

# Mobile Money Services

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**Abstract:** Mobile Money Services enables Communication Service Providers (CSPs) and Service Providers (SPs) to earn additional revenues from financial services delivered over the mobile network channel. The service proposition in emerging markets and developed markets is different, however both markets need to implement a technical solution that fulfills the financial regulatory requirements (that are country specific) as well as the necessary security mechanism, in order to avoid fraud and deliver a service that can be trusted. The basic services are Cash-in (Cash deposit) and Cash-out (Cash withdrawal), Money Transfer, Purchase airtime, Administration of accounts. More advanced services are Online deposit and bank transfers, International remittance, Card linked to account, Bill Payment, Retail payments, Payment of salary, Disbursement/repayment of loan, Savings account, Payment of pension/provident fund.

**Keywords:** Mobile Remittance, E-Money Wallet, Prepaid Charging System, USSD

## I. MOBILE MONEY – SETTING THE SCENE

Mobile Money enables the development of effective and profitable mobile financial services ecosystems that include telecom operators, financial institutions, merchants, distributors and retailers – locally and globally. Telecom operators, powered by Online Transaction Management Platform, can transform their airtime distribution network into a full-fledged commerce network. They typically begin with electronic airtime distribution, and from there gradually expand to provide Person to Person balance transfers, remittance and mobile commerce.

Mobile Mobile is innovating the traditional payment value chain. Operators and mobile internet players are well positioned to challenge incumbent schemes. Person-to-person (P2P) money transfer is the initial driver, evolving to Person-to-Merchant, and Person-to-Machine, to Machine-to-Machine. As 50 billion devices are connected in 2020, electronic money transactions will be a foundation for service enablement, e.g. road tolls, ticketing, metering, real-time charging and much more.



Fig 1 – Mobile Money Interface

## II. MARKET TREND AND FORECAST

The Ubiquity of mobile phones and the major chunk of people who have no formal access to banks are the key drivers for the Mobile Money Market. Mobile Money will offer a rewarding opportunity in terms of revenue for the people in its ecosystem both in the near future and over the long term. While talking about its ecosystem, it constitutes of many industries such as mobile network operators, banks and financial institutions, payment processors, mobile money platform providers, handset manufacturers, etc. because of its fragmented nature of the market.

The report also discusses the total Mobile Payments in terms of transaction value, total mobile money users and the active mobile money users forecast trends. The mobile transaction value is segmented based on industry verticals such as Banking and Financial Services, Telecommunication, Media and Entertainment, Hospitality, Consumer Goods & Retail and Other verticals. MarketsandMarkets also forecast-ed the Installed base and unit shipments for NFC enabled devices over the period of 2013 -2018. The global Advancements, Business Models, Drivers, Restraints and Opportunities are also presented in the report.

The market for Mobile Money is expected to grow from \$13.8 billion in 2013 to \$278.9 billion by 2018, at an estimated CAGR of 82.4% over the same period.

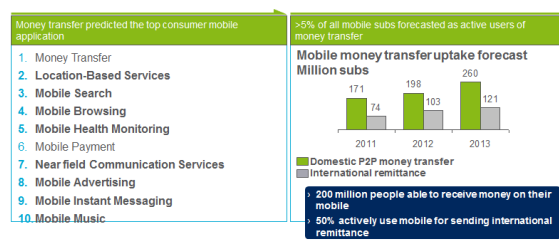


Fig 2

Based on impact on consumers and industry players, considering revenue, loyalty, business model, consumer value and estimated market penetration. Sources: Gartner study 2010, ABI Research 2010

### III. MOBILE MONEY – SALIENT FEATURES

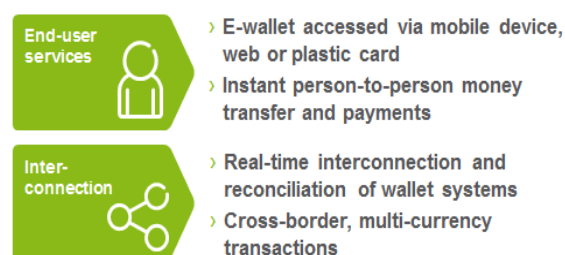


Fig 3. – Mobile Money Salient Features

Salient Features of Mobile Money can be broadly split in two parts:

1. Different money services solutions built on top of Money Orchestrator, which is the technical platform supporting mobile wallets and associated services. Mobile Money Solution can either provide a turnkey solution as prime integrator or some selected components, depending on operator needs. Solution can be provided as a software “product” or as SaaS.
2. Money Interconnect is a service delivered over a ‘remittance hub’ that connects different service providers to each other enabling them to send money instantly between their respective systems. Real-time interconnection and reconciliation of wallet systems. Cross-border, multi-currency transactions

Details of two major features of Mobile Money Services E-Money Wallet and Mobile Remittance are explained below:-

### IV. E-MONEY WALLET

e-Money Wallet is essentially an aggregator of payment instruments. It is a data repository that houses consumer data sufficient to facilitate a financial transaction from a mobile handset. It also includes the relevant intelligence to translate an instruction from a consumer through a mobile handset/bearer/application into a message that a financial institution can use to debit or credit bank accounts or payment instruments.

e-Money Wallet includes functionality such as:-

- Authentication of the consumer.
- Storage of billing and shipping addresses.
- Storage of details of bank account, payment card or any other payment instrument.
- Storage of transaction history.
- Integration to a bank, perhaps through a financial switch, for purchase, payments and transfers.

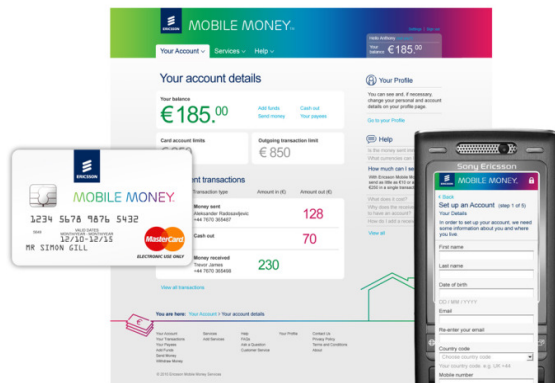


Fig 4. – e-Money Wallet Interface and Plastic Card

E-Money Wallet gives people greater options in how they conduct their day to day financial transactions. It is convenient, secure, fast and affordable way to Store, transfer and withdraws money; make payments via a mobile phone and conduct banking transactions, such as salary payments.

A secure E-Money Wallet solution is therefore vital, not only to protect consumers, but to reassure those hesitant to entrust their money to a new service. At the same time, service providers must protect themselves from fraud and regulatory infringements that could result in legal action, hefty penalties and loss of reputation that can have a dramatic impact on their bottom line.

E-Money Wallet Capabilities can be:-

- E-Money Wallet is a highly secure and flexible financial transaction system.
- Different mobile financial service propositions and business models can be supported.
- E-Money Wallet has been designed according to the requirements of revenue critical systems
- E-Money Wallet is pre-verified with Prepaid Charging System enabling innovative cross bonuses, cross-promotions and cross-product bundles that can implemented to and new customers.
- E-Money Wallet is built with an end-to-end view of the services and with extensive

experience in large scale real-time transactions handling.

## V. MOBILE REMITTANCE

Mobile Remittance is the future of remittance services as it is fast, convenient, secure, transparent and significantly less expensive. The mobile phones penetration has skyrocketed globally from 0.7 billion in 2000 to 6 billion, of which 4.6 billion are in developing countries. This extensive mobile penetration has helped low cost and convenient remittance services to become available in remote geographies without high investments in traditional infrastructure.

Mobile Remittance platform enables a low cost and flexible remittance service offering enormous potential to open new business opportunities for service providers, banks and mobile operators. Their customers can send money securely and instantly from the comfort of their own homes, or, while on the move using their mobile phones either:

- From their mobile wallet account to the receiver's mobile wallet account, or,
- From their mobile wallet account to an unregistered customer, who collects the remittance in cash either at an authorized agent or, an ATM, or,
- Send cash via an authorized agent, with the recipient also collecting cash at an authorized agent, or, at an ATM

The platform also supports an agent assisted remittance model wherein both sender and receiver may not have or use their mobile phones. These Remittance Agents make instant commissions, and their operation is fully managed by a feature rich Agent Management Module.

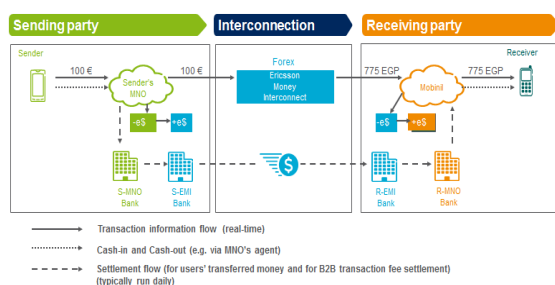


Fig 5- Overview of Remittance Process

## VI. MOBILE MONEY - SOLUTION OVERVIEW

Overview of the Wallet Platform with the key Integration points with BSS, End user channels and the external systems is depicted in this section.

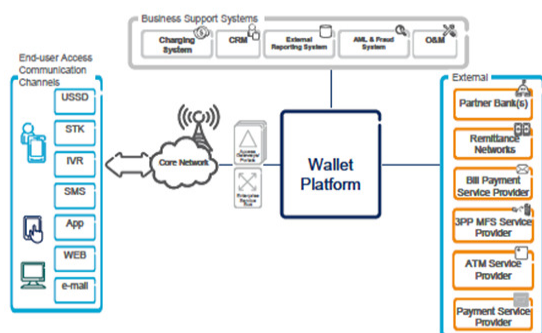


Fig 6 - High-Level view of the modules existing in E-Wallet and connections to related access points and network elements

## VII. MOBILE MONEY – TRANSACTION FLOW

Mobile Money Service processes transactions in real-time and therefore a transaction either succeeds or fails. All steps and outcomes of transactions will be logged.

Below describe the steps performed during processing of a financial transaction

### • Unique Transaction ID

A unique transaction ID is generated once a transaction is received by the system. The purpose of the transaction ID is to provide a unique identifier of all payment transactions and also used in all related

sub-transactions to ensure full traceability throughout the system.

### • Authentication

The authentication function verifies that the user id and PIN/password entered by the user is correct. For security reasons the PIN code/password will be received one-way encrypted from a secure client and matched with the one-way encrypted PIN code/password for the specific user stored in a Hardware Security Module.

### • Authorization

Both the sending and the receiving party must be successfully authorized for the transaction to be executed. The criterions for authorization are configurable to adapt the specific regulatory requirements that are applicable for the specific country, financial license, E-Wallet Institute and the user level.

Example of criterions:

- Transactional value
- Accumulated value of transactions
- Accumulated number of transactions
- Maximum account balance
- Enough funds on the account to cover the transactional value and any fee associated with the operation
- Blacklist/White list
- KYC level

A transaction that is identified as suspicious or has an associated high risk can be handled in a due diligence process to be either automatically or manually approved/disapproved.

### • Fee and commission handling

All types of transactions, person-to-person transfer, cash deposit, cash withdrawal etc., can have an associated fee. This fee is fully configurable and can be, for example, fixed, tiered or a percentage of the transactional amount.

The fee goes to a fee account managed by the E-Wallet Institute from where it can be divided into

commission to affected agent(s), in real-time or periodically.

The commission structure supports distribution of commission to multiple levels of agents.

- **Execution of financial transaction**

The financial transaction is executed once the sender and receiver have been successfully authenticated and authorized. A financial transaction is the part of the payment transaction that involves the actual account changes.

The financial transaction consists of several financial sub-transactions, such as:

- Credit and debit transactions for the e-money transferred from sender's to receiver's account.
- Credit and debit transactions for the fee from sender's account to the E-Wallet Institute fee account
- Credit and debit transactions for the commission from the E-Wallet Institutes' fee account.

If any of the financial sub-transactions fails, all other financial sub-transactions within the same financial transaction will be rolled back. The audit trail log will record this failed attempt, an alarm will be raised in the system and the sender will be informed that an error has prevented the transaction to be executed.

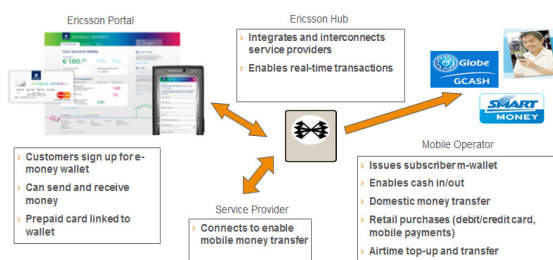


Fig 7

## Notification

All affected parties are notified upon successful completion of the payment transaction.

## VIII. MOBILE MONEY - EXAMPLES OF SOME MAJOR IMPLEMENTATIONS

Mobile Money Services are continuing to be deployed around the world. Examples of successful Implementation of Mobile Money for some key operators alongwith their Technology Partners is listed below.

Service Provider	Brand Name	Technology Partners	Capabilities
MTN	MobileMoney	Ericsson	• Book Bus Ticket • Load Cash with Credit/Debit Card • Shop • Get TalkTime Offer • Book Movie Tickets • Pay Utility Bills
Airtel India	Airtel Mobile Money	Infosys WalletEdge	• International Remittance • Salary Payment Disbursement
Vodafone	m-pesa	Vodafone, IBM-Germany	

Fig 8 – Mobile Money Implementations Globally alongwith their Technology Partners. Also depicts the key capabilities of Mobile Money Services.

## IX. CONCLUSION AND KEY TAKEAWAYS

The evolution of money from promissory notes, to currency, to cards and electronic funds will continue as the digital and physical worlds are bridged by Mobile Money.

Mobile is changing the overall competitive landscape. It's opening the door to powerful technology-centric disruptors that seek to stand between financial institutions and their customers by offering new direct-to-consumer mobile payment and commerce capabilities.

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