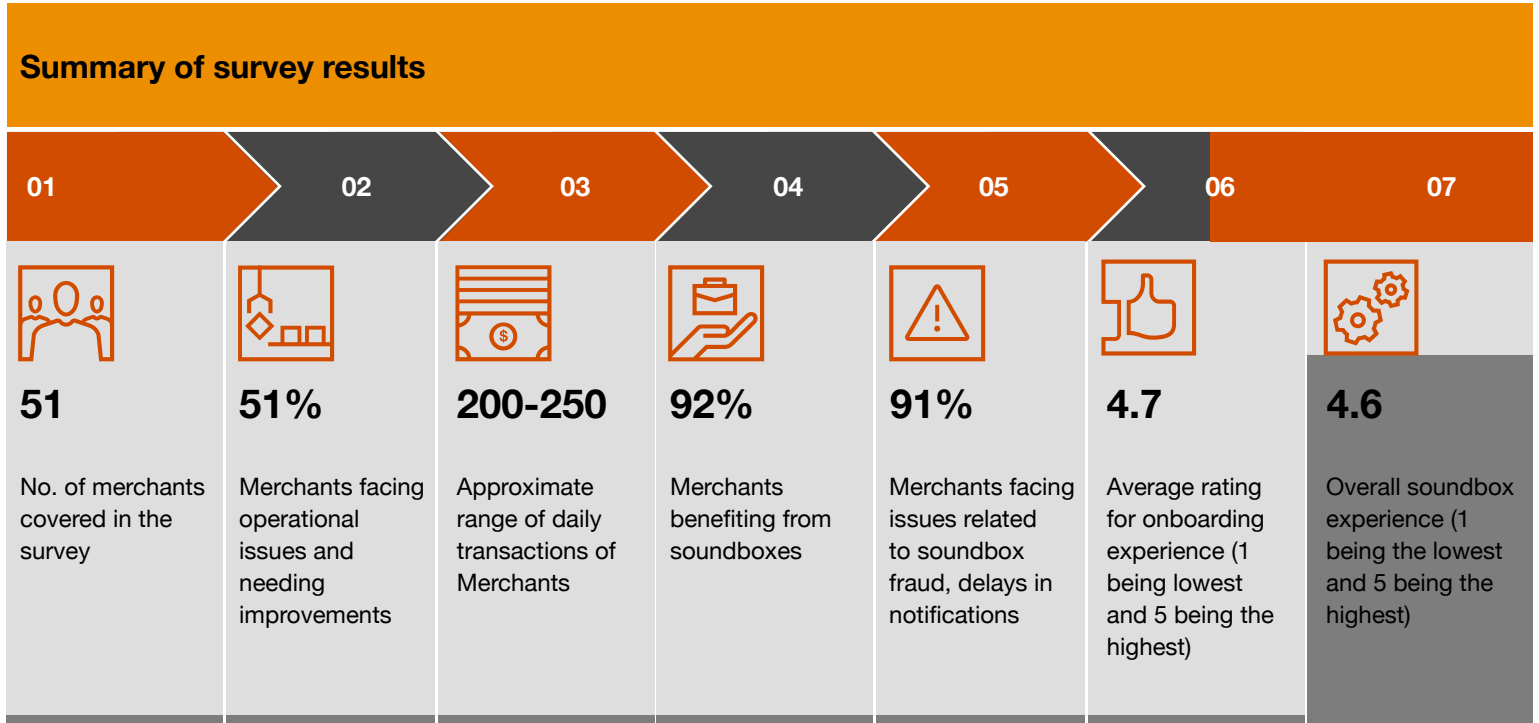
Nearly 91% of merchants face issues such as frauds due to dummy sandboxes, other QRs being pasted over merchants' original QR codes etc., which leads to an increasing number of fraudulent instances of transactions, transaction errors and delays in transaction notifications, apart from other security concerns.

Expectations

To enhance the overall user experience, the surveyed merchants had the following expectations from sandbox providers:

- improvement in battery life
- compatibility with 5G-supported devices
- introduction of a small screen on the sandbox to check the total volume and value of transactions done during the day
- connections with other devices such as monitor
- reduction of monthly recurring charges, and introduction of cashback options
- easy language change settings – possibly via a button.

As stakeholders navigate the complexity of integrating sandbox solutions into everyday business operations, these results serve as a critical compass, driving strategic decisions to optimise user experiences and improving payment technologies in India.



04 New use cases and innovations



Some of the new use cases and innovations in soundboxes have been highlighted below:

1. Soundboxes for emergency alerts: Enhancing public safety through real-time government to citizen (G2C) communication

Soundboxes can be integrated with added functionalities to broadcast emergency alerts and important government announcements (G2C), thereby leveraging existing payment infrastructure for public safety and communication. This can act as direct and immediate communication channel between the government and citizens.

Implementation considerations:

- Integration with government emergency response systems via secure APIs
- Hardware and firmware upgrades to switch seamlessly between payment processing and alert broadcasting
- Integration of GPS and triangular-based geolocation services to allow authorities to send location-specific messages

2. Soundboxes for personalised promotions and announcements

Soundboxes can effectively be used in restaurants, hotels and retail stores to deliver personalised greetings and promotional messages, and announce special offers and events. This can enhance customer engagement, boost sales and improve the overall customer experience.

Implementation considerations:

- A web-based, or app-based platform to manage the content management system (CMS)
- ## 3. Soundbox for accessible ticketing and announcements at transportation hubs

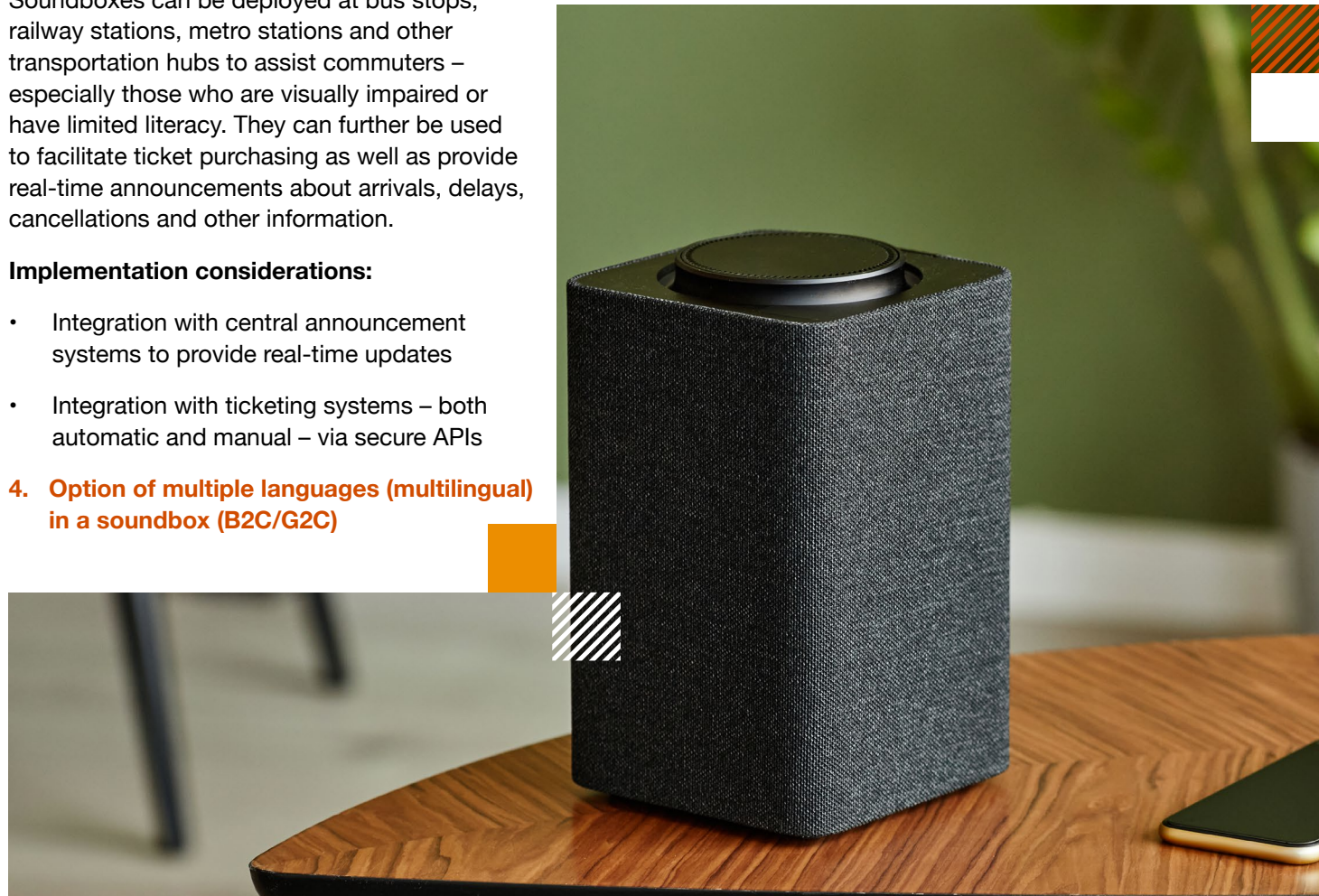
Soundboxes can be deployed at bus stops, railway stations, metro stations and other transportation hubs to assist commuters – especially those who are visually impaired or have limited literacy. They can further be used to facilitate ticket purchasing as well as provide real-time announcements about arrivals, delays, cancellations and other information.

Implementation considerations:

- Integration with central announcement systems to provide real-time updates
 - Integration with ticketing systems – both automatic and manual – via secure APIs
- ## 4. Option of multiple languages (multilingual) in a soundbox (B2C/G2C)

5. Voice reminders to merchants about upcoming bill payments at end of day (EOD)/ beginning of day (BOD)

6. Integration with IoT devices for smart inventory management, smart store management and setting alarms for the reception of orders (for pharmacies, restaurants, etc.)



05 Challenges in adoption



The adoption and utilisation of sandbox technology, though promising for enhancing digital payments' acceptability and convenience, is accompanied by a spectrum of challenges and constraints.

To ensure the expansion of these services, merchants will have to tackle infrastructural disparities between urban and rural areas along with linguistic and cultural dynamics.

Some of the key issues related to the adoption of sandboxes and the solutions to tackle the same have been highlighted in the following infographic:



Interoperability and integration with other products

- Adopting widely accepted standards in line with regulatory requirements of the NPCI and RBI
- Use of robust APIs to ensure seamless integration with existing POS systems and payment infrastructure, alongside rigorous testing and certification processes to ensure compatibility

Connectivity and infrastructural challenges

- Use of public private partnership (PPP) model: The government can subsidise and incentivise telecom providers and infrastructure developers to invest in rural connectivity and utilise satellite-based internet solutions to reach geographically challenged demographics across India.

Low merchant adoption

- Promoting industry associations, demonstrations, and simplified integration and onboarding supported by user-friendly interfaces and technical support

Rising fraud and security concern

- Ensuring compliance with necessary security standards
- Integration with fraud detection and prevention tools to detect anomalies
- Providing prompt customer support with timely resolution

Cost/Rol concern

- Introducing slab-based pricing for different categories of merchants — for instance, make initial set up as zero for small merchants and reduce recurring fee for them as compared to what large merchants are paying.

 Issue  Solution

06 Conclusion



The journey of soundbox technology in India reflects both promise and challenges in equal measure. As highlighted throughout this newsletter, the adoption of soundbox devices represents a significant step towards modernising and democratising digital payments, particularly in diverse and dynamic market environments.

The PwC Payments Transformation team performed a survey of 51 merchants on the use of soundbox devices, revealing a complex landscape of adoption influenced by transaction efficiency, security features, technical reliability and infrastructure.

Key benefits included instant payment confirmation and reduced customer service TAT – especially during peak hours. On the other hand, merchants were concerned about the battery life, occasionally skipped transaction notifications and increasing fraud instances.

The merchants seek improvement in battery life, 5G compatibility, reduced fees and easier language settings to enhance their user experience.

While the road ahead may be marked by technical hurdles and varying levels of merchant readiness, the overarching benefits are clear – enhanced convenience, improved transactional efficiencies, and heightened security for both businesses and consumers alike.

Looking forward, the evolution of soundbox technology will continue to be shaped by innovation, regulatory advancements and market dynamics. It's thus imperative for stakeholders – from technology providers to financial institutions, and PSPs – to collaborate closely to address barriers and nurture an ecosystem conducive to the widespread adoption of soundboxes in the India and across the globe.



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Data Classification: DC0 (Public)

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