

World Bank Fast Payments Toolkit

Case Study: Kenya

PesaLink | 2017

Payment Instruments



Credit
Transfer

Use Cases/Services



Bulk
Payment



Bill Payment
(government
payments)



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How to read this report

- This **deep dive report** relates to **PesaLink** in **Kenya**
- It has been developed based on **primary interviews** with key stakeholders such as **owner, operator** and **participants** in the system as well as by leveraging **secondary sources**
- Key secondary sources include Central Bank of Kenya and IPSL website
- 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**

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

Select parameters



GDP
USD 95.5 billion



Income Category
Lower middle



Population
52.6 million



Access to mobile phone*
86.06%



Access to internet*
48.95%



Bank account*
81.56%



Branches per 100,000 adult
Information not available



Made or received digital payment in last 1 year*
78.96%



Received government wages or transfer in account*
29.90%

Abbreviations

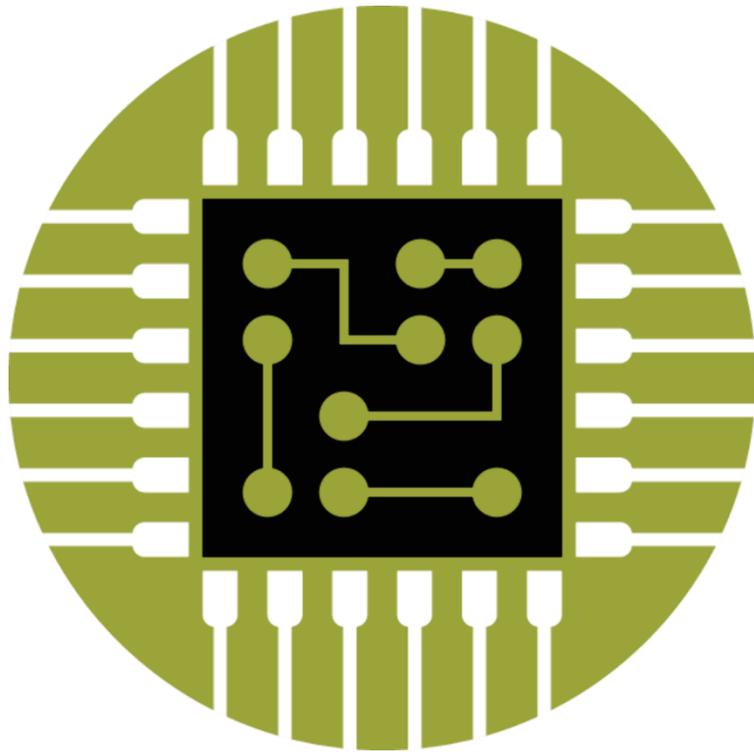
S.No.	Term	Expanded form
1	FSD	Financial Sector Deepening
2	IPSL	Integrated Payment Services Limited
3	KBA	Kenya Bankers Association
4	Ksh	Kenya Shilling
5	NPS	National Payments System
6	PSA	Payment System Aggregator

Table of Contents

	Slide number
A. Executive Summary	8-9
B. Detailed Report	
1 Overview	
1.1. Background and Objective	12
2 Business and Operating Model	
2.1. FPS Structure	14
2.2. Participants	15
2.3. Payment Instruments, Transaction Types & Scheme Pricing and Fee Structure	16
2.4. Channels, Agent Network, Aliases and Use Cases	17
3 User Adoption	19
4 Technical Details and Payment Process	
4.1. Technical Details (Messaging Format, API and Customer Authentication)	21
4.2. Payment Process (Customer Registration, Transaction fulfilment and Settlement)	22-25
5 Governance Framework	
5.1. Legal and Regulatory Aspects	27-29
5.2. Risk Management	30
6 Annexure	
6.1. Key Features	32

A. Executive Summary

Faster Payment System | Kenya PesaLink



- PesaLink was launched in **2017** to provide **real time P2P payments** solution to customers in Kenya
- It was launched to **reduce the payment cycle from 2 days (Electronic Fund Transfer)** to instant. The objective of PesaLink was to digitize the Payment landscape and was market driven
- **Banks and microfinance banks** associated with **Kenya Bankers Association** can become direct participant of PesaLink, while **Payment Service Aggregators (PSA)** are indirect participants and require sponsor bank for settlement
- PesaLink supports multiple channels such as **branch, mobile banking, internet banking, USSD and agent network** while **mobile number** is used as an alias
- Transactions are settled through **Deferred Net settlement** mechanism in **2 cycles** at the RTGS system of Central Bank of Kenya

- Real time payments
- ISO8583 messaging standard
- Deferred Net settlement
- Mobile number as alias
- Operates 24x7x365

- PesaLink currently supports **ISO 8583 messaging standard**, built on the existing card infrastructure. There are plans to upgrade it to **ISO20022** by early next year

Key Highlights and Takeaways

Key Differentiators of Kenya's PesaLink

Banks as owner

- PesaLink is owned by **Banks**, who are members of **Kenya Banking association**
- All the investment to set up PesaLink was made by Banks only

Constant Innovation

- Presently, PesaLink is upgrading its **switch** to support enhanced features such as request to pay and also allow **non-banks to connect directly** to the system

Inward Remittance

- Banks have integrated with **International Money Transfer Operator (IMTO)** to facilitate inward remittance through PesaLink. It does not support outward remittance.

Learnings from PesaLink Journey

Viewpoint of all the stakeholders

- Workshops were held for all member banks, with discussions on the platform to serve all banks equally. There were concerns raised by small banks, who felt threatened by the larger banks, that had better technology platforms and would take away their client base, hence there were sessions held to address concerns by these tiers

Buy-in from stakeholder

- Regulator and operator needs to conduct a **strong feasibility test** and get **buy-in** from all the stakeholder during conceptualization of FPS

Banks should initiate upgrading their legacy system

- Banks should upgrade their **legacy system** and update their backend during conceptualization of FPS. Additionally, Regulator needs to have a **strong strategy** during implementation of Fast Payment System

Stakeholders should develop a strong business case before the implementation

- Countries should first develop a **business case** and get viewpoint from stakeholders before initiating the development of the system. This will help in visualizing the **end product**

B. Detailed Report

1. Overview

Chapter sections:

- 1.1. Background and Objectives
- 1.2. System Development & Key Timelines



Chapter Summary:

- PesaLink was conceptualized in 2012, when the idea was adopted by the Governing Council
- Financial Sector Deepening Trust Kenya (FSD-K) joined the project as a partner and paid for a consultancy to study the Retail Payments landscape in Kenya and presented options for the integrating bank Payments in Kenya. The governing council adopted the report and chose the single switch option for implementation. FSD-K engaged the same consultant to develop a business case for the selected integration option and presented to Kenya Bankers Association (KBA) member banks for the approval. After adoption and multiple consultations with stakeholders the system went live in 2017
- The time frame to develop the system was only one and half year so FSD and KBA leveraged the existing infrastructure such as use of **ISO 8583 messaging standard**, which banks were using for their operation
- One of the major challenge during implementation of the project was to get **buy-in from all the banks** and to enhance their existing infrastructure to support real time transactions
- PesaLink is upgrading its switch, the new switch would enable indirect participants to connect directly to the system and **migrate to ISO 20022**

1.1. Background & Objectives



- PesaLink enables real time **P2P transfers** through **customer account number or mobile number**. It is owned by Kenya Banking Association and is operated by IPSL

- Electronic Funds transfer are processed in the Automated clearing House (ACH) which operated on a T+1 basis, effectively meaning a two-day transaction cycle. The other option was the Real Time Gross Settlement System (RTGS) run by the Central Bank, but it handled transactions above Kshs 1 Million and typically settlement took 4 Hours.
- At the same time, there was a wallet service **M-Pesa** which enabled **real time P2P transactions** within a limit of **Ksh 1,50,000**(as of March 2020). Customers had to transfer money from their bank account to its M-Pesa wallet and send it to the beneficiary wallet, who would transfer to its bank account
- Thus, there were discussions within the banking community to develop **their own system capable of real time P2P transfers**

How the system was conceptualized

Pesalink was conceptualized by the Kenya Bankers Association (KBA) and supported by the Financial Sector Deepening (FSD) with the desire to integrate digital payments, financial inclusion and reduce the overall cost of transactions.

- Financial Sector Deepening and Kenya Bankers Association realized the need to integrate and leverage on the banking system infrastructure to drive the digital payments agenda. Several factors led to the developments, some of them being digitization of payment landscape, sharing of infrastructure to drive down the unit cost and facilitate faster movement of money through the real time bank to bank transfer system
- Initially, Financial Sector Deepening facilitated the Study to identify the best way to integrate and develop Kenya's Retail Payments infrastructure, led by the banking system. Result from the feasibility study was shared with KBA and it requested FSD to engage the same consultant to prepare a business case by analyzing bank's data. Following determination of the case as viable, the KBA created an implementation Project team led by Project manager to support the development of PesaLink

2. Business and Operating Model

Chapter sections:

- 2.1. FPS Structure
- 2.2. Participants
- 2.3 Scheme Pricing and Fee Structure
- 2.4. Payment Instruments, Transaction Types, Aliases and Use Cases/Services
- 2.5. Channels and Agent Network



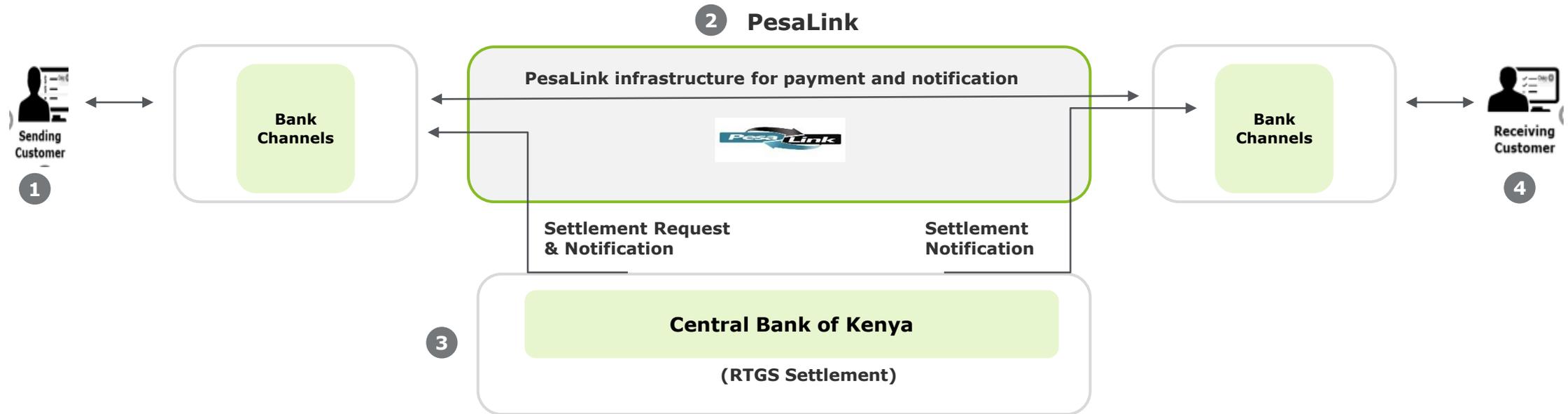
Chapter Summary:

- PesaLink allows **Banks and microfinance bank institutes** as direct participant while Payment System aggregators are the indirect participants and require sponsor banks for settlement of transactions
- Maximum and minimum transaction limit for PesaLink has been capped at **Ksh 1 million** and **Ksh 10** respectively
- Banks are charged **Ksh 11.6** as transaction charge while there is no cap on end users charges, and it is up to the bank to decide the **cost of transaction for end users**
- PesaLink supports multiple channels like **Mobile, Branch, Internet, USSD, ATM and agent banking** while mobile number is used as **an alias**
- Currently, PesaLink supports **bill payments and bulk payment** as use case, with the upgradation of the switch it will support new use case like **request to pay**, etc.

2.1. FPS Structure



Kenya Bankers Association (KBA) is the owner and IPSL is the operator of the PesaLink system. Settlement occurs in the RTGS system of the Central Bank of Kenya



Key entities

Central Bank of Kenya (Regulator and overseer)

- Oversight of **payment and settlement** systems is defined as a central bank function whereby the objectives of **safety and efficiency** are promoted by monitoring **existing and planned systems**, assessing them against the objectives

IPSL (Operator)

- IPSL** was established by the **Kenya Bankers Association** as a PSP to address the challenges of **retail payments system** under the National Payments System (NPS) Act

2.2. Participants



Members of Kenya Bankers Association can become direct participant of PesaLink, while payment service aggregators can participate as indirect participants through sponsorship arrangement with participating banks

Membership in PesaLink

Direct Membership



Banks



Micro-Finance
Companies

Indirect Membership



Payment service
aggregators

Adoption Statistics (as on May-2020)

- Currently, more than **30 banks** are participating in PesaLink
- Additionally, there are **3 payment service aggregators** participating as indirect member

Regulatory requirements for participants

Banks and **micro-finance banks** that are members **Kenya Bankers Association** can become a **direct participant** of PesaLink. Participants also needs to have a **settlement account** at Central Bank

Payment service aggregators such as **FinTech** participate as Indirect member. They need to have an agreement with a **sponsor bank** to settle transactions on their behalf at Central Bank RTGS

Onboarding Process

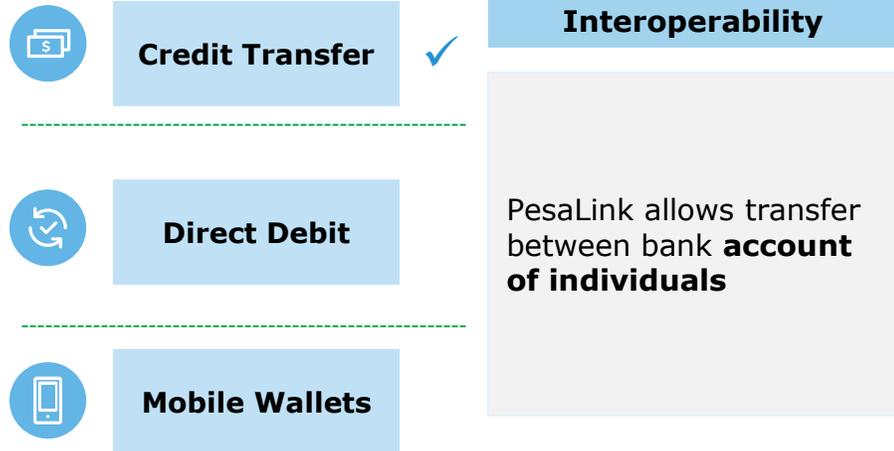
Participants have to follow IPSL standards along with a rigorous testing process. An external auditor conduct an audit of the participant before go-live

2.4. Payment Instruments, Transaction Types, and Scheme pricing



PesaLink enables payments via **banks account** up to Ksh 1 million. It allows transaction in Kenya Shilling

Payment Instruments Supported



Payment Type, Limit and Currency



Fee charged for end users

- User charges are dependent on banks. Charges depends on the number of transactions processed. For example, KCB charges **Ksh 0-500** for transactions
- During the Covid situation Central Bank mandated participants not to charge customers for transactions for **3 months**

Fee charged for participants

- Banks pay Joining fee to PesaLink
- Additionally, part of end user charges are paid to IPSL by banks which is **Ksh 11.6**

2.4. Access channels, agent network, Use Cases/Services and Aliases



PesaLink supports **multiple channels** like USSD, mobile, internet banking, etc. while **mobile number is used as an alias**. Bulk payment is the only use case supported currently, while there are plans to launch bill payments and merchant payments as use case

Access channels and Agent networks



Mobile



Internet



Agent



USSD



ATM



Branch

- PesaLink allows transactions across mobile banking, e-banking, ATMs, Agents and USSD code

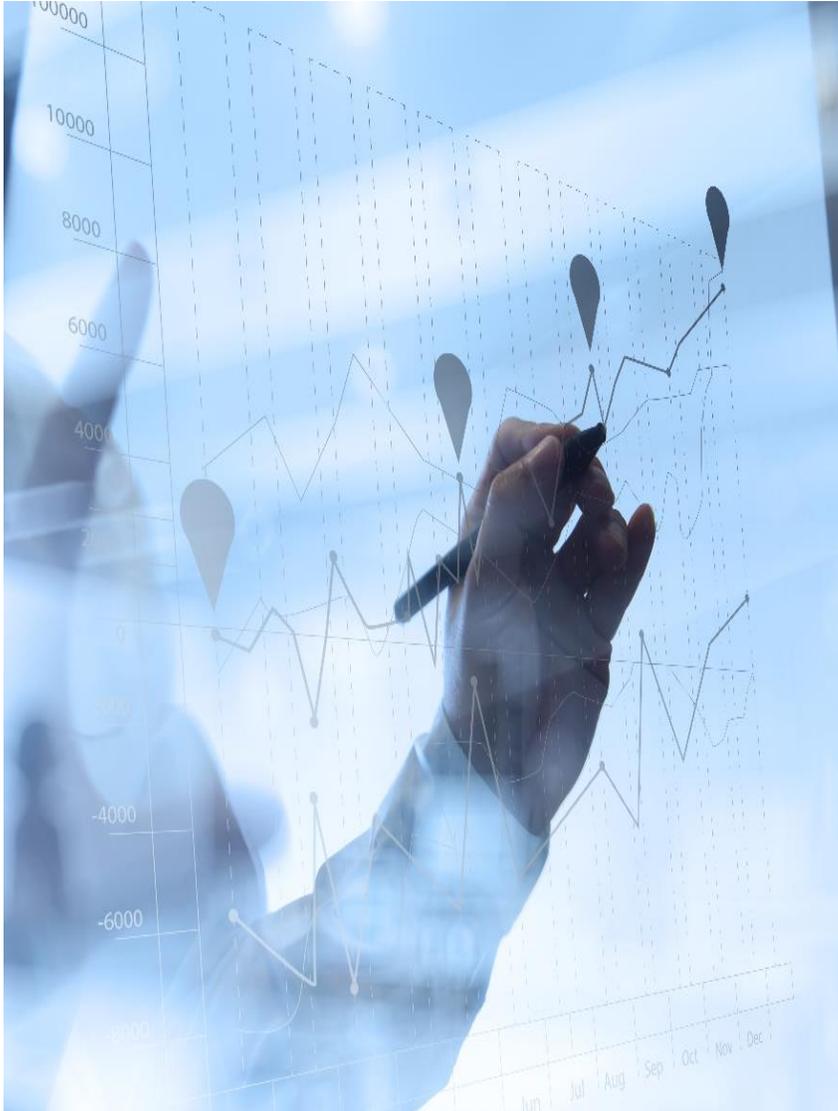
Aliases

- PesaLink allows transfer to bank account of customer. Additionally, customers can also enable transactions through mobile number of recipient.
- During the launch, discussions were there on how to use mobile number as alias since some customers have 3-4 mobile numbers and it would create difficulty to map them with their bank account

Use cases/Services

- PesaLink currently supports **bill payments and bulk payment** as the use case. It is used to process salaries, etc. Additionally, PesaLink can also be used as a mode of payment for Visa processing at government portal
- There are discussions within the bank to support **request to pay as use cases in future**

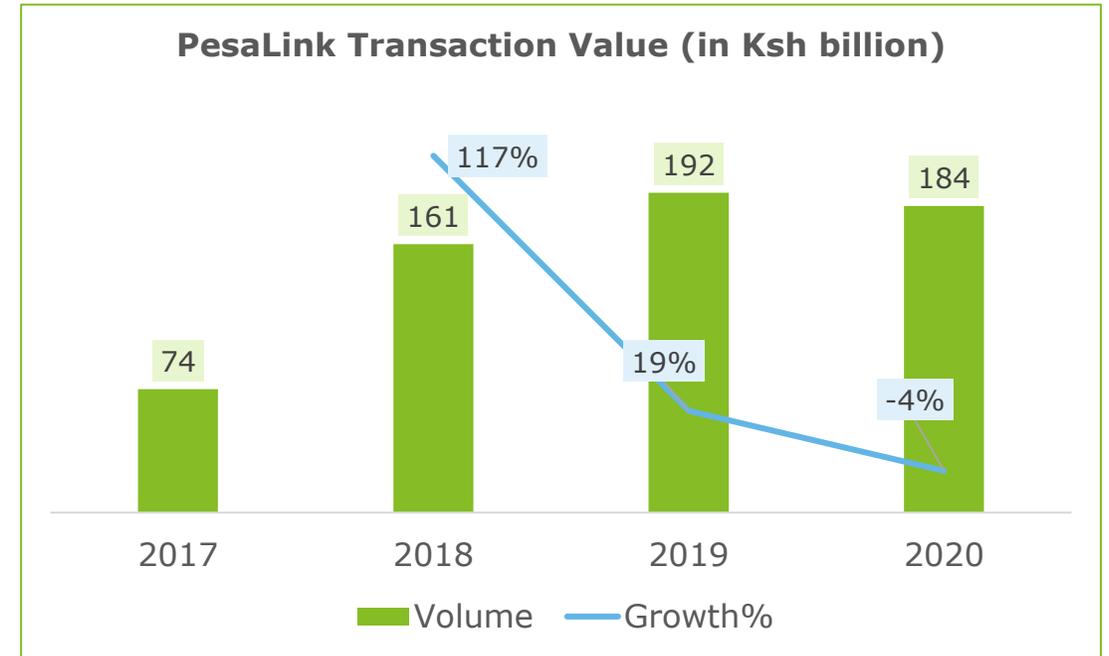
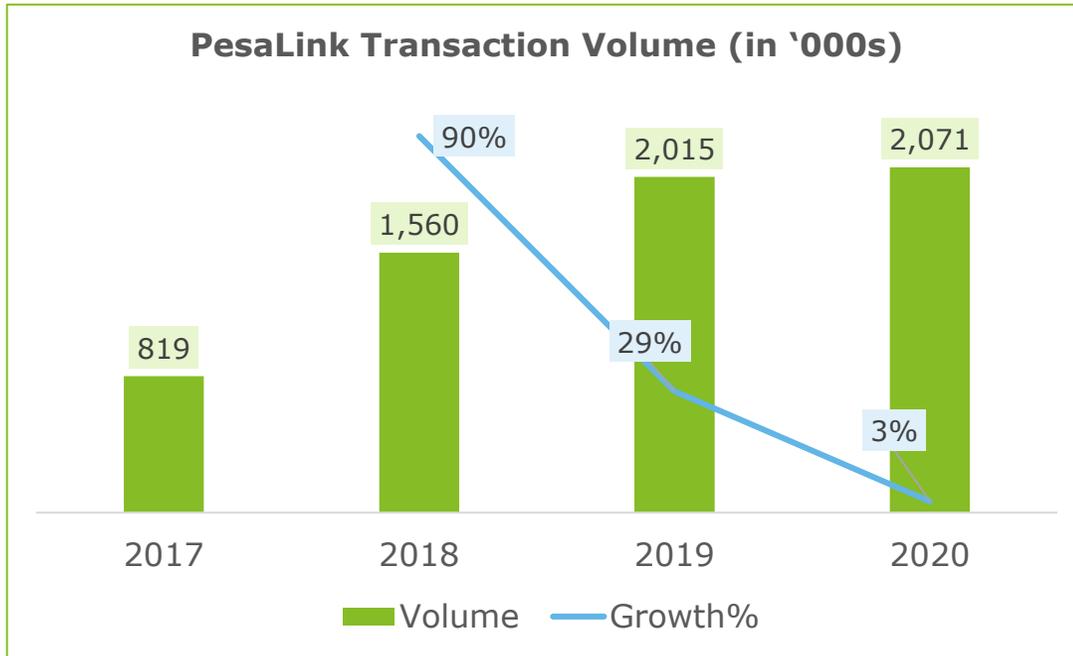
3. User Adoption



Chapter Summary:

- Volume and value growth for PesaLink has seen a steady increase since its launch
- **Central Bank of Kenya** mandated all the banks to waive transaction charge for PesaLink transactions since March 2020 due to Covid-19

3. User Adoption



- PesaLink has shown steady growth since its launch, with Compounded Annual Growth Rate (CAGR) for volume and value being 36.2% and 35.5% respectively. The system is capable of handling millions of transaction daily
- **During** the launch of PesaLink, additional marketing activities were carried out to increase adoption
- **Additionally, during** Covid-19, Central bank has mandated all the participants to waive off end user charges since March 2020 leading to a surge in transaction
- KBA has also been involved in promotional activities through **radio jingles** and **social media campaign**. Banks have made direct communication with **end users** to increase uptake of PesaLink

4. Technical Details and Payment Process

Chapter sections:

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

4.2. Payment Process (Customer Registration, Transaction Fulfilment, Liquidity Management and Settlement)



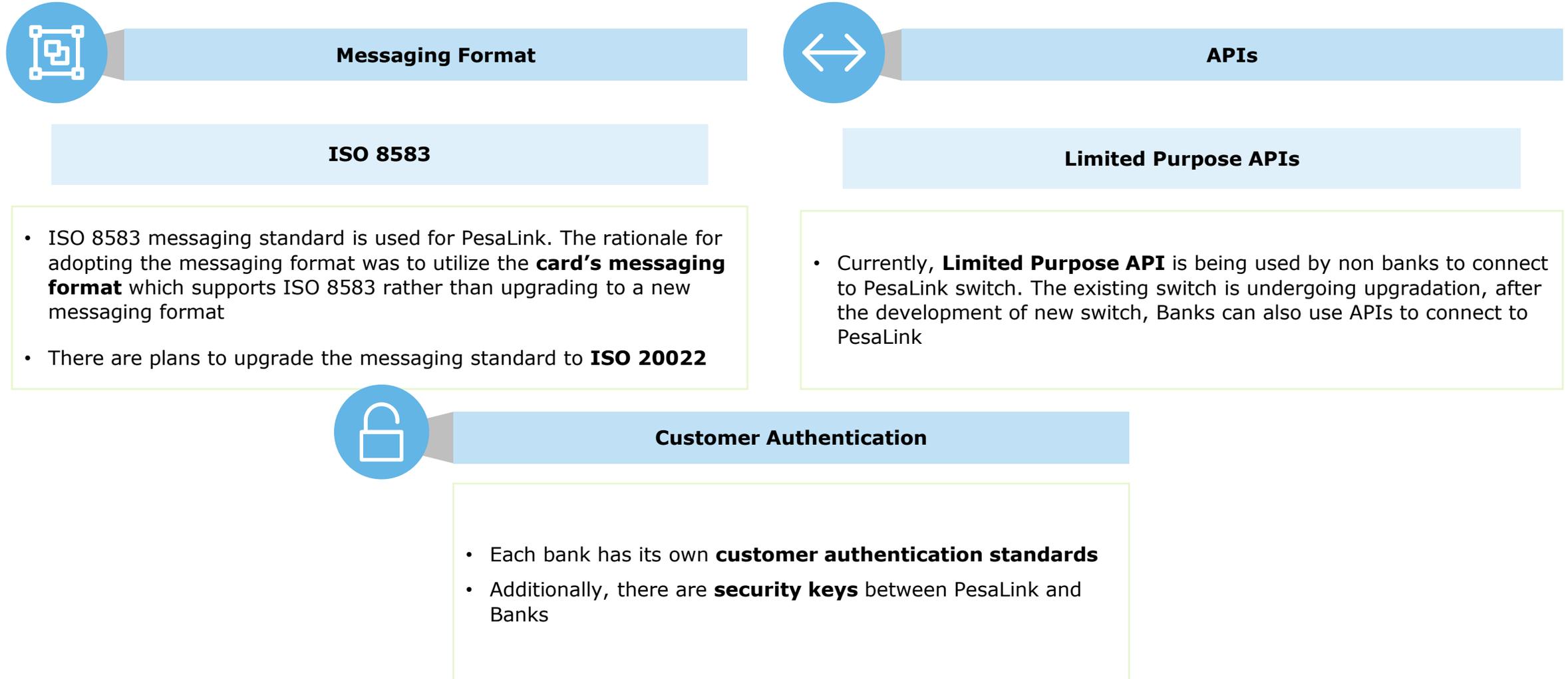
Chapter Summary:

- PesaLink currently supports **ISO 8583** messaging standards. With the upgradation of existing switch, there are plans for migration for migration **to ISO20022**
- Currently, non-banks can use **limited APIs** to connect to switch, with its upgradation even banks can utilize limited APIs to connect to the system

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



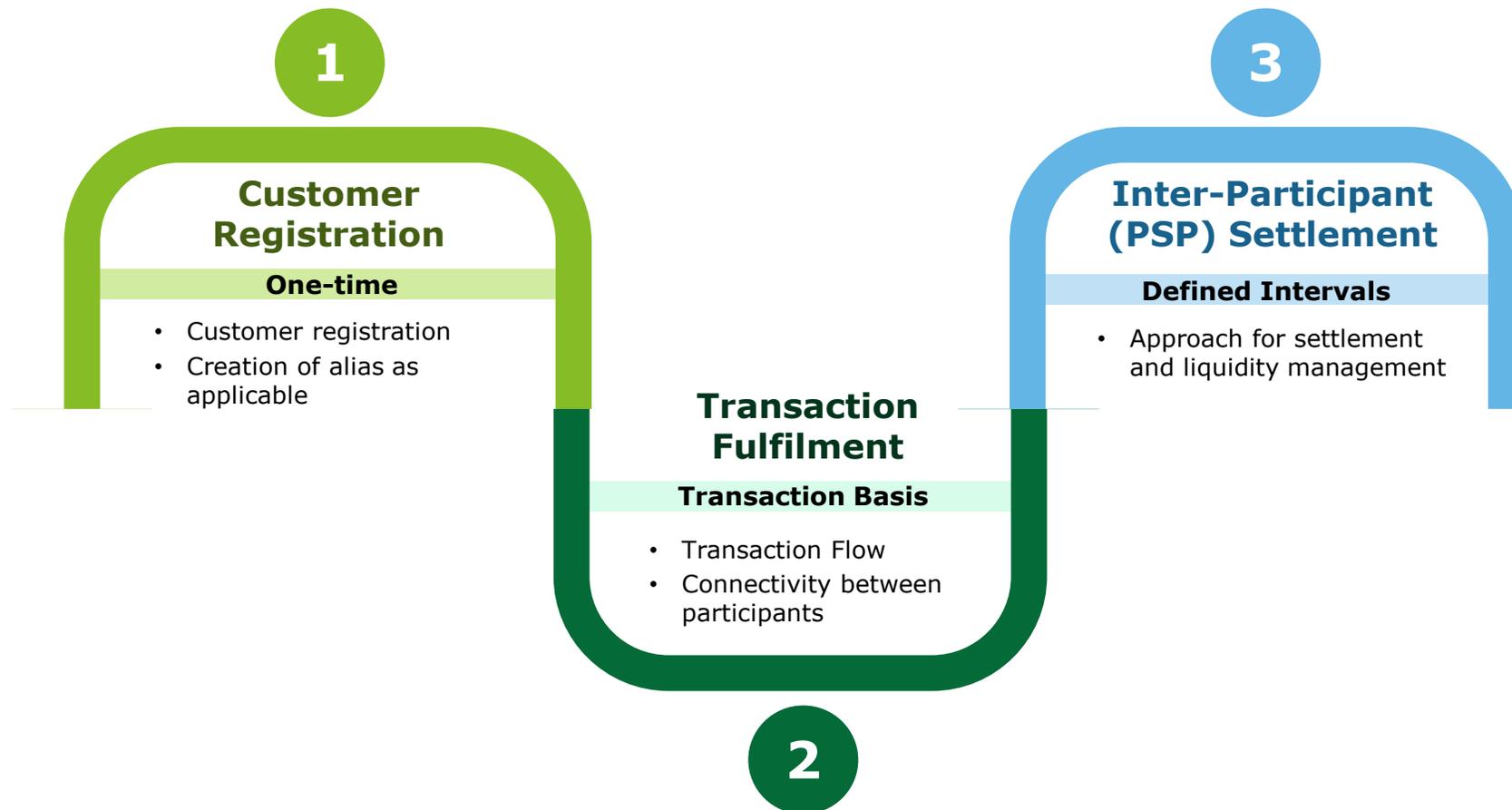
Below are the technical details of PesaLink covering the **messaging format & use of open APIs**. The messaging standard is extremely important in terms of connectivity and interoperability



4.2. Payment Process



Steps in the payment process include **one-time customer registration, payer-payee transaction fulfilment and inter-participant settlement.** Subsequently, various aspects related to these areas are covered



4.2. Payment Process | Customer Registration



PesaLink has an inbuilt feature with the mobile banking application of customers

Process for users to transact through PesaLink

Step 1: User logs into this bank's mobile application

Step 2: User selects PesaLink from the main menu; has an option to pay to a mobile number or account number

Step 3: User provides mobile number or bank details of the recipient

Step 4: User selected the account from which the money has to be transferred

Step 5: User enters the amount to be paid

Step 6: User provides the purpose of transaction (for e.g. rent)

Step 7: User confirms details and enters PIN to complete transaction

Step 8: User receives a confirmation message from the bank

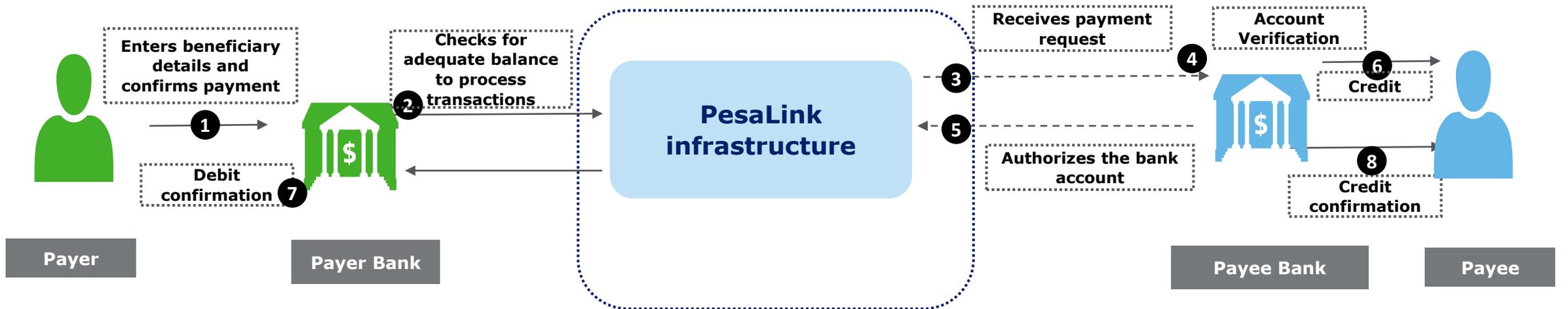
4.2. Payment Process | Transaction Fulfilment



PesaLink facilitates customer transaction using the bank account details and mobile number. The typical transaction fulfilment cycle is depicted below:



The transaction process is completed within few seconds from payment initiation to credit conformation





4.2. Payment Process | Liquidity Management and Settlement



PesaLink transactions are settled through net settlement in 2 cycles at the RTGS of the central bank and

Direct Member Settlement

Approach



Hub

Type | Time

Deferred Net settlement | 2 cycles daily

- PesaLink transactions are settled in Central Bank RTGS in **2 cycles daily**.
- During the conceptualization, it was envisaged to provide settlement frequently to minimize settlement risk. It is expected that the settlement cycle would be increased to **5 cycles** as transactions pick up
- Transactions limit has been capped to Kenya Shilling **1 million** and banks are required to maintain collaterals at the Central Bank RTGS to reduce liquidity risk
- Transactions during off-work and week ends are settled in the **first working cycle** of next working day
- The average uptime for PesaLink **>99%** to avoid any **operational risk**

Sponsored (Indirect) Member Settlement

- Indirect members such as payment service aggregators require **sponsor bank** to settle transactions on their behalf.
- These transactions are also settled through **deferred net settlement** mechanism

5. Governance Framework

Chapter sections:

5.1. Legal and Regulatory Aspects

5.2. Risk Management



Chapter Summary:

- The National Payments System Act, CBK Act, Banking Act and NPS regulations provide the legal framework to payments system in Kenya. Central Bank of Kenya is the regulator of the National Payments System. IPSL is a wholly owned subsidiary of the Kenya Bankers Association (KBA) to operate Pesalink
- The Central Bank has put in measures to minimize liquidity and credit risk; while transactions limit has been capped to **Ksh 1 million**, additional measures like **collateral requirement** has also been put in to minimize liquidity and credit risk
- There are plans to increase the settlement cycle from **2 times to 5 times daily** to reduce settlement risk
- Central Bank has also issued **BCP guidelines** for **cyber security** (for banking sector). There are cyber security compliances that are evaluated annually

5.1 Legal, Regulatory and Governance Aspects



The **National Payments System Act, CBK Act, Banking Act and NPS regulations** provides the legal framework for payment system in Kenya

Institutional and Governance Framework

Legal Framework:
National Payments System Act, CBK Act, Banking Act and NPS regulations

Regulator and Overseer:
Central Bank of Kenya

Operator:
IPSL

As per Central Bank of Kenya website

- The **National Payment System Act 2011** was enacted providing a new legal framework for NPS in Kenya. This act makes provision for the regulation and supervision of payment systems and payment service providers, and for connected purposes
- Further to this, the **National Payment System Regulations 2014** was enacted to operationalize the NPS Act 2011 and provides for the authorization and oversight of payment service providers, designation of payment systems, designation of payment instruments and Anti-Money Laundering measures.
- The oversight responsibilities of the Bank are carried out within these legislations and the Central Bank of Kenya Act 2004, Chapter 491 Section 4(A) (2) in subsection (1) (d), which provides the Bank the mandate to exercise the oversight powers of **promoting financial stability through cohesion in financial market infrastructure**

Objectives of Oversight

In performing its duties, the Bank aspires to: –

- **Promote Safety and Efficiency** of Kenya's Payments System to ensure the soundness of the National Payment System and hence **financial system stability**.
- Ensure **conditions of fairness, equity and transparency in payment systems** – the rights and obligations of parties to funds transfers are allocated in an equitable manner to ensure level field for all payment system participants
- Promote extension of **payment services nationally, regionally and internationally**
- Monitor the exposures in the National Payment Systems

5.1 Legal, Regulatory and Governance Aspects



Central Bank of Kenya is the regulator and overseer of PesaLink and aims to promote efficiency and soundness in the payment system

Institutional and Governance Framework

Legal Framework:

National Payments System Act, CBK Act, Banking Act and NPS regulations

Regulator and Overseer:

Central Bank of Kenya

Operator:

IPSL

As per Central Bank of Kenya website

- The Central Bank's overall objective as provided under Section 4 A (i)d of the Central Bank of Kenya Act is to formulate and implement such policies as to best promote the establishment, regulation and supervision of efficient, effective payment, clearing and settlement systems.

In this regard, the Central Bank seeks to ensure that payment systems

- Do not generate **high level of risks** to participants and users of financial services
- Continue to operate without **major disruptions**
- Offer **efficient, reliable** and **safe payment** services to customers
- Have the necessary and **regulatory legal framework**

The Central Bank participates in the payment system as a:

- **Facilitator of settlement:** By providing settlement accounts at the Central Bank to enable Commercial banks exchange obligations.
- **Provider of payment systems:** It operates and owns the KEPSS system which is used to facilitate real time transactions.
- **Supervisor:** Supervises the operations of the Nairobi Automated Clearing House on behalf of Kenya Bankers Association in order to maintain integrity and confidence.
- **Provider of liquidity:** The bank provides liquidity to the system to facilitate efficient operation of the settlement system.
- **Overseer of the payment system:** To promote efficiency and soundness in the payment system.
- **Catalyst/collaborator;** as a catalyst the Bank spurs change in the payment landscape through policy guidelines and as a collaborator provides a platform for open dialogue with all stakeholders geared towards improvement of the national payment system

5.1 Legal, Regulatory and Governance Aspects



While PesaLink is owned by Kenya Bankers Association, IPSL operates the system

Institutional and Governance Framework

Legal Framework:

National Payments System Act, CBK Act, Banking Act and NPS regulations

Regulator and Overseer:

Central Bank of Kenya

Operator:

IPSL

As per IPSL website

- Integrated Payments Service Limited (IPSL) concept can be traced back to 2012. Established by the **Kenya Bankers Association (KBA)** under the **National Payment System (NPS) Act**, IPSL was formed to address the challenge of **integrating retail payments** in Kenya
- IPSL aims at creating value for the industry, banks and customers **through innovation and interoperability**. The company was established to provide a **secure, fast and efficient money transfer system** by tapping into the latest technological advances

5.2 Risk Management



PesaLink follows different risk management measures such as capping transaction limit, high availability of system, etc.

Liquidity and credit risk

- All the participants are commercial banks and settle for the transactions in Central Bank Money to mitigate settlement risk. Continuous Settlement is done at the RTGS (KEPSS) During the day, giving banks the opportunity to raise fund from market to meet their obligations
- Additionally, transaction limit has been capped to **Ksh 1 million** to ensure liquidity for banks throughout the day

Settlement and operation risk

- During the conceptualization of PesaLink, IPSL envisaged the need to have **frequent settlement cycles**, but it was decided to have 2 transactions cycles initially. Currently, there are plans to increase the settlement cycles to **5 times daily**
- The average annual uptime for PesaLink is **99.99%** ensures minimal **operational risk**, consistent efforts are taken by KBA to maintain high uptime for system
- Banks are responsible for settlement of **indirect participant**. Also, non-bank or indirect participant have account domiciled with their respective bank to prevent **liquidity and settlement risk**

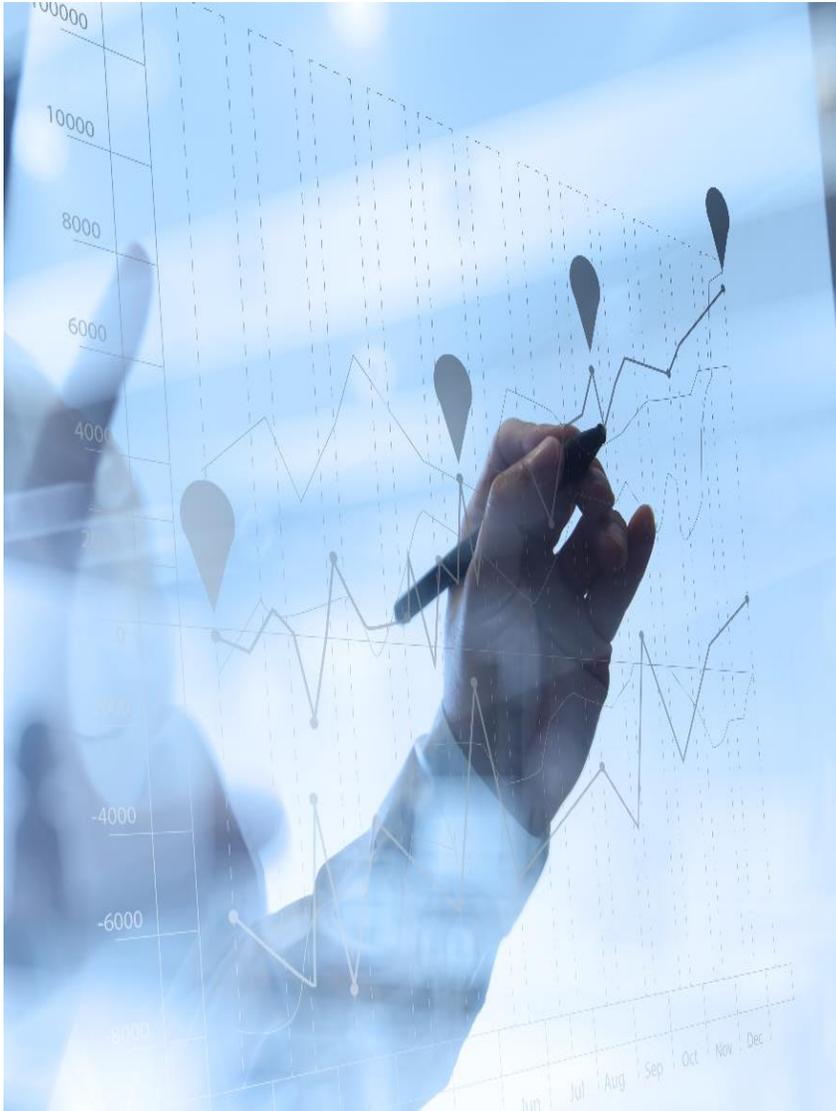
Data Protection

- PesaLink transaction data are not shared by banks, IPSL repository holds the data. Retention period for the **data is 7 years**. Banks are **custodian of customer data** and safety measures are put in place to ensure data protection
- Recently, parliament has also passed a **Data Protection Act** which is getting operationalized

Cyber security guidelines

- The Central Bank issued cyber security guideline under the **National Payments Act** that governs incident management and incident reporting
- Banks need to have the **cyber security standard** for the switch to participate in PesaLink. The Central Bank has also issued cyber security compliance measures that are evaluated on **yearly basis**

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 (Maximum 30 second)
	Transaction limit	<ul style="list-style-type: none"> Minimum – Ksh. 10 Maximum – Ksh. 1 million
	Alias	<ul style="list-style-type: none"> Mobile Number
	Channel	<ul style="list-style-type: none"> ATM, Branch, Internet and Mobile channels, USSD and Agency banking
	User charges	<ul style="list-style-type: none"> User charges are determined by individual banks*
	Infrastructure setup	<ul style="list-style-type: none"> New System
	Messaging format	<ul style="list-style-type: none"> ISO 8583
	Use of Open APIs	<ul style="list-style-type: none"> Limited API for non-banks
	Authentication	<ul style="list-style-type: none"> Information not available

Payment Types & Use Cases/Services

		
Individual	Business	Government

		
Merchant	Bulk / Batch Payment	Bulk / Batch Payment
		
Cross-border payments	Request to Pay	Request to Pay
		
Schedule future payments	Bill payments	Bill payments
		
Direct Debits		

Settlement

Approach	 Hub	 RTGS	 Distributed clearing
Type Time	Deferred Net Settlement		2 Cycles Per Day