

World Bank Fast Payments Toolkit

Case Study: China

IBPS | 2010

Payment Instruments



Credit
Transfer



Direct Debit

Use Cases / Services



Bill
Payments



Recurring
Payments



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Glossary of terms

S. No.	Term	Definition
1	GDP	Gross Domestic Product at current price
2	Income Category	Classification as per World Bank based on Gross National Income (GNI) per capita
3	CPMI	Committee on Payments and Market Infrastructure
4	FPS	As per CPMI, fast payment System is defined as payments in which the transmission of the payment message and the availability of final funds to the payee occur in real time or near-real time and on as near to a 24-hour and 7-day (24/7) basis as possible
5	Oversight	Regulating or governing body supervising the payments system
6	Operator	Institutions responsible for the operation of the payment system
7	Alias	Alternative to bank account numbers for increased convenience of the customer. For e.g. mobile number, national identification number
8	Access Channels	Modes used by customer to initiate transaction on FPS. For e.g. branch, internet, mobile
9	Individual Payment Type	Person to person (P2P) – Payment between individuals for non-business purposes
10	Business Payment Type	Person to Business (P2B) – Payment from an individual to a business entity Business to Person (B2P) – Payment from a business entity to an individual Business to Business (B2B) – Payment between two business entities
11	Government Payment Type	Person/Business to Government (P/B2G) – Payment from person/Business to a government institution Government to Person/Business (G2P/B) – Payment from government institution to a person or business entity
12	Credit transfers	Credit transfers are payment instruments based on payment orders or possibly sequences of payment orders made for the purpose of placing funds at the disposal of the payee
13	Direct Debits	Direct debits are payment instruments in which the transaction is pre-authorized and funds are blocked in account for a debit to be initiated at a future date. In direct debits, payer's account is debited on execution of mandate by merchant or payee
14	E-money	E-money is a prepaid value stored electronically, which represents a liability of the e-money issuer (a bank, an e-money institution or any other entity authorized or allowed to issue e-money in the local jurisdiction) and which is denominated in a currency backed by an authority

Abbreviations

S.No.	Term	Expanded form
1	IBPS	Internet Banking Payment System
2	CNCC	China National Clearing Center
3	DNS	Deferred Net Settlement
4	PBoC	People's Bank of China
5	HVPS	High Value Payment System (HVPS)
6	BEPS	Bulk Electronic Payment System
7	DFCPS	Domestic Foreign Currency Payment System

Select parameters



GDP

GDP – \$14.34 trillion



Income Category

Upper middle



Population

1.393 billion



Access to mobile phone*

93.44%



Access to internet*

64.12%



Bank account*

80.22%



Branches per 100,000 adult

Information not available



Made or received digital payment in last 1 year*

67.93%



Received government wages or transfer in account*

30.33%

How to read this report

- This **deep dive report** relates to the **Internet Banking Payment System (IBPS)** in **China**
- It has been developed based on **primary interviews** with key stakeholders such as **regulators, operators** and **participants** in the system as well as by leveraging **secondary sources**
- Key secondary sources include PBoC and CNCC websites
- The table below presents a legend to assist readers as they navigate through different sections of the report

Legend



The first slide of every section includes a chapter summary to provide readers with an overview of the section contents



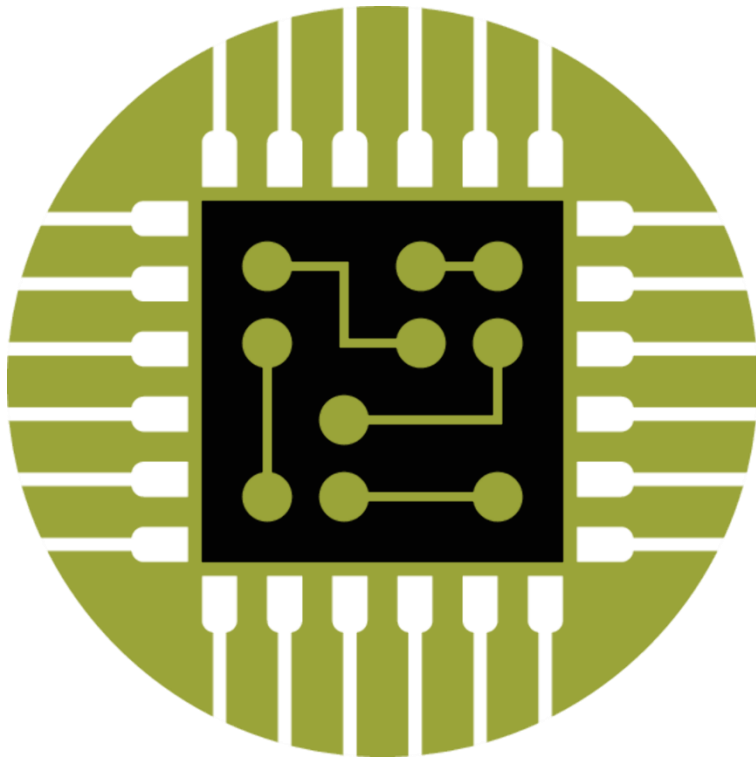
The green box with the adjacent icon indicates **section/sub-section summary across** the report. Reader may choose to read through this for a **high-level overview on the selected topic**

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A. Executive Summary

Internet Banking Payment System (IBPS) | China FPS



- **Internet Banking Payment System (IBPS)** is a real-time electronic fund transfer system operating on 24*7 basis
- It was launched in August 2010, as part of Second Generation of China National Advanced Payment System (CNAPS II) by the People's Bank of China (PBoC)
- IBPS enables consumers, businesses and government agencies to make real-time payments in Chinese Yuan
- **Banking institutions** having reserve accounts with PBoC, are eligible to become direct participant. Banking institutions with or without central bank accounts can become indirect participants of IBPS and are dependent on direct participant to fulfil settlement obligations
- IBPS supports multiple channels such as **branch, mobile banking, internet banking, and QR** while **mobile number** is used as an alias
- Transactions are settled through **Deferred Net settlement** mechanism in **6 cycles** at the RTGS system of People's Bank of China
- **Key features of IBPS are:**
 - Real time payments
 - Operates 24x7x365
 - ISO 20022 messaging standard
 - Mobile number as alias
 - Deferred Net settlement
- IBPS currently supports **ISO 20022 messaging standard** and **supports multiple use cases/services** such as Bill Payments, and Recurring Payments (credit card repayment, loan repayment)

B. Detailed Report

1. Overview

Chapter sections:

1.1. Background and System Development



1.1. Background & System Development



IBPS was launched in 2010 as part of Second Generation of China National Advanced Payment System (CNAPS II) by the PBoC. It facilitates online transactions in real time and operates for 24*7

- **Internet Banking Payment System (IBPS)** was launched in August 2010 as part of **Second Generation of China National Advanced Payment System (CNAPS II)** by the People’s Bank of China (PBoC). IBPS integrates the online banking operations of most large domestic and foreign banks in China. It facilitates online transactions in real time and operates for 24*7
- With the rapid development of information technology and e-commerce, online payments and emerging electronic payments became increasingly popular. Commercial banks launched online-banking services, putting forward higher requirements for the speed of payment transfer and feedback. In order to further improve settlement services and support the innovation of online payments, the PBoC decided to develop IBPS
- IBPS is a completely new system, developed and maintained by the PBoC. In order to improve the fast payment service, IBPS successively launched SMS authentication, QR payments and mobile phone as alias

Implementation Timelines

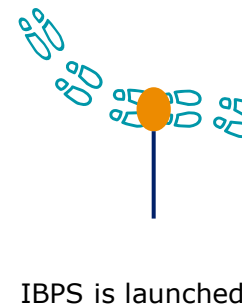
Development Timeline

In November 2009, the IBPS project started. In August 2010, the technical preparation, system verification and other processes were completed.

- The first group of participating institutions went online for trial operation on August 31, 2010
- In December 2010, the second group of participating institutions entered into operation
- In January 2011, the third group of participating institutions entered into operation, which marked the completion of the nationwide promotion of the IBPS.

Key Milestones

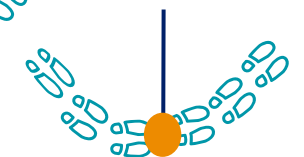
2010



IBPS is launched

2019

Mobile Number alias enabled on IBPS in February 2019



2. Business and Operating Model

Chapter sections:

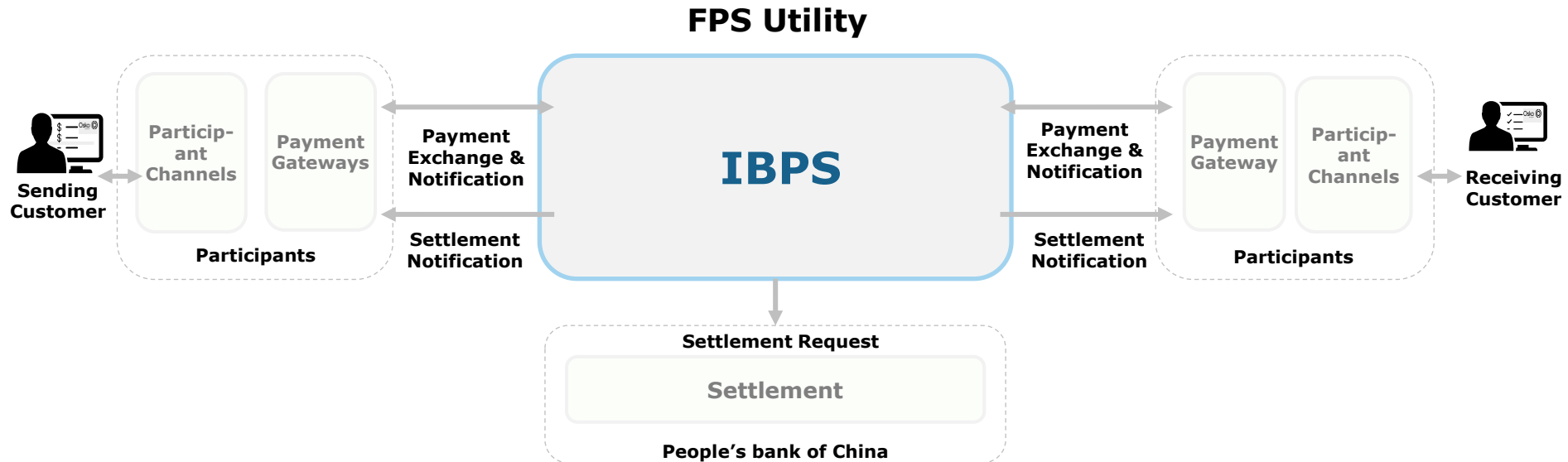
- 2.1. FPS Structure
- 2.2. Participants
- 2.3. Payment Instruments, Transaction Types & Scheme Pricing
- 2.4. Aliases, Access Channels and Use Cases/Services



2.1. FPS Structure



People's Bank of China (PBoC) is the owner and regulator, and CNCC is the operator of IBPS. Final settlement takes place in the RTGS system of the PBoC



Key entities

People's Bank of China

- **The Law on the People's Bank of China** defines PBoC's role as a catalyst, and regulator of payment, clearing and settlement systems. PBoC provides the regulatory oversight for the payment system

CNCC

- IBPS is operated by the **China National Clearing Center (CNCC)**, which reports directly to the People's bank of China (PBoC)

2.2. Participants



IBPS allows banking institutions to become a direct participant in the system. It also allows indirect participation of banks with or without central bank accounts through a direct participant

Membership in IBPS

Direct Membership



Banking institutions with central bank accounts

Indirect Membership



Banking institutions with or without central bank accounts

Adoption Statistics

- Till July 31, 2020, the IBPS has 218 direct participants and 175 proxy access participants

Regulatory requirements for participants

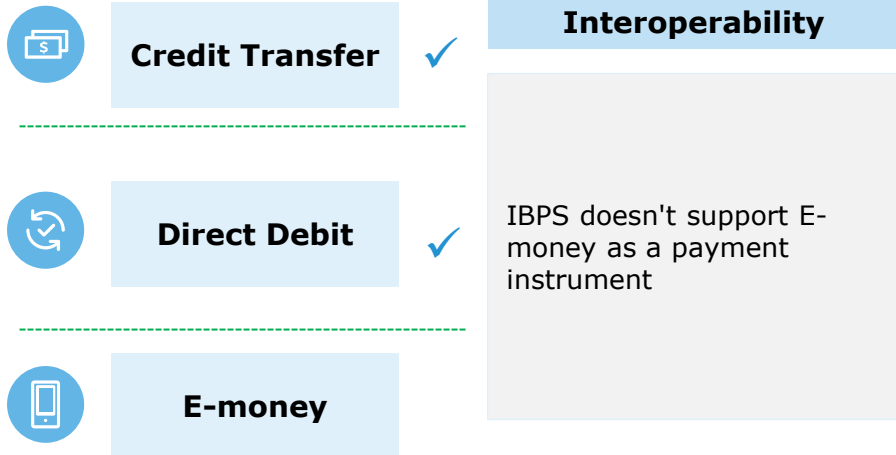
- Participants of IBPS need to be banking financial institutions approved to conduct internet banking services. In terms of business preparation, participants need to draw up supporting business regulations. In terms of technology, software development and systems upgrade should be completed by the participants. Direct participants connect with IBPS through Member Bank Front End
- Direct participants and indirect participants need to make business and technical preparation in accordance with the 'IBPS Business Processing Regulation'
- The timeline of participants joining the system depends on their business and technical preparation time
- In order to ensure the smooth operation of IBPS and clarify the rights, obligations and responsibilities of all parties, the PBoC has formulated a series of relevant management measures such as the operation management measures and the transaction processing procedures of the IBPS

2.3. Payment Instruments, Payment Types and Scheme Pricing



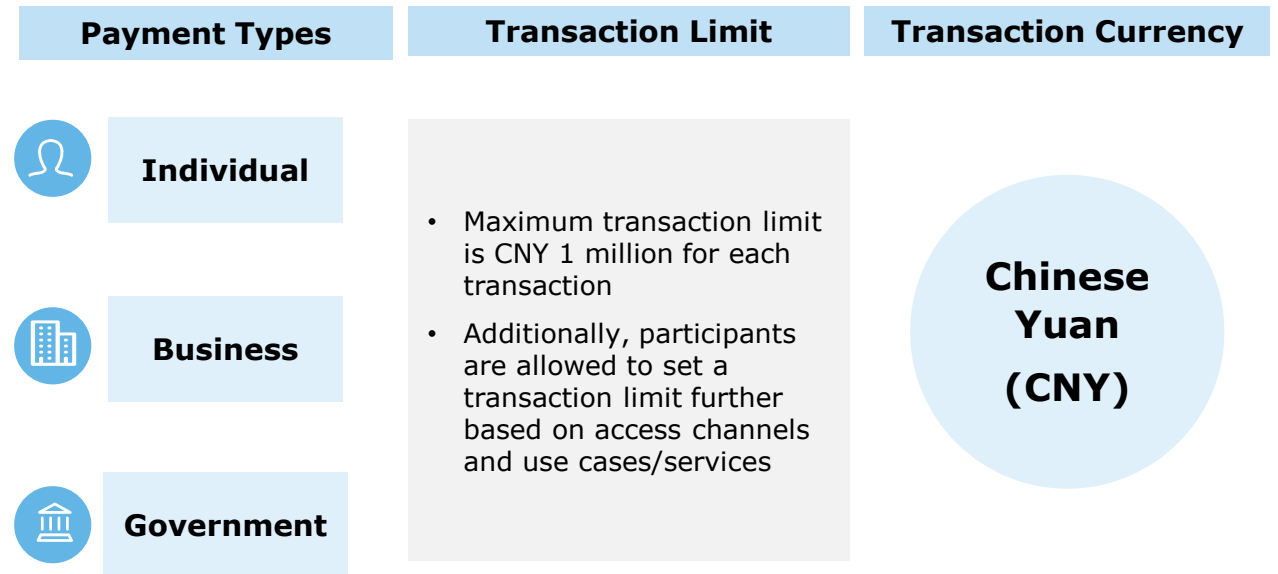
IBPS supports **credit transfer** and **direct debits** as payment instruments. PBoC has set a transaction limit of CNY 1 million on IBPS transactions. Participants are allowed to set a transaction limit further

Payment Instruments Supported



Direct Debit payments are processed by IBPS either under reserved agreements or authorized by senders every time. The agreement is signed by the sender, the receiver and the banks of both sides. In this case no authorization is required for each payment, and the IBPS automatically compares and processes the transactions that meet the agreement

Payment Types, Limit and Currency



Scheme Pricing

- IBPS has adopted a pricing structure combining **fixed fee (monthly)** with **variable fee (based on transaction volumes)**. The charges to the end users are determined by the participants themselves

2.4. Aliases, Access channels and Use Cases/Services



IBPS supports **form-factor neutrality** and allows transactions across both traditional and alternate delivery channels. PBoC has developed the '**mobile phone number payment**' function to provide the directory service of mobile phone number and related account information

Aliases

- PBoC has developed the '**mobile phone number payment**' function to provide the directory service of mobile phone number and related account information
- In order to ensure that the new function provides a safe and secure payment experience to the public, the PBoC has formulated clear risk control measures
 - Users are required to register their mobile phone number in line with the mobile phone number registered with the bank
 - For the registration, bank account should have been opened for more than 6 months with actual transactions, and registered mobile phone number should be in use for more than 6 months before the registration
 - PBoC mandated use of at least two dynamic authentication factors, i.e., face, voice, short messages etc., are required to ensure the authentic identity of the customer when processing registration, change and cancellation
 - IBPS carries out an online check of the payee's name with the input of mobile phone number to prevent the wrong payment due to the incorrectly typed number

Access channels



Branch



Mobile Banking/Apps



Internet Banking



QR

- IBPS supports **form-factor neutrality** and allows transactions across both traditional and alternate delivery channels
- It also supports proximity-based channels such as QR and NFC.

Use cases / Services

- IBPS supports use cases /services such as **Bill Payments** and **Recurring Payments** (credit card repayment, loan repayment)
- Commercial banks are allowed to introduce new application scenarios according to their business requirements

3. User Adoption

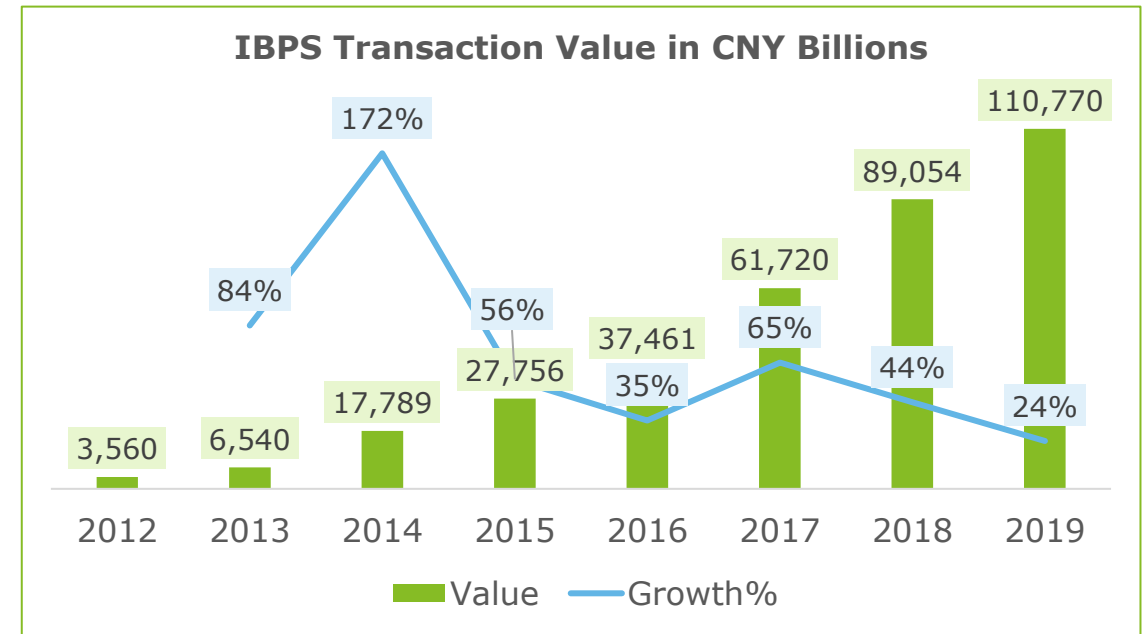
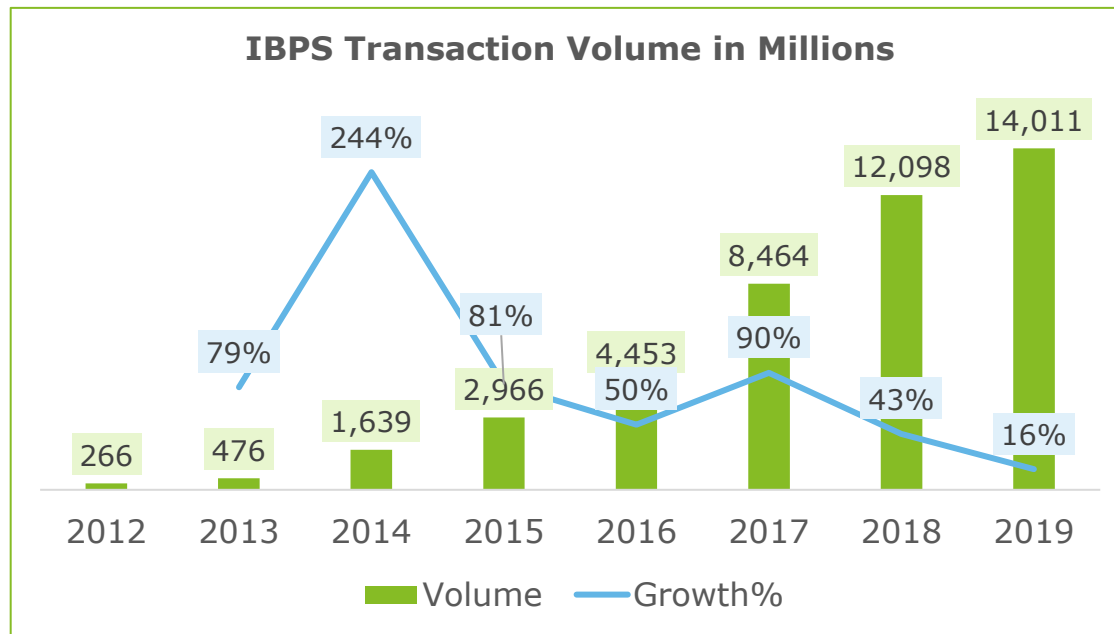
Chapter sections:

3. User Adoption



3. User Adoption

Adoption statistics



- In recent years, there has been a marked dip in growth of transaction volumes and values through IBPS. Since its launch in 2010, IBPS adopted a charge-free policy until 2018 in order to promote the access of the participants

4. Technical Details and Payment Process

Chapter sections:

4.1. Technical Details | Messaging Format & Customer Authentication

4.2. Payment Process (Customer Registration and Settlement)



4.1. Technical Details | Messaging Format, Customer Authentication and APIs



Below are the technical details of IBPS covering the **messaging format, customer authentication and APIs**. **ISO 20022 messaging standard** is extremely important in terms of connectivity and interoperability

Messaging Format

ISO 20022

- IBPS uses ISO 20022 messaging standard as it allows payments to carry structured data, as well as standardizing payment formats
- Using ISO 20022 message standard improves the efficiency of business processing and facilitates interoperability with other financial infrastructures in general

Customer Authentication

Two factor authentication

- Two factor authentication using password and security verification tools such as dynamic passwords (EToken) and SMS code

APIs

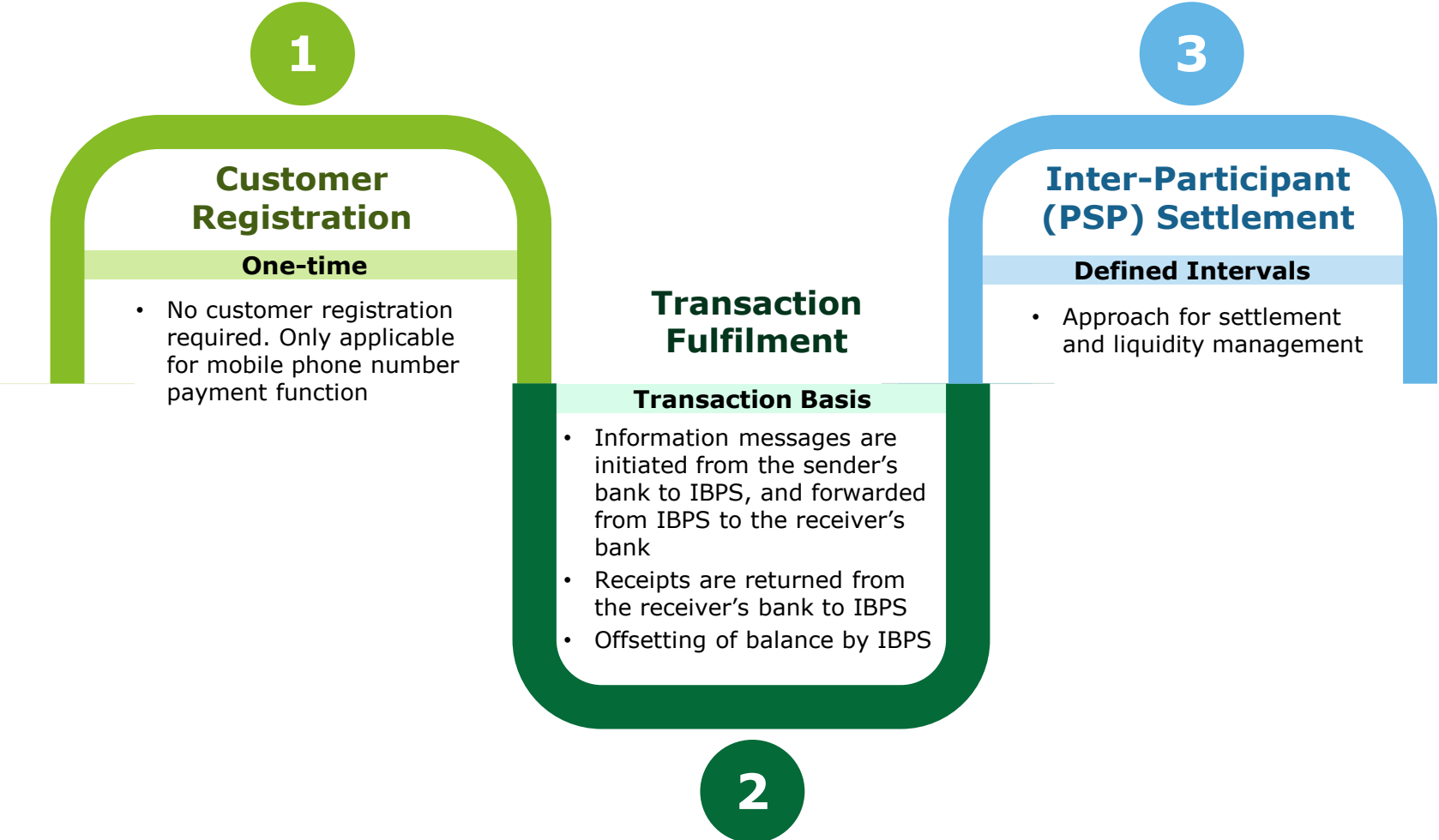
No APIs supported

- Currently, IBPS does not support any APIs

4.2. Payment Process



The steps in the payment process include **payer-payee transaction fulfilment and inter-participant settlement**. IBPS doesn't require separate customer registration. They only need to register for accessing mobile phone number payment function





4.2. Payment Process | Liquidity Management and Settlement



Final settlement in IPBS is done through **Deferred Net Settlement (DNS)** using the PBoC's RTGS system. Direct participants conduct transactions and funds settlement on behalf of their proxy access participants

Direct Member Settlement

Approach



Hub

Type | Time

Deferred Net Settlement

6 Cycles Per Day on PBoC's RTGS system

- Settlement in IBPS is done through **Deferred Net Settlement** mechanism. CNCC performs settlements using 6 cycles per day for IBPS transactions
- The netting settlement mechanism adopted by the IBPS helps:
 - To save liquidity of participants,
 - To reduce liquidity management pressure of participants and operational pressure of the system as well
 - To decrease the system operation cost
 - To ensure safe and stable operation of the system
- The liquidity risk of the IBPS is integrated into the RTGS liquidity management as a whole. The credit risk is controlled through the net debit limit mechanism, which means participants can only conduct transactions within the net debit limit.

Indirect Member Settlement

- Direct participants conduct transactions and funds settlement on behalf of their proxy access participants

5. Governance Framework

Chapter sections:

5.1. Legal and Regulatory Aspects

5.2. Risk Management, Dispute Resolution and Customer Complaints



5.1 Legal, Regulatory and Governance Aspects



The **Law of the People’s Republic of China on the PBoC** provides the legal framework for payment system in China



- The **Law of the People’s Republic of China on the People’s Bank of China** (Law on the People’s Bank of China) was promulgated in 1995 and amended in 2003
- According to the law, PBC’s responsibilities are to **“maintain the normal operation of payment and clearing systems in China”**
- Article 27 states that the People’s Bank of China shall organize or assist in organizing a clearing system for banking financial institutions, coordinate the efforts of banking institutions in clearing and provide clearing services.

5.1 Legal, Regulatory and Governance Aspects



The People's Bank of China is the regulator and overseer as well as owner of IBPS and is responsible to promote efficiency and soundness in the payment systems in China

Institutional and Governance Framework

Legal Framework:

Law of the People's Republic of China on the PBoC

Regulator and Overseer:

People's Bank of China

Operator:

CNCC

- PBoC has promulgated **Measures for Processing of IBPS Business, Procedures for Processing of IBPS Business,** and **Measures for Operational Administration** on IBPS to clarify rights, obligations and responsibilities of the parties concerned
- PBoC is also responsible for the management of the **reserve accounts** opened by financial institutions with PBoC

5.1 Legal, Regulatory and Governance Aspects



China National Clearing Center (CNCC) is the operator of IBPS. CNCC is responsible for construction, operation, maintenance, and management of payment systems in China

Institutional and Governance Framework

Legal Framework:

Law of the People's Republic of China on the PBoC

Regulator and Overseer:

People's Bank of China

Operator:

CNCC

- **China National Clearing Center (CNCC)** is a public institution directly under the People's Bank of China
- It provides payment and clearing and related services to the central bank, commercial banks and the whole society. It is responsible for the construction, operation and maintenance of the payment systems of the People's Bank of China
- The payment systems that the CNCC is responsible for construction, operation, maintenance, and management include:
 - High Value Payment System (HVPS)
 - Bulk Electronic Payment System (BEPS)
 - Internet Banking Payment System (IBPS)
 - Domestic Foreign Currency Payment System (DFCPS)

5.2. Risk Management, Dispute Resolution and Customer Complaints

Risk Management

- Credit risk has been mitigated by adopting a **Net Debit Limit management mechanism**. PBoC has incorporated liquidity risks into RTGS management by sharing settlement accounts with HVPS and BEPS for mitigating settlement risks
- For mitigation of operational risks, PBoC has mandated **strict authorization process**. It has also focused on strengthening internal governance of all participants and increasing technical training courses. IBPS reduces the risks of fraud by setting an upper limit of CNY 1 million for each transaction.
- PBoC manages operation risks by means of strengthening network and data security, strengthening operation maintenance and improving disaster backup mechanism
- Customer data can only be stored **locally in the banks**. IBPS transaction data shall be stored online for 10 working days, and the offline storage time is the same as that of similar accounting files

Inter-Bank Dispute and Customer Complaints

- IBPS has established an error handling service platform through which direct participants can submit error handling applications. Complaints from end users are handled by the participants

6. Annexure

Chapter sections:











6.1. Key Features












6.1. Key Features

👤 Features

Key Highlights

	Operating hours	<ul style="list-style-type: none"> 24*7 including weekends and bank holidays
	Payment speed	<ul style="list-style-type: none"> Real time (<20 seconds)
	Transaction limit	<ul style="list-style-type: none"> Maximum CNY 1 million; Additionally, participants can limit it further
	Alias	<ul style="list-style-type: none"> Mobile number
	Channel	<ul style="list-style-type: none"> Branch, Internet banking, Mobile Banking, QR and NFC
	User charges*	<ul style="list-style-type: none"> Decided by the banks
	Infrastructure setup	<ul style="list-style-type: none"> New System
	Messaging format	<ul style="list-style-type: none"> ISO 20022
	Use of Open APIs	<ul style="list-style-type: none"> Open APIs not available
	Authentication	<ul style="list-style-type: none"> Two factor authentication using password and security verification tools such as dynamic passwords (EToken) and SMS code

Payment Types & Use Cases/Services

		
Individual	Business	Government
	Merchant	
	Cross-border payments	
	Recurring payments	
		Bulk / Batch Payment
		Request to Pay
		Bill payments

Settlement

Approach	 Hub	 RTGS	 Distributed clearing
Type Time	Deferred Net Settlement	6 cycles per day	