Value of Voice – an unsung opportunity

- While the number of Mobile for Development services launched in developing countries has increased significantly in recent years, in most cases these services are still primarily delivered through text messaging
- Despite its ubiquity, voice is one of the least used options, and its use in Mobile for Development services has been decreasing since 2009
- However, we believe this fails to account for several underappreciated (or misunderstood) advantages over SMS that give it a compelling use case for mobile operators and entrepreneurs: a larger addressable market (avoids literacy barrier), cost advantage to the service provider, richer content and higher quality of service, and the ability to track user behaviour

Text messaging remains the most common way of delivering mobile-enabled services in developing countries. However, there are compelling reasons to reconsider the value of using voice solutions as a delivery mechanism – both for scale and profitability. Although the initial costs of implementing a text-based (e.g. SMS, USSD[1]) Mobile for Development (M4D) service are generally lower than voice-based services (e.g. IVR[2], native voice), the corresponding addressable market of these services is often more limited, constrained by language and technology illiteracy (see Figure 1). IVR voice services are also well placed for profit margin expansion due to cost structure advantages compared to running SMS and USSD services.

This note has been designed to inform mobile operators and entrepreneurs why (and when) voice based services should be considered when implementing an M4D program. We will begin by highlighting the advantages and disadvantages of using voice, text messaging or data to deliver services; we will then describe in detail the advantages of using voice.

Figure 1: Voice vs. text messaging

Technology	Addressable market	Cost efficiency for service provider		Who typically delivers the service?
		Short –term	Long-term (at scale)	
Native voice (call centre, helpline)	●	○	○	Donors, operators
IVR	◕	○	◑	Donors at start-up stage Potential for self-sustained business model
USSD	◑	◐	◐	Operators
SMS	◑	◕	◔	NGOs, SMEs, service providers (including mobile operators)

○ Low   ● High

Note: This represents a general assessment, as such will not apply to all services
Addressable market size and cost efficiency for a given technology are meant to be relative to another

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[1] Unstructured Supplementary Service Data
[2] Interactive Voice Response

Comparing different technologies

There are three broad technology groups used to deliver M4D services: voice, text messaging and mobile data. Voice services can be divided into native voice, IVR and outbound voice messaging (OBD); text messaging can be divided into SMS, USSD and Text-to-Speech; data can be divided into browsed services (web and WAP) and apps.

Delivery technology	Advantages	Disadvantages
Voice	■ Works on all phones ■ Has the potential to reach more people ■ Automated voice systems (IVR) have the potential to generate sustainable margins at scale ■ Richer content ■ Higher quality of service	■ High upfront set-up costs ■ IVR systems are difficult to install and configure ■ Need significant infrastructure support to deal with all incoming calls ■ Customers cannot save content (e.g. messages from an IVR system) on the phone for future reference
Text-based	■ Works on all phones ■ Low set-up costs ■ Low technical set-up ■ Can be stored for later viewing or shared/ forwarded. Customers can refer back to the SMS	■ Limitations due to illiteracy (both language and technical) ■ Some mobile phones do not support local languages ■ Costs escalate in-line with scale
Mobile data	■ Richer user experience (functionality and content) ■ Fewer limitations of content (as number of words, broader access to content) ■ Helps overcome illiteracy by having images	■ Limitations due to technology literacy ■ Less ability to understand user behaviour when communications run over the internet ■ Device requirement and cost implication

The most popular mode for delivering M4D services is text messaging, with around two thirds of services tracked by MDI based on this technology, followed by USSD-based services at around 40%. Services that require mobile data are still a minority but are rising, particularly in education and employment applications (see Figure 2). Voice is comparatively low.
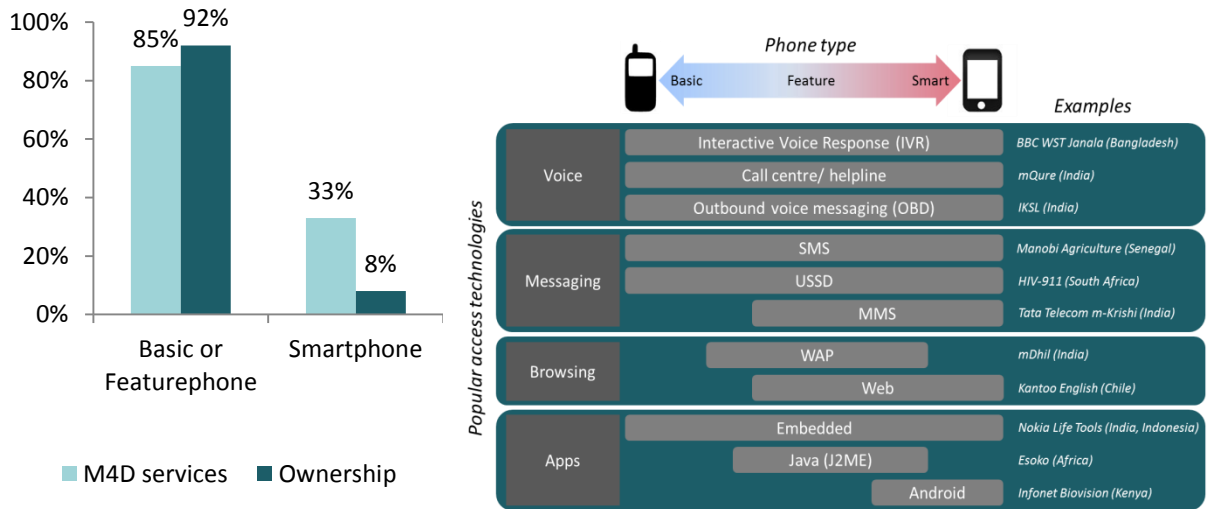
Figure 2. How are M4D services delivered?
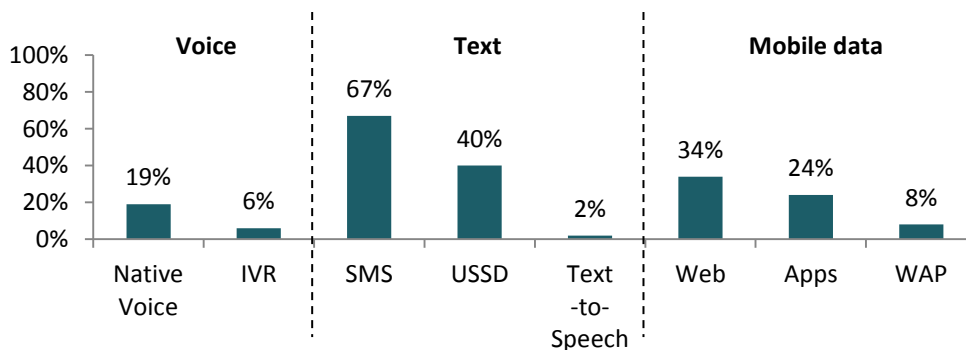
Note: services can be designed for multiple devices or technologies, so percentages will add up to more than 100%

Source: GSMA-MDI Analysis

That SMS has become a prolific use case is not surprising. It is supported on all generations of mobile phones, and its simple functionality is accentuated on basic and featurephones – which represent the vast majority of devices currently in use across the developing world – in the absence of more advanced features such as mobile web browsing.

Figure 3. What type of handsets are VAS[3] designed for?


Source: GSMA-MDI Analysis (developing world)

Note: services can be designed for use on a featurephone and smartphone, so M4D figures add up to more than 100%

However, the same argument is true of voice. While SMS popularity has been maintained (even increased) as smartphone penetration has increased, the use of voice overall has declined, with it only used by around 10% of VAS (see Figure 4).

Figure 4. SMS rises, voice languishes
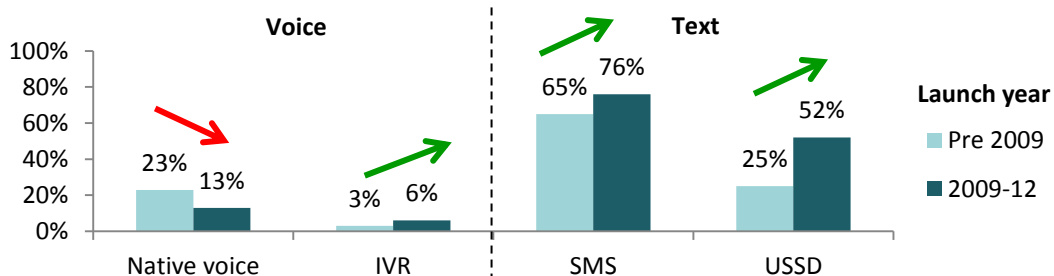
Note: services can be designed for multiple devices or technologies, so percentages will add up to more than 100%
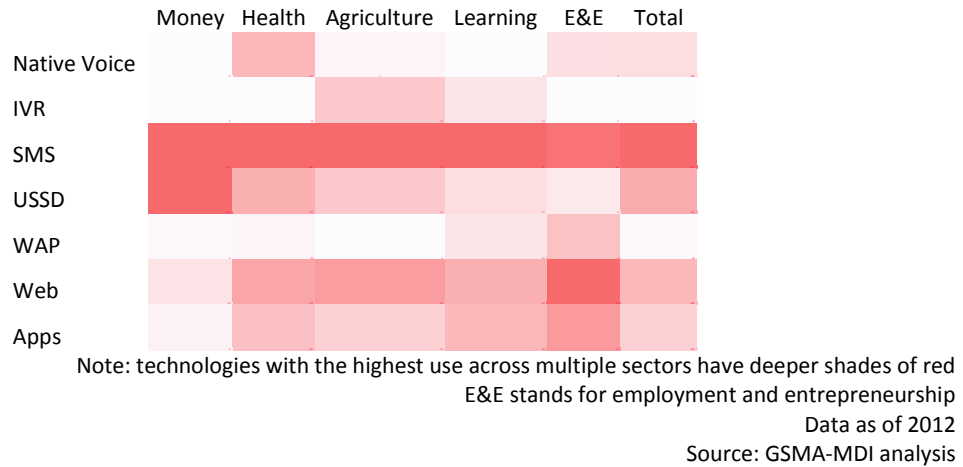
Source: GSMA-MDI Analysis

SMS services are used across all M4D verticals, while voice has proved to be niche, with its use mainly in health and agriculture (see Figure 5, and footnote for examples[4]). To some extent, this reflects the content-rich nature of demands from users in these sectors – a farmer requiring instructions on how to administer a pesticide is more likely to require a human voice at the other end of the line than a migrant worker using a text-based system to send money back to a local

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[3] Value Added Services

[4] In India, mQure is a mobile healthcare service that provides medical knowledge and expertise over the phone (other examples are Hello Doctor in South Africa, Learning About Living in Nigeria and Ligne Verte in the Democratic Republic of Congo). Krishi Barta in Bangladesh is an agricultural portal that provides agricultural news and weather updates via IVR to Robi customers (other examples include National Farmers Information Service (NAFIS) in Kenya, Farmerline in Ghana and Malomat in Afghanistan).

village. However, even *within* these voice-friendly sectors, voice is considerably less popular than SMS, suggesting the use case benefits are still not adequately understood.

Figure 5. SMS is everywhere, voice is niche

Note: technologies with the highest use across multiple sectors have deeper shades of red
E&E stands for employment and entrepreneurship
Data as of 2012
Source: GSMA-MDI analysis

Why should voice be considered?

Addressable market

In general, there is a correlation between literacy rates and SMS usage - an analysis of 24 developing countries shows that lower literacy rates correspond to lower SMS usage (see Figure 6). There is a clear need for voice services in areas with low literacy, particularly for Base of the Pyramid (BOP) populations who typically have even lower literacy rates than the general population. While there are a few exceptions, such as Brazil (which may be impacted by the use of OTT services such as Whatsapp, which we believe to be relatively high in this market), the majority of markets follow this correlation and, interestingly, there are no markets with poor literacy rates and high SMS usage.

Figure 6. Adult Literacy Rates and SMS users
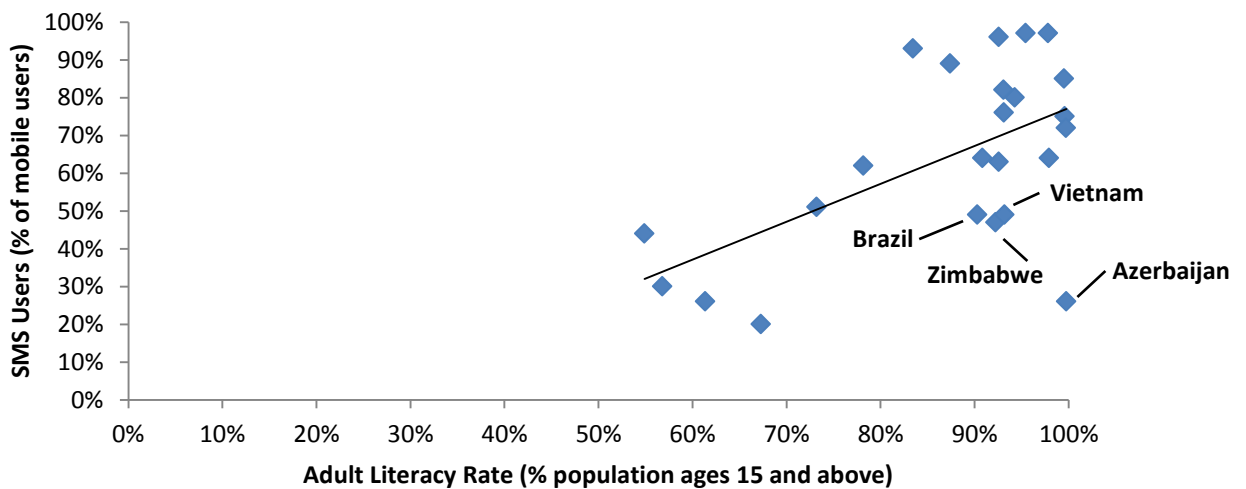
Note: figures are for 2010
Source: World Bank

As such, one of the main advantages of using voice is that it has the potential to reach a bigger share of the market. In many cases, services delivered through SMS or data packages do not account for illiteracy (both language and technical). By taking a few key factors into consideration there is an opportunity to better understand the best mode of delivery. For instance, when delivering a mobile agriculture VAS, taking into account the literacy rates of farmers, voice or IVR services could provide an estimated uplift of 50% in the addressable market in Ghana and three times more in Ethiopia compared to SMS/USSD (see Figure 7).

Figure 7. Wider addressable market through IVR/voice services?
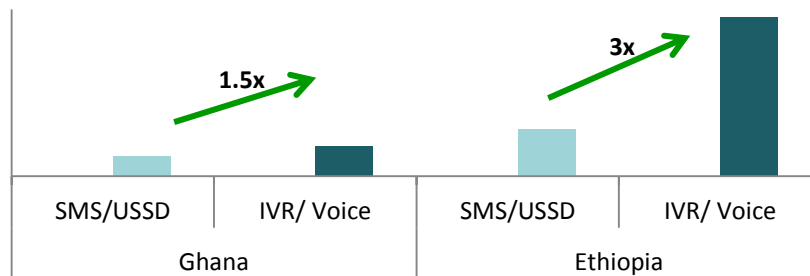
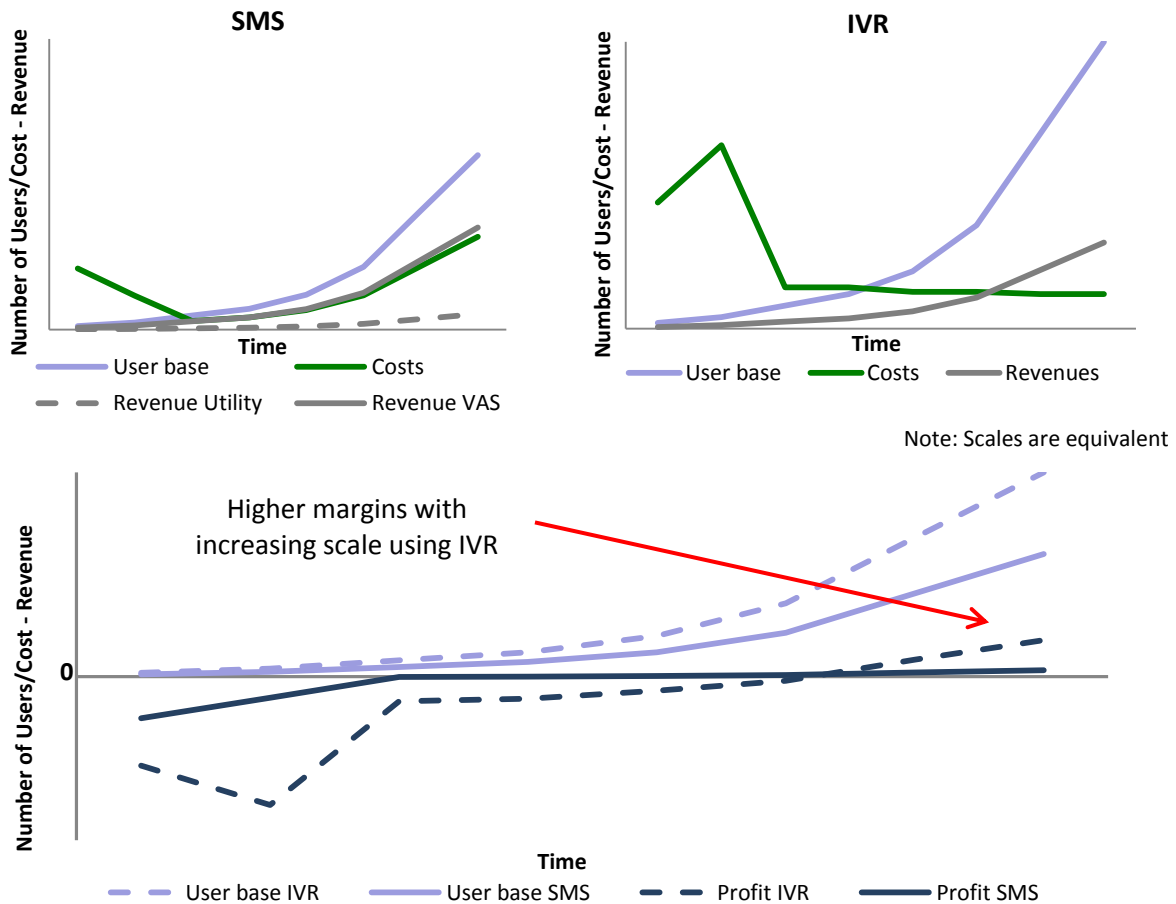Source: GSMA – M4D mAgri -MDI analysis

Cost advantage?[5]

The challenge with IVR services is the high upfront investment required, which can be a deterrent to all but large consortiums (either operator or donor-led). One of the reasons for these high upfront costs is the need to educate customers in the use of products. This is usually done through helplines, which are the least scalable and most expensive solutions. It is also due to significant hardware, software (licensing) and configuration costs. However, as scale increases, the cost base flattens out as it is relatively fixed. By contrast, in many SMS solutions, costs are linked to scale as they are tied to the number of SMS sent to end-users. The business may be profitable, but margins are thin (with expansion constrained). So, while the upfront investment and start-up costs are generally lower in an SMS service, the ability to generate profits with an increasing audience reach is generally higher in the long run with IVR (see Figure 8).

For SMS solutions, the business model can change if it is commercially or donor-funded. In the former case, the service provider charges users a premium rate, so revenues are generally higher (VAS revenue). If the service is donor-funded, it is not imperative to extract revenue from the end user, so SMS messages are charged at the normal bundle rate (utility revenue).

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[5] We consider IVR and SMS as opposed to other voice and text messaging services

Figure 8. SMS and IVR costs versus user growth and revenue (for service provider)

SMS

IVR

Note: Scales are equivalent

Higher margins with increasing scale using IVR

Source: GSMA – MDI analysis

Assumptions:

IVR

- There are high upfront costs because IVR services are built from the start to accommodate a large user base
- After the initial setup costs, the cost of scaling hardware and licences is at least partly absorbed by MNOs, as the service generates revenues for them
- IVR services are pull oriented (i.e. users dial in)
- No marketing costs have been considered

SMS

- User base is typically smaller compared to IVR services due to literacy rates
- Mobile Originated (MO) is 60% of Mobile Terminated (MT)[6]; in SMS solutions the number of messages sent by the server is higher than the messages sent back by the user. In this case, for all messages sent by the service provider, 60% return from users. The service provider is charged for every message sent, in the majority of markets, it can only recoup revenue from messages sent back from users at a rate of 60% of the MT

User information

When the communication flows over voice channels, MNOs are able to track anonymously their customers' usage behaviour and use this to inform their future product and marketing decisions. However, when a user starts accessing services through data (e.g. a mobile app or web page) the MNO often loses visibility of the customer behaviour and usage information. This information is

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[6] "Mobile (Handset) Originated" (MO) means an SMS was created and sent by a mobile user, "Mobile (Handset) Terminated" (MT) means a message which is terminated on a user's mobile handset

typically owned by the application owner or destination website, where the subscriber details are held.

Content and quality of service

IVR and voice services are designed to ensure a high quality of service - when users ask a question over voice they can expect an immediate response, otherwise the session is likely to be terminated by the user. However, when a user sends an SMS there is an expectation that some time will pass before receiving an answer. In addition, voice has the ability to offer richer content compared to SMS; an SMS can be no longer than 160 characters, whereas a 30 second voice clip can transfer roughly the same amount of information as 3 SMS messages.

Generally, humans better understand and remember information delivered via audio/video rather than text. Choosing the right voice, gender and tone for a particular service can make a service more effective for the end user. For example, the reassuring voice of a doctor describing health measures is likely to be more helpful for a user than reading a doctor's suggestion in a text message. This also helps to build trust between the end user and the service provider.

Finally, some languages/characters are not supported on all phones; in many BOP areas, handsets are sourced as grey market imports that do not support local language sets. In IVR voice services the voice is built into the server and therefore does not depend on the phone that is used to access it.

Outlook

When designing and delivering an M4D service there is no one size fits all model, with the choice being made on a case by case basis depending on the target audience and nature of the service. These two prongs make up the backbone of user-centric design, a concept well known in theory but not widely implemented in practice (see Scaling Mobile for Development: a developing world opportunity). However, we believe this is beginning to change given the need to mitigate the risk of market share loss and the costs involved with redesigning services post launch. Voice is well positioned to benefit off the back of this user-centric approach given the literacy and trust factors, with the economic rationale adding to its attractiveness, and as such we expect a rise in its use in mobile VAS over the next 2-3 years.

Tweaks to the voice model are also likely to help. For example, making IVR platforms more open to third party developers would significantly help such solutions to scale given the relatively closed model currently in place, particularly for NGO-based developers. Hybrid models that use voice in conjunction with SMS could also be used. From an SMS-based service it is possible to add a short code which, if activated, calls an IVR system and gives more in depth information; the reverse is also possible, in which a user can decide to receive content via SMS during an IVR session.