CGAP holds that Smartphone interfaces are likely to become the main interface for mobile money use. A well-designed interface will drive growth, profitability, and a much improved user experience.

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Smartphones Will Change Mobile Money

The predominant USSD interface is clumsy, text heavy, hierarchical, and a barrier to uptake. Smartphones open a whole new range of interface options that can leverage touchscreens, images, graphics, and sound. A well-designed interface can affect millions of customers in their day-to-day interactions with finance. Many market signs point to rising smartphone usage in the next 5-10 years.

Smartphone interfaces could be a key to unlock value for low-literate consumers overcoming communication barriers imposed by early-stage feature phone-based models. There is also compelling evidence that more educated customers appreciate quicker and more intuitive user experiences – large and successful digital players such as Uber, Facebook, and others make large investments in the user interface and experience. Such investments will also change mobile money.

CGAP holds that a well-designed smartphone interface will enhance:

FOR PROVIDERS

▲ **GROWTH:** transactions, use and revenue per customer

▲ **CUSTOMER ACQUISITION:** increased and diversified customer base

▲ **CUSTOMER RETENTION:** higher activation and use, and lower dropouts

FOR CUSTOMERS

▲ **TRUST:** easier to understand services and fees

▲ **CONSUMER PROTECTION:** reduce errors and enable easier access to assistance for customers

▲ **CONTROL:** more control over their financial transactions
Many Interfaces Make Avoidable Mistakes

- Copy USSD Menus
- Resort to Careless or Confusing Icons
- Overly Rely on Text
Many Interfaces Make Avoidable Mistakes

Overload with Information and Options. For example, this menu runs onto two screens from M-Ledger app.

Copy Online Computer Interfaces not Suited to Smaller Smartphone Screens
This document presents a set of UI/UX principles for mobile money smartphone interfaces. The principles are for basic mobile money services delivered to the mass market in low-income countries. However, the principles are also valid for higher income consumers.

These UI/UX principles continue to be debated, vetted, and improved with the help of an expert group that first met in April 2016 (see Appendix for experts list). The content relies heavily on inputs from CGAP partners, including Wave Money Myanmar, Karandaaz Pakistan, Small Surfaces, and GRID Impact.

This is the first version (V1.0) of this document. It is not meant to be comprehensive, but is intended as a starting set of principles that will improve smartphone interfaces for basic mobile money functions. Further insights into mobile money UI/UX are sure to follow as the experiences grow richer and broader in the months ahead.

The principles apply to basic mobile money functions, such as:

- **LEARNING ABOUT AND EXPLORING THE SERVICE**
- **REGISTERING ON AN APPLICATION AND BEGINNING USE**
- **DEPOSITING/WITHDRAWING**
- **MAKING BASIC PAYMENTS**
21 Principles for Smartphone Mobile Money UI/UX
Allowing new users to explore the service before registering for full use is an opportunity. There can be video, images, or text that explain how the service can be useful to the user. Apps that do not do this miss an opportunity to leverage the smartphone as a way to sell the service and engage new customers.

The Karandaaz Pakistan design has an introductory set of images about the app people can explore that then leads to the option to open the account.

This app requires users to register for an account before being allowed to peruse the services within the app.
Access to agents remains critical for mobile money. Providing in-app guidance by using the GPS location feature on smartphones, and access to agents’ addresses and phone numbers to find the most convenient or most reliable agent can be a critical aid.

Pepele Mobile uses a visual agent locator feature with a map and distance filter.

This app identifies agents that have float so users can more easily transact.
Initial application sign-up is a barrier. Reducing the number of steps and making each step simple and clear can ease app use. Finding the right balance of ease-of-use can greatly speed customer acquisition.

WAVE Money in Myanmar requires both the user’s mobile phone number as well as a unique code for initial sign in. The 5-step process is customized, simple, and easy to follow.
Navigation from hierarchical menus common in USSD are disliked by consumers. Users like to go directly to the thing they need done. Some refer to this as “shallow” navigation, allowing users to navigate directly to what they want.

The Karandaaz Pakistan home screen provides clear transaction options with little need for the customer to search or dig.

This app from Pakistan requires users to first select a category of transactions and then visit a separate menu.
The WAVE Money home screen prioritizes important actions and keeps the home menu simple and clear.

The WAVE Money home screen allows the menu to pop-up to directly go to desired function.

The WAVE Money app has a shallow architecture, which makes it easy for customers to go directly to what they need to do.
Focus Menu Choices on Actions

Menus should avoid “navigating” and focus on “doing”. The options should be presented as a limited list. Menus should not use technical jargon and instead offer direct links to action steps.

This pop-up menu focuses on specific actions users can choose from.

This home menu focuses on key actions users frequently use in Pakistan.

This app from Pakistan lists transaction options that are not positioned as actions.
Users prefer quick visual cues over text. Visual cues should be selected carefully to link to users’ experience – enough visual detail to communicate but not too much detail, which overwhelms.

This example of AndroMoney uses dynamic, detailed icons coupled with simple text language.

The homescreen is characterized by a menu of large, detailed illustrations that visually depict the core features.

This African mobile money app relies solely on text, rather than incorporating icons and visuals. Lower-literate users may find it difficult to navigate the app, especially if French is a secondary language.
The Wave Money app uses color (green for success), text ("Success"), and visual cues (the tick mark and right arrow) to explain the transaction and its status to the user.

The Karandaaz Pakistan design uses colors, tick marks, and arrows to indicate money being sent or received from a user’s wallet. In the example on the right, green and left-facing arrows mean the user has received money while red and right-facing arrows mean the user has sent money.
Good icons communicate clear actions and are understandable to local users. Icons initially expected to work often end up confusing customers. Prototype testing in local environments is critical.

In Pakistan, icons that use multiple colors and less abstract symbols were easier to recognize. For example: Help was better as a person with a headset, rather than a question mark.

In Pakistan flat, single color icons were more difficult for users to understand. Abstract syntax was also confusing. For example, most research participants did not associate “?” with help.

Water Bill and Call Center icons by Kid A and parkjsun from the Noun Project
Karandaaz Pakistan prototyped illustrated icons – flat, black-and-white icons, multi-colored hand-drawn icons, but ultimately decided on these computer-illustrated multi-colored icons. Each icon focuses on an action that is understood in the Pakistani environment. Consumers preferred these because they are clear and specific, but do not have excessive detail. These icons depict an action step that clearly communicates.
Use Simple and Familiar Menu Terms

Use plain language and make it consistent with how people communicate locally. Choose words that are locally used in everyday discussion.

The Saida app, which links to your M-Pesa account, uses colloquial and personal language to offer assistance to customers.

The Chillr app, while text-heavy, uses simple language in education messaging.

The Karandaaz Pakistan design uses “Find Shop” language rather than the more common “Local Agent” because in Pakistan, this is the colloquial, common phrase.

In this Pakistan app, the term “nick setting” is probably not familiar to users.
Leverage Android design practices that are familiar to users. Input fields, push notifications, header bars, menus, and other patterns should be consistent with design and navigation users may already be familiar with. For example, new apps in the Kenyan market have adopted language, flows, and visual cues in-line with M-Pesa.

This app makes strong use of patterns from the Android UI Pattern Library, which may be more familiar to Android users.

The Android Pattern Library is a great resource for designers who want to follow industry-standard design. https://developer.android.com/design/index.html
10 Customize Transaction Choices

Present a few choices based on past usage or most popular actions. Where possible build in pre-filled and prioritized choices based on each user’s prior use.

“Pay Bill” is an icon on the home screen.

The Pay Bill menu is organized by categories.

Each category shows an alphabetical list of providers. Providers that a user has previously transacted with appear at the top of the list.
Apps can speed up many transactions and key decisions by automatically pulling information from a user’s contact list. Using information already saved to the phone can help quickly fill in transactions and reduce key-punching errors.

The Wave Money app links to the user’s contact list and lists recent recipients first. Those with the blue flower icon indicate others who are registered with Wave Money.

Karandaaz Pakistan also allows the user to choose a recipient from her contact list, with recent contacts listed first.

This app from Pakistan requires the user to input the recipient’s mobile account number. This may lead to input errors.
Auto-Check to Minimize Human Error

The sequence, use of feedback and ability to make corrections can minimize human error. This will reduce customer frustration and improve complaints handling, while also building user confidence and fluency.

In this example from Karandaaz Pakistan, a user is trying to send more than his/her current balance allows. The design does not wait for the user to press “Next” before alerting the user to the error.
It is easy to overwhelm customers with too much information or too many choices. Keep things simple, focused, and consistent, allowing users to make simple decisions.

In the WAVE Money interface, designers separated airtime purchases (for the customer’s versus someone else’s wallet) into two screens. They also broke the choice down into a two-screen process: who, then how much.

An early WAVE money prototype for airtime purchases allowed purchasing for oneself and others on the same screen. This overwhelmed customers with too many choices.
14 Reassure with Transaction Confirmations

Every decision or action is a potential misstep. Allow customers to confirm steps and assure them along the way by reinforcing each action.

The WAVE Money app uses several different confirmation and assurance design features. In addition to allowing customers to review a step prior to confirmation, the app also provides a confirmation “receipt” with several visual cues to convey a successful transaction.

Easypaisa Telenor in Pakistan offers a confirmation screen after a successful transaction.
A brief “sending” animation let the user know that his/her transaction is being processed. Even if the transaction is instant, this animation helps the user feel confident that his/her transaction was successful. The Karandaaz Pakistan design shares a detailed transaction receipt and provides confirmation in the form of the Virtual Assistant.

The Karandaaz Pakistan design provides an opportunity for the user to confirm the transaction prior to sending money. It also provides detailed transaction confirmations, which include the amount sent, associated fee, date and time of transaction, and transaction ID number.
Customers like to review past transactions as reminders, for evidence in the event of a mistake, and for peace of mind. Allow them to do the same in the app, while also making it interactive so they can easily repeat past transactions. Where possible, also create opportunities for users to see the status of a transaction.

The design for Karandaaz in Pakistan uses visual cues—both icons and colors—to help identify types of transactions. Any transaction summary can be expanded to show the full detail of the transactions as well.

The transaction detail screen shows additional details about the transaction. It also shows recent transactions with this particular contact.

By pressing “Send Money” on the transaction detail screen, a user can initiate a new transaction with this contact.

The Jana Cash app also uses visual cues to indicate transaction history, including the interesting option to show certain transactions as “in progress” or “pending” or “failed”. Jana Cash is very transparent about transactions and informs customers how the service works.
Provide Instructions When Needed

Key instructions should appear at the moment it is needed. Seeking helpful information should not require a user to exit a transaction in-progress but rather should appear within the transaction flow. Advice can react to the customer’s interaction with the app, making the support seem personalized and contextual.

Support was integrated into transactions in the WAVE Money app. Customers receive clear guidance (using simple language) at the moment they need it, as part of the transaction. This gives customers the comfort that they will be supported through transactions, and helps reduce confusion.

At any point in the transaction flow a user can receive contextual help by opening the Assistant. The help throughout the transaction flow was easy to discover and appreciated by customers. Even customers who did not need help welcomed this feature because they might share their phone with someone else who would benefit from the help.

In this example from GCash, the user is reminded of transaction processing time as well as fee deductions during the bill payment flow. Although the reminder is included as a footnote, it is helpful to the customer who may be unaware of this information.

In this example, helpful information is stored in the FAQs section of the app, which requires users to search for specific topics rather than being offered the advice in a transaction.
Handling errors is an opportunity to address frustrations for end users. Present users with clear pathways to resolve problems. Don’t make users feel as if it is their fault.

The Karandaaz Pakistan design provides feedback to the user when an error has occurred without taking the user out of the transaction flow. When possible, error feedback should happen in real time. In the example, a user is trying to send more than his/her current balance allows and receives an error as he/she types the amount. The design does not wait for the user to press “Next” before showing the error.

In this example from the Karandaaz Pakistan design, a user has tried to press “Next” without properly completing the form. The design identifies the error and also gives an instruction about the mistake.
18 Customize and Simplify Keyboards

Customized simple keyboards ease user inputs and navigation.

In the WAVE Money app, a simplified key board appears for input.

In this prototype from the Karandaaz Pakistan work, research participants had to tap on the field to open the native keyboard. Many participants struggled with this. Additionally, the keyboard showed unnecessary characters that did not correspond to the transaction at hand.
19 Auto-Calculate Fees During Transactions

Inserting a fee calculator alongside transactions provides an immediate easy-to-use feedback tool for users.

The WAVE Money app automatically calculates fees during the transaction flow so users can immediately see the cost of the transaction.

In the WAVE Money Myanmar prototype testing, fee slab tables were consistently hard for customers to understand. Customers were overwhelmed by information about multiple fee levels.
20 Provide Full Transaction Details on One Screen to Finalize Transactions

Transactions can take place over multiple screens. But by consolidating summary transaction information onto one screen, users can build confidence because they have a sense they know what they are doing and will likely experience fewer errors.

This portion of the Karandaaz Pakistan send money flow shows how single screens are focused to one key decision; this prevents the user from being overwhelmed.

Key by Nadir Balci/ from the Noun Project
Having the account balance easily accessible is reassuring for the client and also very useful. Design should also leave room for users to easily hide their balance on the screen away from the prying eyes of family or others. Users want both quick information on their balances and also privacy.

A user can hide his/her balance by tapping on the balance on the homepage. Once hidden, tapping his/her name will make the balance appear again. This addresses privacy concerns some users may have.
Good Ideas Worth Further Prototyping
Allow for PIN Resets in the App?

The most common reason to call a call center is to reset PIN codes. Apps may allow users to undertake PIN reset directly.

Users can change their PINs in the WAVE Money app. This wireframe shows a flow for users who remember their PIN but want to reset it for some reason. In addition to users resetting their PIN in the app, providers may want to create flows that allow users to reset their own PINs if forgotten, rather than having to call the call center.
Use Audio Instructions in Local Language?

Many users like the option to hear explanations, instructions, confirmations, or other content in their local language. Providing easy, readily accessible, in-process audio is an added enabler for many users.

The Karandaaz Pakistan design includes an audio function for users who prefer listening to instructions or explanations. In this case, pressing the speaker icon will play an audio recording that matches the text of the Assistant.
Using images of currency can help customers who have difficulty with numeracy. This may be particularly important in countries with historical inflation and where denominations are very large—thousands and millions. Visual representation of bills may help those who struggle with periods, commas, and zeros.

The Karandaaz Pakistan design was tested using currency representations of transaction amounts, particularly for customers who might be less literate. The Rupee denominations match the amounts articulated in the virtual assistant’s comment.
Link Users with Their Social Networks?

Sharing information about other customers’ usage encourages adoption. Be careful, however, as users may not want to give out detailed information about themselves. Find the balance between sharing and privacy.

The Saida interface integrates WhatsApp as a way to acquire new customers and expand the potential usage of its services.

Karandaaz Pakistan encourages users to share transactions on social media. Connecting with Facebook makes it easy to find contacts and share activity.

Customers who prototype tested the WAVE Money app found it unacceptable to share information about how many transactions they had done with the service. On the other hand, customers had no concerns about sharing status levels (e.g., bronze, silver, gold), even if these levels were linked to transaction volumes.
Begin with Simple Instructions, Add Complexity over Time?

Improve usability using only the minimum information required for the task. Allowing users to learn through use (rather than by instruction) empowers users. Build in more sophisticated features over time as users gain experience.

The WAVE Money design helps customers understand complex transaction histories by teaching them first how to read individual transaction records. Once they had experience reading these individual records, it was easy to progress to reading a set of records together in a history.
Enable Users to Self-Register?

Depending on the context, apps can allow new users to register for an account remotely. This might include taking a photo of an ID, taking a selfie, and entering some basic registration information.

The WAVE Money design shown here (and continued on the following page) shows an eight-step process that guides users through the process of registering for an account remotely. This is one possible approach to self-registration that providers might want to test further.
Enable Users to Self-Register? (cont.)
Agents are an essential part of mobile money operations. Providing customers the opportunity to rate agents or easily register complaints can be a powerful tool to improve service and customer satisfaction.

Empower Customers to Rate Agents?

One possibility is to allow users to rate agents after completing certain transactions like withdrawing money. Users could search for agents based on their customer rating score.
Make Customer Support Accessible Through Multiple Channels?
Many customers have unsatisfactory experiences seeking help from customer support phone lines, often giving up after long wait times. Testing accessible channels for customers to get immediate help for problems, using text messaging, video, and audio could be an interesting alternative.

IDEO.org prototyped a WhatsApp chat as an alternate, complementary customer-service channel with live human responses from a telecom staff person.
How to Improve the Smartphone Interface
Test Design with Diverse Sample of Customers

Design improves with feedback from a range of representative customers – existing users, potential users, and “extreme end users” (super-users and non-users). Insights can come from many different kinds of potential users. Designing to be inclusive of diverse customer segments will broaden appeal and improve scalability.

Through participatory activities with mobile money customers and agents, GRID Impact tested various design concepts and features. These activities included card sorting to select appropriate visual icons and transaction flows, icon co-design to develop improved visual language, and task-based transactions to test the logic of flows.

GRID Impact tested the two interaction model concepts using low-fidelity prototypes. These paper-based prototypes allowed the team to capture feedback from users and agents on the style, design, icons, flows, and overall structure of the smartphone app menu.

GRID Impact also used a high-fidelity clickable prototype to generate feedback from users on how the app worked. The team used task-based transactions to see how users engaged with the app, where they encountered difficulties, and how they interpreted transaction flows.
Strong design requires multiple versions. Begin with low-fidelity (paper) and shift to higher-fidelity (electronic and clickable) prototypes. Designers should not be afraid to put paper prototypes or incomplete electronic versions of their concepts in front of users. Multiple iterations testing and fixing along the way produces superior results.
Be Willing to Discard

Many “great” ideas should be thrown away during the iterative design process. What concepts you choose not to include are as important as those that you keep.

In the WAVE Money example, one design approach considered for the application used a “chat” model (following Viber, which is very popular in Myanmar). Financial transactions were grouped around individual people (like a chat history). Customers felt that transaction histories were not important enough to always be visible. So this idea was discarded.

The WAVE Money team wanted to make transactions more personal and meaningful. One idea was to allow the sender to include “stickers” with a transaction. This idea failed, but resulted in a very popular “say thanks” feature for recipients.
Tweak Small Details to Make a Big Difference

No detail is too small to test: colors, terms, placement, icons. Each detail is an opportunity to avoid confusion and improve the customer experience. Multiple iterations of prototypes allow many opportunities to fix and improve small details along the way.

Despite the “left-to-right” arrow being counterintuitive when coupled with “right-to-left” Urdu text in Pakistan, it was the most widely understood symbol for moving to the next step. This was both surprising and an important finding that might have been otherwise overlooked.

During prototype testing with users in Pakistan, “X” was received well for “cancel” because people associate “X” with wrong or mistake. However, “X” was not good to use for “close,” because people were not familiar with this UI pattern.

Call Center by parkjisun from the Noun Project
The integration of business operations, app development, and design from the beginning throughout is critical. This builds in business needs, technical constraints/options, and design to find the most practical solutions. This can add time to the iteration design, but will produce better results.

Involve Business Managers and App Developers in UI / UX Design at Every Step

App Development (the coders)

UX / UI Design (human-centered specialists)

Business Strategy and Operations (managers)
Additional Resources

There are many practical resources available to providers interested in developing smartphone interfaces for mobile money using a user-centered design approach. This Appendix offers a series of toolkits, guides, and practical applications of UX / UI design for smartphone interfaces.

**CGAP Publications**

- **Customer Experience Toolkit**
  [https://www.dropbox.com/s/mopjha4og1te0j1/CXT_VF.pdf?dl=0](https://www.dropbox.com/s/mopjha4og1te0j1/CXT_VF.pdf?dl=0)

- **What Human-Centered Design Means for Financial Inclusion**

- **Designing Customer-Centric Branchless Banking Offerings**

- **Exploring Alternative Product Concepts**

**Understanding HCD + UX Design**

- **Don’t Make Me Think, Revisited**

- **Principles of Mobile App Design**
Additional Resources
Smartphone User Interface and User Experience Design

Design for Mobile Money Toolkit by GRID Impact for Karandaaz Pakistan

Toolkit Overview  Wireframes  Icons & Illustrations  Prototype

Download Design Toolkit

Smartphone User Interface and User Experience Design for Mobile Money in Pakistan Design Toolkit
http://karandaaz.com.pk/toolkit
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Expert reference group on smartphone UI/UX

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