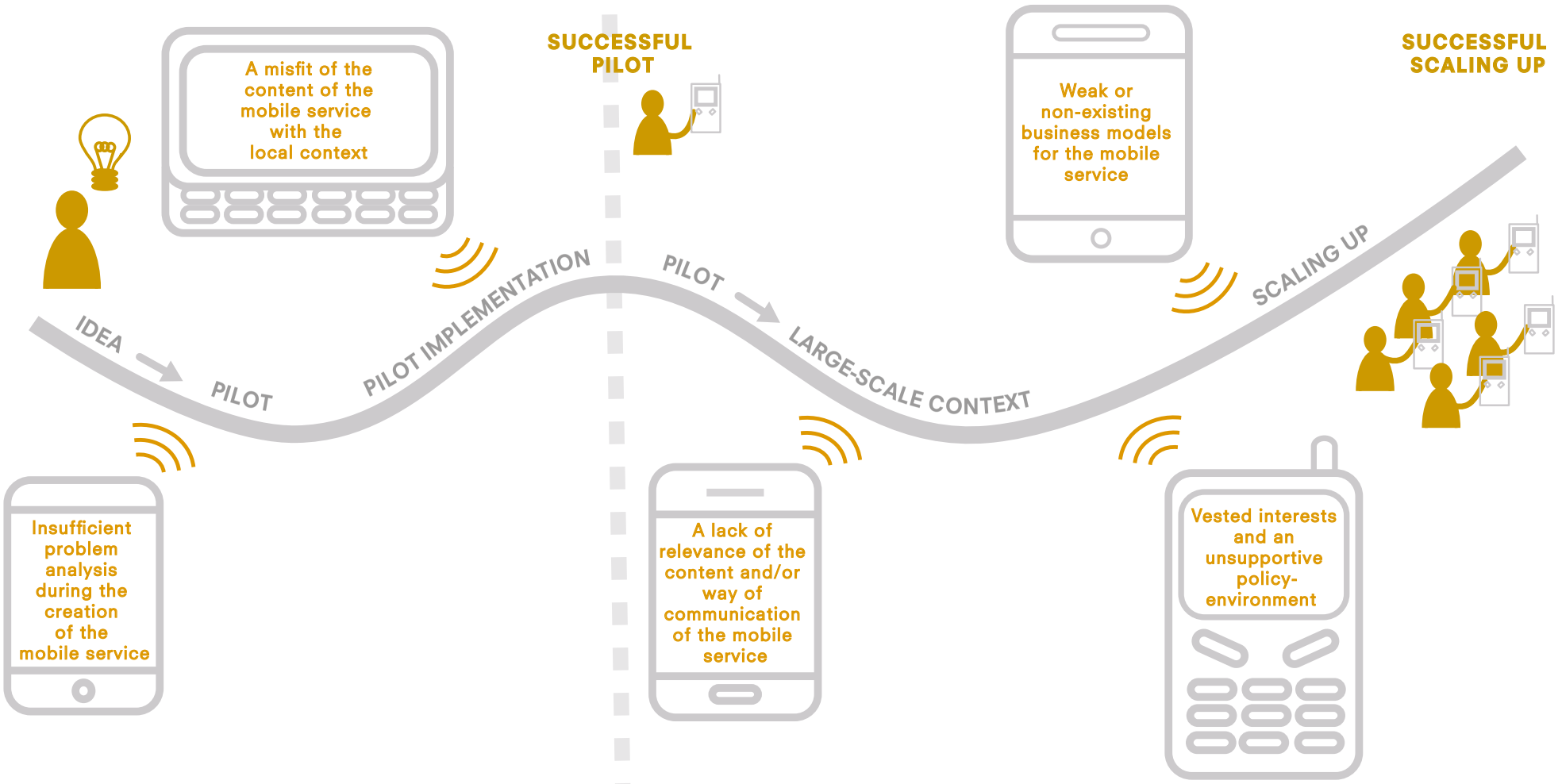
THE ROLE OF MOBILE PHONE SERVICES IN DEVELOPMENT

From Knowledge Gaps to Knowledge Apps

PHASE 1: Creation and implementation of a mobile service

PHASE 2: Scaling up of a mobile service



Mobile services in Agriculture, Finance and Health

mAgri

22 Million users across 185 mobile agricultural services [20].

mFinance

Mobile money providers are processing an average of 33 million transactions a day [47].

mHealth

By 2011, 93 of 112 health systems in countries surveyed by the WHO had already adopted some form of an e-health or m-health approach [48].

THE ROLE OF MOBILE PHONE SERVICES IN DEVELOPMENT

KEY MESSAGES

- **Mobile services have great potential for development in reaching socially and geographically isolated people.**
- **The benefits for developing countries are major in, but not limited to, the agricultural, health and financial sector.**
- **Mobile services generate most impact when context-adjusted content is created and when their continued existence is financially independent through sustainable business models.**
- **A major challenge to overcome is creating a supportive policy environment in which mobile services can reach their full potential.**

INTRODUCTION

"The quickest way to get out of poverty right now is to have one mobile telephone." [1]
- Muhammad Yunus (2011)

Farmers checking the weather forecast, health workers receiving advice on the best treatment methods or factory employees transferring their salary to their families at home: All of it can be done with a feature phone. Over the last years, a whole new world of mobile technology has opened up for a great number of people. Currently, 95% of people worldwide live in an area with mobile network coverage [2]. There are about 4.7 billion individual subscribers. Almost 70% of these subscribers are located in the developing world and it is expected that between now and 2020, over 90% of the new subscriptions are obtained there [1]. This revolutionary development is toppling the status quo of global information and communication methods and goes hand in hand with the rapid spread of mobile services. As mobile services are becoming increasingly popular, their potential as a tool for development is widely recognized [3]-[7].

However, mobile services are not always as successful as expected from their pilots [8]-[10]. If they want to live up to their potential as a tool for development, the process of creation, implementation and scaling-up is vital. In order to improve this process, the focus should be on how policy makers and other public and private stakeholders can amplify the effects of mobile services for development, rather than focusing on technical issues [9],[11]. The exact role of stakeholders, ranging from governments, NGOs, private companies and policy makers, differs per case. This policy brief will assess the potential and barriers of mobile services, ending with recommendations, important considerations and a glimpse ahead. Good practices from the financial, health, and agricultural sector will be shared, presenting how mobile services can serve as a tool for development.

Mobile services are digital applications which can be operated on any mobile phone. Services include voice messages, data roaming, SMS, streaming and location-based services [12].

POTENTIAL

Mobile services have the potential to positively affect sustainable development, acting as a tool to decrease information gaps and empower individuals [7]. Beyond basic connectivity, the technology allows overcoming the lack of physical infrastructure such as roads and landlines [13]. Mobile services can empower people by reaching out to those geographically or socially isolated from information [14],[15]. Not only do more people then have access to information, it is also accessible around the clock [16]. In this way the increase of availability and accessibility of mobile technology aligns with the leave no-one behind ideal of sustainable development.

One of the first success stories was M-Pesa, a mobile phone-based money transfer and (micro)financing service launched in Kenya in 2007, which has had and still has great economic developmental impacts [17]. Prior to M-Pesa, only 18.9% of the Kenyan population had access to conventional financial services, whereas by 2011, over 70% of the Kenyans reported using M-Pesa [18]. M-Pesa is one successful example of a mobile service, as it has connected millions of people to a well-functioning financial service [19].

The opportunities of mobile services, such as M-Pesa, offer many chances for development in general as well as in relation to the Sustainable Development Goals [10],[20]. Production and profitability of farmers can be advanced through mobile services (SDG 2, Zero Hunger). Mobile services can support emergency communication and(in)formal medical advice to remote areas with a lack of health care facilities. (SDG 3, Good Health and Well-Being). Lastly, economic growth and resilience of infrastructure can be catalysed through provision of data connectivity and financial inclusion (SDG 9, Industry, Innovation and Infrastructure) [20].

GOOD PRACTICES

From the agricultural, health and financial sector one case has been selected. The cases depicted have been launched relatively recently, show potential for scaling up beyond one country and are overall considered to be promising. This selection is only a snapshot of many available mobile services.

mAgri

Agriculture is still the major source of employment in developing countries, despite the challenges farmers face due to climate change, hunger and a growing population [21]. Small-scale farmers often face a knowledge gap in regards to agricultural best practices [22]. Mobile services aimed at agriculture, or mAgri, are for instance aimed at providing technical farming advice or location based weather updates [8]. MAgri services can contribute to bridging the knowledge gap, thereby increasing agricultural production and profitability [20].

Case: iCow, launched in 2011.
Goal: Assist dairy farmers in maximizing their return by, among other things, advising on feeding schedules and market rates on cattle prices.
Country of origin: Kenya, now expanding to Tanzania, Ethiopia, Uganda and Rwanda.
Target users: Small-scale dairy farmers with access to feature phones.
Stakeholders: Mobile network operator Safaricom, the Kenyan government, professional services company Accenture, elea Foundation, Indigo Trust, Infonet Biovision, US government agency USAID and small-scale farmers [23],[24].

GOOD PRACTICES

Accessibility: The service is designed for feature phones and therefore requires no internet connection [23].
Policy: The Kenyan government has developed a supportive environment for innovators in this sector [24].
Business model: The information on cows provided via the service is standardized. Adding new farmers to the system is not an expense and only brings in subscription charges [25].

mHealth

In 2015, 400 million people did not have access to essential health services [26]. In general, there are problems, both with the physical as well as financial access to and general lack of good quality health care. For example, there is an unequal spread of doctors around the world, leading to a lack of qualified professionals in the developing world. It is estimated that by 2035 there will be deficit of around 12.9 million skilled health workers [27]. mHealth, which is the use of mobile services for the delivery of health services and information, has great potential contribute to overcoming these issues and transform the health sector. Especially in remote rural areas which are otherwise hard to reach, mHealth can be revolutionary in solving the pressing need for health care [4],[5],[28],[29].

Case: Leap, launched in 2013.
Goal: Increasing the number of well-trained community health workers and facilitating communication among them.
Country of origin: Kenya, with the ambition to spread to 30 other countries in Africa before 2020.
Target users: Community health workers.
Stakeholders: NGO Amref Health Africa (owner), Mobile network operators Safaricom and Vodafone, the Kenyan government, the M-Pesa Foundation, professional services company Accenture and community health workers (partners) [30].

GOOD PRACTICES

Quality of Content: The content of the service is accredited by the Kenyan Ministry of Health, increasing the reliability of the information that is distributed [3].
Partnerships: The social venture business model behind Leap has allowed for different types of investors as well as other partners to become involved. This contributes to a strong and sustainable business model [3].

mFinance

Approximately 2 billion working-age adults globally do not use formal financial services [31]. mFinance, or financial services accessible through mobile phones, contribute to bridging this gap and allow the formerly 'unbanked' access to services. mFinance can digitally enhance the process of financial inclusion and supplement consisting financial infrastructures. Services currently on the market let individuals, micro- and small enterprises pay with their mobile devices, transfer, save, borrow without credit history and insure themselves against risks [32] Services that enable low cost, cross-border remittance transactions are rapidly growing, through which migrants can support their friends and family abroad. Already in 2014, more than 250 mFinance services were deployed in 85+ countries, all contributing to digital financial [32].

Case: Hello Paisa, launched in 2012.
Goal: Live, low-cost and secure digital remittances.
Country of origin: Nepal.
Target Users: Migrants, to send money to their friends and family back home.
Stakeholders: Numerous banks and financial institutions, several mobile network operators, retail stores, migrants [33].

GOOD PRACTICES

Partnerships: Collaboration of public and private partners, both on the global and national level [33].
Evidence-based Feedback loop: A close engagement with users to improve the mobile service to meet their demands [33].
Cyber security: Actively examines financial consumer protection [33].

BARRIERS AND RECOMMENDATIONS

The implementation process of mobile services consists of two subsequent phases, namely 1) the creation and development of a mobile service and 2) the scaling-up of mobile services. In both phases, several barriers are identified.

Phase 1: Creation and Implementation of a Mobile Service

The goal of phase 1 is to first identify and analyse challenges that hold target users back in their development. After that, it is to be determined how a mobile service can be used as a tool to overcome the challenge.

Barrier - Insufficient problem analysis during the creation of the mobile service: *A mobile service can be unsuccessful when the challenge that the mobile service aims to address and context in which the challenge is situated are not thoroughly analysed before creation and implementation of the service* [11],[34].
Recommendation: A thorough problem analysis exists out of three parts. Firstly, a stakeholder and target user analysis needs to be done. It needs to be determined which group(s) that the mobile service will be targeting. The diversity within this target user group also needs to be taken into consideration [3]. Also, the stakeholders should be identified and it should be determined which stakeholders will be included in the process of creating and implementing the service [35]. It needs to be ensured that all stakeholders are aligned regarding the problem definition. Furthermore, the availability, affordability and accessibility of mobile services in the local context should be analysed [36]. Aspects such as reception, battery charging possibilities, the resources available to add credit to one's phone and the level of digital (il)literacy of the target users are all potentially limiting factors to the successful implementation of mobile services [6],[15],[24],[37]. Moreover, the larger context has to be analysed. A close look needs to be taken at the competition in and possible saturation of the market in order to avoid unnecessary creation and implementation of services [34]. Also, local laws and regulations regarding mobile services have to be taken into account, so that a service is designed in accordance to those [34],[38]-[40].

Barrier - A misfit of the content of the mobile service with the local context: *A mobile service can be unsuccessful because it fails to present its content, for example weather forecasts or methods of medical treatment, in a way that is either reliable, understandable and/or acceptable for the target users* [3],[37]. *Getting people to trust the information provided to them can be especially difficult when it can significantly influence their livelihood* [25].
Recommendation: The reliability of the content of a mobile service should at all times be ensured. It is important to include all stakeholders in the iterative process of shaping the content. For example, a representative sample of the target users together with the government and research institutes can validate content to ensure its reliability [3],[15]. This sample of target users can also help to determine the appropriate communication style, by which it can then be ensured that the way in which the content is delivered is appealing and trustworthy to the target users [3],[25]. The results of evidence-based feedback loops should be included in the creation of the service. In this way, things such as the service's content and communication style can be adjusted based on the evidence already available and thereby help to increase its relevance and trustworthiness for the target audience [34].

Phase 2: Scaling-up of Mobile Services

The goal of phase 2 is for mobile services to scale up from a pilot to implementation on a larger scale with a bigger group of target users.

Barrier - Weak or non-existing business models: *A coherent business model (for-profit or non-profit) which allows the mobile service to exist independently of any external funding in the long run is regularly forgotten and thereby forms a barrier in scaling-up* [9],[15],[25],[40].
Recommendation: During the creation and implementation phase it is important that a good business model is designed. In the pilot-phase, a mobile service can still be supported by external funding but in the long run, it needs to be able to survive independently. Donors, such as governments or NGOs, should make clear from the start that one of the criteria for funding the mobile service is that there should be a viable business model. It is recommended to involve multiple stakeholders in the creation of a coherent business model, especially experts from the private sector [3],[25],[35].

Barrier - A lack of relevance of the content and/or way of communication of the mobile service: *When a mobile service is scaled-up to a larger context, it is not always checked thoroughly whether the content is still relevant and/or the communication style is still appropriate. There is a lack of (academic) research that could otherwise provide evidence on the impact and effectiveness of the service* [3],[10],[29],[34],[41].
Recommendation: In the process of scaling up, the relevance of the content and the effectiveness of communication style of a mobile service should constantly be monitored to ensure its relevance [3]. A recommended strategy is to make better use of evidence-based feedback loops. In these loops, evidence is gathered from practical experience with and impact of mobile services, on issues such as the level of understanding of the content by the target users and whether or not the service still fits with the users that were originally targeted. This evidence is then used for improving the service both for the new as well as the current context. To create stronger feedback loops, several different stakehold-

ers, such as academia, research institutes, NGOs and governments should do more research in partnerships [34],[35].

Barrier: Vested interests and an unsupportive policy-environment: *Vested interests of parties that oppose the development of mobile services can hold back the process of scaling-up. The vested interests are aggravated in a situation of an unsupportive policy environment, in which the potential of mobile services is not recognized* [8],[11].
Recommendation: Ideally, governments can take the lead in overcoming these vested interests. They can create awareness among policy makers about the large range of possibilities of mobile services, so that policy makers are not led by vested interests [15]. Also, partnerships and information sharing between other stakeholders and the government will enable policy makers to take informed decisions on supportive frameworks and regulations for mobile services [8],[11]. Depending on the specific context, other methods can be used to further enhance a supportive policy environment, such as innovations grants for mobile service start-ups, conferences and forums on this topic and adaptation of regulations that hold back mobile service development [9],[23],[25],[37].

IMPORTANT CONSIDERATIONS

Policy makers and other stakeholders should be aware of several aspects that can complicate the creation, implementation and scaling-up of mobile services.

Cybersecurity and privacy: Mobile phones, especially smartphones, collect an increasing amount of information, which is valuable and therefore vulnerable to cyberattacks and data abuse [1],[15],[34],[40],[42].
Mobile services are a tool, not a solution: Mobile services offer a new way to address old problems, but should not be perceived as a silver bullet for development. Mobile services do, for instance, not replace the need for appropriate policies and stable governance systems [3],[6],[34].
Internet can increase inequality and divergence: Although the internet can help low-income countries and the poor by providing access to information, it can also widen the gap between those who have access to internet and those who have not [25],[43]. For example, internet penetration rates around the world are higher for men than for women [16].

A GLIMPSE AHEAD

There are plenty of future opportunities for mobile services reaching beyond the possibilities and sectors discussed above.
A first promising trend is the **Internet of Things**: a term used to indicate that personal mobile devices can be linked to one another and with physical things, hereby increasing connectivity between people, data and devices [25],[37],[44]. Mobile services can benefit from the Internet of Things by incorporating sensors or drones in for instance agriculture. Examples are wireless sensors that can track crop growth, thereby gathering data for farmers [44],[45]. This could be the next step for mobile services: moving beyond mobile phones and instead focusing on any mobile technology [25].
Another promising trend is the use of mobile services in other sectors, such as **m-governance**: the use of mobile to support governance processes and increase people's participation, especially of the marginalized groups. Possibilities have also been recognized in other sectors, such as climate change adaptation and education [6],[46].

KEY RECOMMENDATIONS

- Policy makers need to **recognize the potential** of mobile services as a tool for development in reaching previously socially and geographically isolated people.
- Perform a thorough **problem analysis** during the creation phase of mobile services, by paying attention to, among other factors, the target users, stakeholders and the general context.
- Ensure that the content of mobile services is **reliable, trustworthy and relevant** for target users.
- Private and public stakeholders, such as mobile operators, governments and NGOs, need to form **partnerships** to gain and share insights.
- Fund mobile services in the pilot phase, but force them to develop viable **business models** so that in the long run they can scale up and become financially independent.
- Policy makers need to create a supportive **policy environment** in which mobile services can reach their full potential.
- Perform more research on thorough **impact assessments** of mobile services.

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Experts speak on their own behalf and their views do not necessarily reflect the views of their institutions.

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