



Accelerating affordable smartphone ownership in emerging markets

JULY 2017



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The GSMA represents the interests of mobile operators worldwide, uniting nearly 800 operators with more than 300 companies in the broader mobile ecosystem, including handset and device makers, software companies, equipment providers and internet companies, as well as organisations in adjacent industry sectors. The GSMA also produces industry-leading events such as Mobile World Congress, Mobile World Congress Shanghai, Mobile World Congress Americas and the Mobile 360 Series of conferences.

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About Connected Women:

GSMA's Connected Women works with mobile operators and their partners to address the barriers to women accessing and using mobile internet and mobile money services. Together we can unlock this substantial market opportunity for the mobile industry, deliver significant socio-economic benefits, and transform women's lives.



This material has been funded by UK aid from the UK government; however the views expressed do not necessarily reflect the UK government's official policies.

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The Connected Society programme works with the mobile industry and key stakeholders to improve network coverage, affordability, digital skills and locally relevant content, in pursuit of the wider adoption of the mobile internet.

For more information, please visit www.gsma.com/mobilefordevelopment/programmes/connected-society

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Executive Summary

Global adoption of smartphones has grown at an extraordinary pace: today's circa 4 billion smartphone connections are nearly double the figure of three years ago.¹ This increase in smartphone ownership² has been fundamental for enabling many people's first internet experiences, and has offered them a gateway to enter the digital economy and benefit from life-enhancing opportunities. We have seen rapid mobile internet adoption particularly in emerging markets, where an internet-enabled handset can signify the only form of internet access, and the number of mobile internet connections is approximately three times higher than fixed-line internet.³

Smartphone uptake across and within regions and markets is not balanced, risking leaving large population groups without the means to come online. Eastern Africa and South Asia are the regions lagging behind the most, with smartphone adoption levels as of mid-2017 at 25% and 30% respectively - much lower compared to the global average of over 50%.⁴ A major contributing factor to this inequality is the high rate of poverty. South Asia and Sub-Saharan Africa are home to the majority of the world's poor people. Consumer research shows how the cost of an internet enabled handset is a critical barrier to using mobile internet for low and middle-income consumers in emerging markets.^{5,6} India is a clear example of this, where over half of the population live in multidimensional poverty⁷ and where an average priced smartphone can cost up to 16% of income for poor and low-income groups.⁸ We estimate that over 134 million people in India are unable to afford one of the cheapest internet-enabled handsets on the market, because it exceeds an affordability threshold at 5% of income.⁹ Although smartphone prices are projected to decrease in emerging markets, prices will not drop low enough to accelerate ownership among the underserved, including low-income groups, women, and rural populations in the near future. For example, the 2017 average smartphone prices in Kenya and India of circa \$118 and \$115 respectively, are only expected to drop to \$109 and \$97 by 2020.¹⁰

Beyond income levels, there are multiple supply and demand side factors influencing smartphone affordability. On the supply side, the manufacturing costs of the device itself are largely dictated by prices of key components including: the screen, chipset, memory and battery, all of which fluctuate in line with higher spec requirements, limited availability, and regulations.¹¹ In the inbound supply chain, import duties and taxes imposed on smartphones are significant contributors to total costs, as well as transportation charges that can be particularly high in emerging markets. Inefficiencies in the outbound supply chain drive up costs, as devices often pass through a number of supply chain players before reaching end consumers. Distribution channels, particularly to rural consumers, are often inadequate, either not providing easy access to smartphone retailers due to location (distance from urban centres), or forcing consumers to pay a high marginal premium to a local independent dealer who is incurring high transport and inventory costs as well as benefiting from a captive market.

There are a large variety of demand side factors influencing smartphone affordability and people's willingness to pay. Consumers' disposable income, combined with their value perception of the device and the internet are particularly influential. These elements, coupled with levels of awareness of what smartphone and internet usage entails and can deliver, and whether use cases are convincing enough to justify the expenditure hugely impact upon demand. Limited knowledge about smartphones further manifests in gaps between perception and reality around device prices. Consumers commonly have an exaggerated view of smartphone costs, which leads to the belief that such handsets are unobtainable, even in cases where the consumer would in fact be able to afford the device.

The ability to purchase a smartphone varies widely within low-middle-income groups. The research suggests four primary customer segments related to people's level of affordability:¹²

- Beyond their means:** primarily comprising of the extremely poor, often with no reliable income source, this group needs to make major trade-offs in household expenditure to afford even a basic internet-enabled handset. Smartphones are not affordable for this group.
- Cannot afford to pay for a smartphone upfront, but could afford to pay in instalments:** comprising of the working poor, this group finds it difficult to adjust household expenditure to purchase smartphones through upfront payments.
- Can save to pay for a smartphone:** this group consists mainly of people at the higher end of the low-income segment. Individuals have the ability to save over time to purchase a smartphone.
- Can afford lower priced smartphones through a lump sum payment:** this group comprises of middle-income customers, typically with a reliable source of income. Members of this group are usually price conscious but have some flexibility to pick and choose among devices.

There is ample opportunity for the mobile industry and ecosystem players to improve smartphone affordability among these consumer segments. Through investigating 30+ business models across Sub-Saharan Africa, South Asia, and Latin America, three overarching models with different approaches to reducing consumers' smartphone ownership barriers, with a focus on affordability, were identified.

1. GSMA Intelligence. 2017

2. Although consumers can gain access to the internet also on feature phones, such models are not offering the ability to use more sophisticated mobile applications and have a limited browsing experience, as compared to using smartphones with more advanced operating systems. With this in mind, the end-goal should be to bring people online via smartphones, in order for them to reap the full benefits of connectivity.

3. ITU. "Global ICT Statistics". 2014

4. GSMA Intelligence. 2017

5. It is important to note that smartphone affordability is one barrier to ownership amongst several. Additional barriers include: lack of digital skills, cultural values/social norms, safety concerns, mobile data costs, among others. Efforts of making smartphones affordable on their own will not solve all access issues.

6. GSMA Intelligence Consumer Survey. 2016.

7. UNDP. [Human Development Report 2016](#). 2016

8. Strategy Analytics. "Global Handset ASP & Revenue Forecasts by 88 Countries: 2012 to 2022". 2017

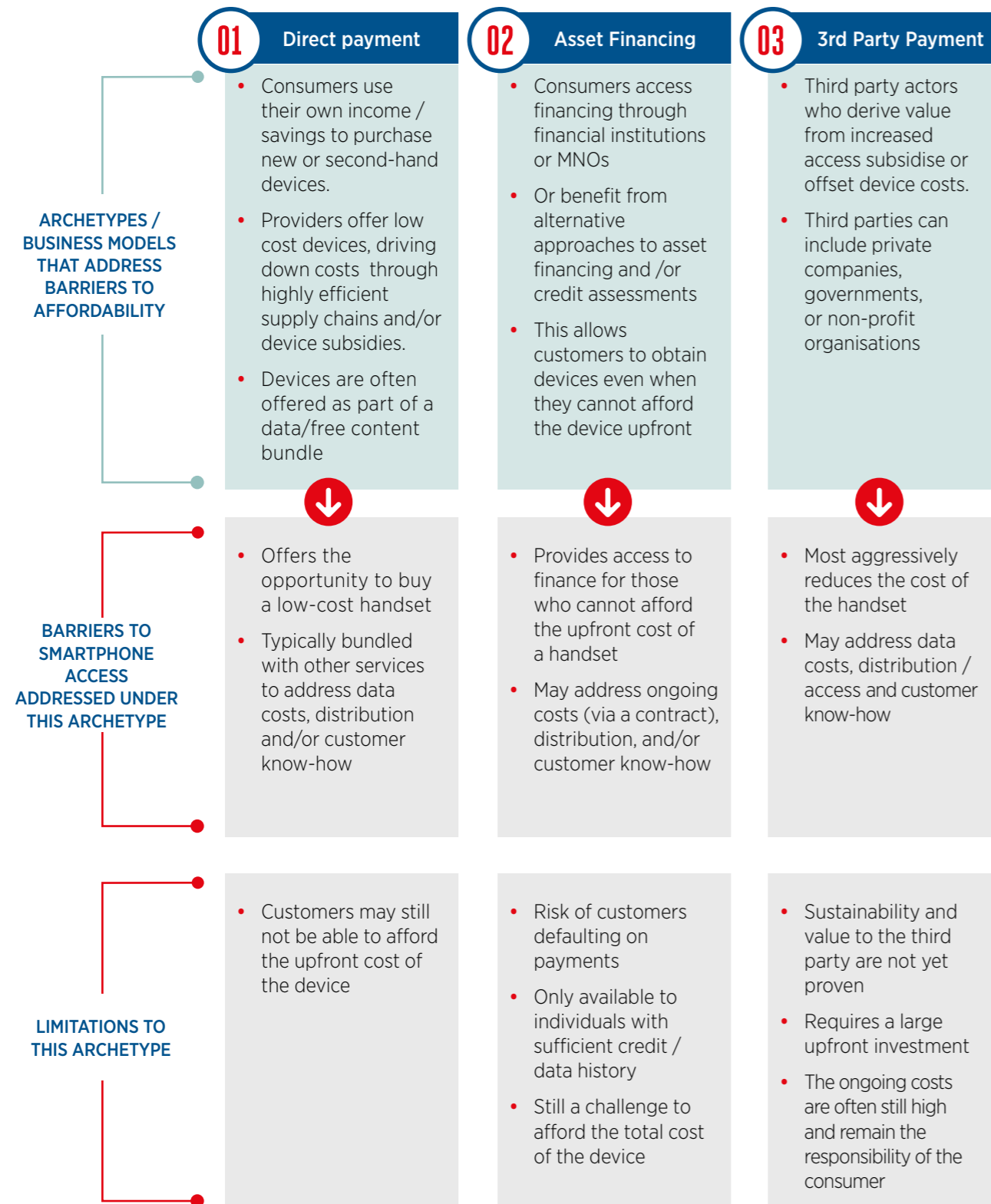
9. GSMA analysis based on Tarifica 2017 data.

10. Strategy Analytics. "Global smartphone ASP & Revenue Forecasts by 88 countries: 2012 - 2022". 2017. It is important to acknowledge that the entry price point for some lower-end smartphones is now at \$40 for the mass market. However, average smartphone prices are driven up by higher-end models.

11. Stakeholder interviews.

12. Based on analysis from limited sampled primary research in three markets - India, Kenya and Rwanda. Findings and insights were extrapolated to build an understanding of low and middle-income consumers more broadly.

Business model types that address affordability barriers faced by low and middle-income consumers in accessing smartphones



Several actors across the industry have implemented initiatives to address affordability barriers to smartphone ownership. Three noteworthy case study examples include Vodafone, Copia and Mobisol:

Vodafone, India - Working with an established NGO to expand women's smartphone access

Launched in 2017, the Smart Snehidi programme seeks to improve access to smartphones among low and middle-income female micro-entrepreneurs. The programme is led by Vodafone and the non-profit organisation Hand in Hand (HiH). HiH assists women to build microenterprises, to access finance through self-help groups (SHGs), and to learn digital skills. As a partner in Smart Snehidi, HiH facilitates microfinance loans for smartphone purchase among members of its SHGs and trains women to use these devices in their businesses. Loans are offered at an interest rate of 24% per annum. Vodafone works with HiH to ease financial barriers through attractive talk time and data plans. As of April 2017, the programme has enabled 2,000 women to acquire smartphones in three districts across Tamil Nadu, India, with an ambition of enrolling 50,000 women across 19 districts of Tamil Nadu within the next three years.

“Hand in Hand is a trusted bank (organisation) so we bought a phone from them. I am happy when they give it for monthly instalments. We ourselves [the SHG] decided to take a loan for 10 monthly instalments.... Now we are paying it.”

- Smart Snehidi customer

Copia, Kenya - Mobile catalogue shopping for the rural base of the pyramid

Copia is a mobile retail platform launched in 2013. It is operational in Kenya and one of the only catalogue/e-commerce models targeting the rural and peri-urban bottom of the pyramid-demographic in Africa. Agents sell by means of a catalogue or tablet through a Copia mobile application and are the ordering and delivery point for customers. Copia has a rapidly growing network of agents in Central Kenya (currently standing at 1,200+). The platform sells smartphones, feature and basic phones, including devices by Tecno, Samsung and Huawei, as well as Airtel and Safaricom branded phones. Device prices are comparable to those in Nairobi and typically lower than those offered by independent grey market vendors in rural and peri-urban areas. Thereby, the model reduces the direct price paid by customers and eliminates time and transport costs associated with purchasing goods in rural areas.

“I tell people not to rush to town to buy a smartphone but instead order through Copia... the fare adds to the cost of buying the phone [and] the prices in town are higher.”

- Copia customer

Mobisol, Rwanda - Alternative credit assessment and rent-to-own models for smartphones

Established in 2010, Mobisol is a solar energy company that leverages alternative approaches to credit assessment and pay-as-you-go technology to expand access to low-income and peri-urban populations in East Africa. Currently operating in Kenya, Tanzania and Rwanda, Mobisol has installed over 78,000 solar home systems (SHSs) in households and businesses with a reach of ~350,000 customers. Mobisol has partnered with MTN Rwanda and Tecno Mobile in a pilot that allows existing customers the option of purchasing a Tecno W2 smartphone. New customers can buy the smartphone as part of a bundle when buying a SHS. MTN support the acquisition of new customers by providing free data bundles over the period of the loan (18 or 36 months) to customers that are registered on their network through Mobisol. Existing customers that have been with Mobisol for a minimum of 6 months and already own a SHS must meet the criteria which considers past payment behaviour to be eligible for the loan. They are required to pay a down payment of RWF 6,900 (-\$8) to access the smartphone offering, and then continue with a monthly repayment of RWF 3,550 (-\$4) for 36 months. New Mobisol customers that are purchasing the smartphone as part of their SHS pay RWF 2,015 (-\$2.50) monthly over an 18-month loan term for the smartphone in addition to a new solar system loan.

“I heard ... that [the Mobisol phone] had an internet bundle of three years. It pleased me so much because I use the internet to search for information and keep in touch with family and friends.”

- Mobisol customer

In exploring the dynamics of the smartphone ecosystem landscape, and initiatives aimed to facilitate handset ownership, **we see a pattern of common challenges that consumers face across different regions and strategies that could be adopted to help tackle them.**

Three strategies stand out:

- 1** **Making the purchase price more manageable through financing:** potentially the most meaningful support that can be provided is to break up the upfront cost of the device into more manageable sums, supporting the consumer through offering affordable loans, alternative forms of credit scoring and savings schemes.
- 2** A key area for ecosystem collaboration would be to ensure **efficient distribution channels** are in place for handsets to reach people, especially in locations with limited retail presence where prices are often inflated due to low supply.
- 3** **Localising devices, reflecting market demands:** Beyond access channels, offering affordable smartphones that respond to the handset needs and value perceptions of the local consumers, ensuring that they are not paying for features that they will not use, could be an equally important area to focus industry efforts.

13. Mobisol. "Mobisol". 2017

14. New customers pay a down payment on the solar home system and not the smartphone.

Facilitating affordable smartphone ownership for low and middle-income consumers in emerging markets should be made a key priority. Market pressures alone will not bring down prices to a level that makes smartphones affordable for low-income groups in the near future. Mobile industry actors, financial institutions, NGOs, governments, community organisations and policy makers have the opportunity to support consumers' improved device access, and stand to benefit from increased smartphone penetration and the ensuing socio-economic benefits.

The GSMA is dedicated to supporting ecosystem collaboration aimed at accelerating smartphone ownership, and strives to inspire players in the space to explore new routes and opportunities for partnerships.




“I’m not able to raise the money all at one instant - but payment in instalments is no problem”



- Smartphone non-owner, rural Kenya

Key Findings

There are  circa **4bn smartphone connections globally**

The average smartphone costs **US \$100-200**  in many emerging markets^{***}

A median of  **37%** own smartphones in emerging markets


Average smartphone cost in India & Tanzania  **= 16% of income** for people on <US \$2/day 

134m people in India **can't afford the cheapest available internet-enabled handset***

Instalment plans & device savings schemes  help people minimise upfront costs

 Selling smartphones via **rural agent networks** helps people save on travel

Women lag behind  **Men** in smartphone ownership 

Affordable smartphone initiatives are **commercially sound**  **30%** ARPU from growth in data use^{**}

Localise smartphone design and offers  **to cut costs and drive local uptake**  

* Assuming device unaffordable when the price exceeds a 5% affordability threshold. Tarifica 2017 pricing data for cheapest available internet-enabled handset sourced through MNO retail channels.

** Case study finding from MNO smartphone loan initiative for female micro-entrepreneurs in India. When provided with a smartphone, ARPU increased by 30% for the enrolled women entrepreneurs due to increased data usage.

*** It is important to acknowledge that the entry price point for some lower-end smartphones is now at \$40 for the mass market. However, average smartphone prices are driven up by higher-end models.



Background



Background

The GSMA's members want to connect everyone, and everything to a better future, and smartphone ownership for offline populations is critical to realise this vision.

The GSMA is thereby dedicated to supporting ecosystem collaboration aimed at accelerating smartphones access. Although consumers can gain access to the internet on feature phones, such models are not offering the ability to use more sophisticated mobile applications and have a limited browsing experience, as compared to using smartphones with more advanced operating systems. With this in mind, the end-goal of actors in the space should be to bring people online via smartphones, in order for them to reap the full benefits of connectivity.³

This report is the outcome of a research study into the smartphone ecosystem landscape and business models that drive affordable smartphone access, undertaken by Dalberg Global Development Advisors, and the GSMA Connected Society and Connected Women programmes.⁴ It is directed at actors who have an interest in enhancing consumers' smartphone ownership in emerging markets. The objective is to spark a wider conversation across the industry around what can be done to address the fact that millions of people in lower and middle-income markets cannot afford the cost of a smartphone, and to inspire ecosystem players to explore new routes and opportunities for partnerships.⁵

The report is structured into five main sections:

1	An introduction to the smartphone affordability challenge and key influencing factors
2	Affordability analysis in relation to consumer groups
3	An analysis of three archetypes of industry business models
4	Case studies of initiatives for affordable smartphone access with insights on their success and impact for end-users
5	Emerging recommendations of measures that could be taken by ecosystem players to make smartphones more affordable

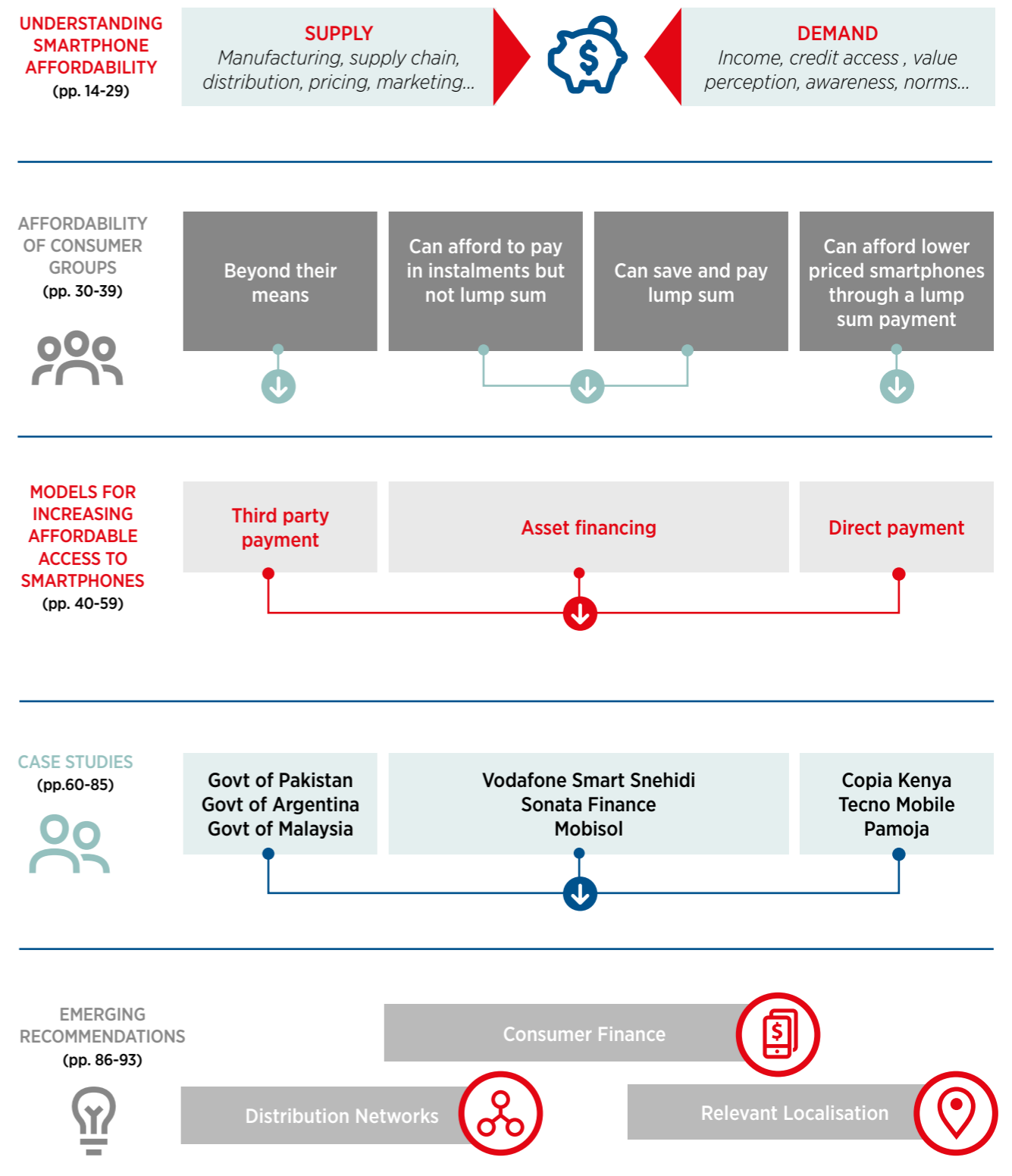
3. NB: the forthcoming conclusions in the report are applicable for both feature phone and smartphone contexts, but the landscape research and review of initiatives have mainly been smartphone focussed.

4. The study explored 30 initiatives through 87 stakeholder and end-user interviews and 4 focus group discussions, in addition to desk based research. Please note the primary research sample of low and middle-income end-users was limited to 58 respondents - findings and insights have been extrapolated to build an understanding of low and middle-income consumers more broadly.

5. Please note certain topics are out of scope for this report, including: representative market sizing of population groups' ability to afford smartphones; analysis of policy and taxation related affordability barriers (please refer to the GSMA Global Taxation Study 2017 for more on this topic); in-depth value chain analysis of the handset ecosystem; historical and forecast pricing analysis of the global devices marketplace; handset security and fraud management.

Figure 1

Report structure and content



1

Understanding smartphone affordability



Understanding smartphone affordability

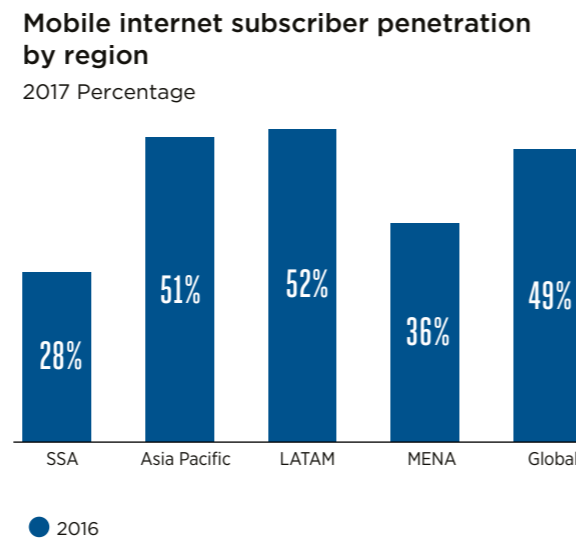
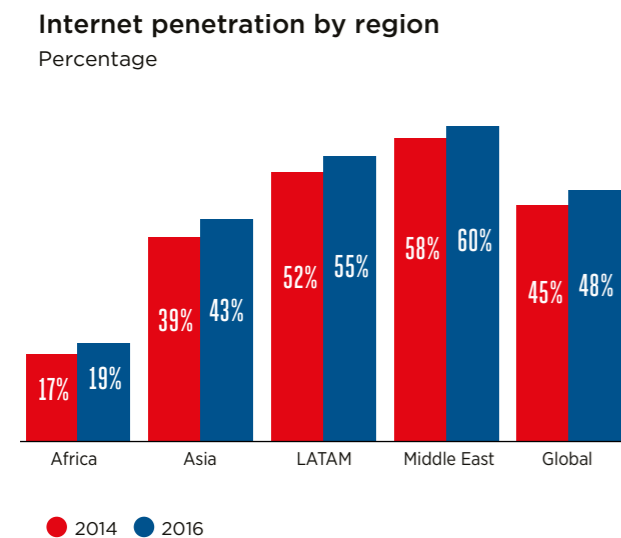
The current state of connectivity and smartphone ownership in emerging markets

Access to the internet is expanding, driven primarily by the expansion of mobile broadband. In 2016, an estimated 3.5 billion people were accessing the internet, of which 2.5 billion people were from developing world markets.⁶ Mobile internet remains the most dynamic market segment, with penetration reaching 49% in 2017 globally.⁷

Further, the number of mobile internet connections in emerging markets is approximately three times higher than fixed-line infrastructure internet.⁸

Figure 2

Internet penetration and mobile internet subscriber penetration by region⁹

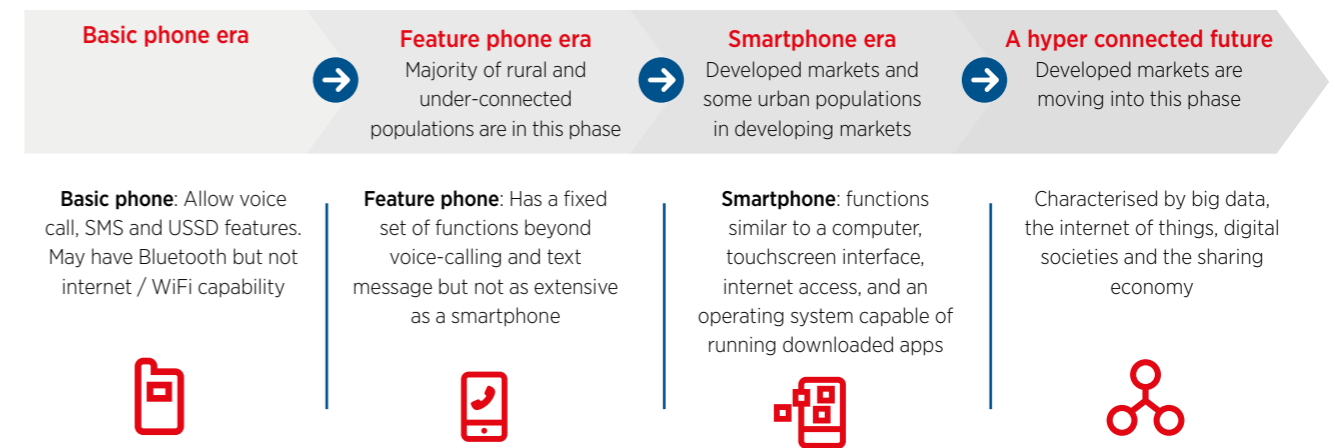


Mobile handset technology continues to evolve, bringing many individuals their first computing devices and first experiences using the internet. In more developed markets, mobile broadband connectivity and the mass adoption of increasingly powerful smartphones are enabling trends that change the way people interact and consume goods and services, such as through the internet of things and the sharing economy.

6. ITU. "ICT Facts and Figures". 2016
 7. GSMA Intelligence. 2017
 8. ITU. "Global ICT Statistics". 2014
 9. GSMA Intelligence. 2017; 2016; Pew Research Centre. "Smartphone Ownership and Internet Usage continues to climb in Emerging Economies". 2016
 10. Pew Research Centre. "Smartphone Ownership and Internet Usage continues to climb in Emerging Economies". 2016

Figure 3

Evolution of mobile handset technology

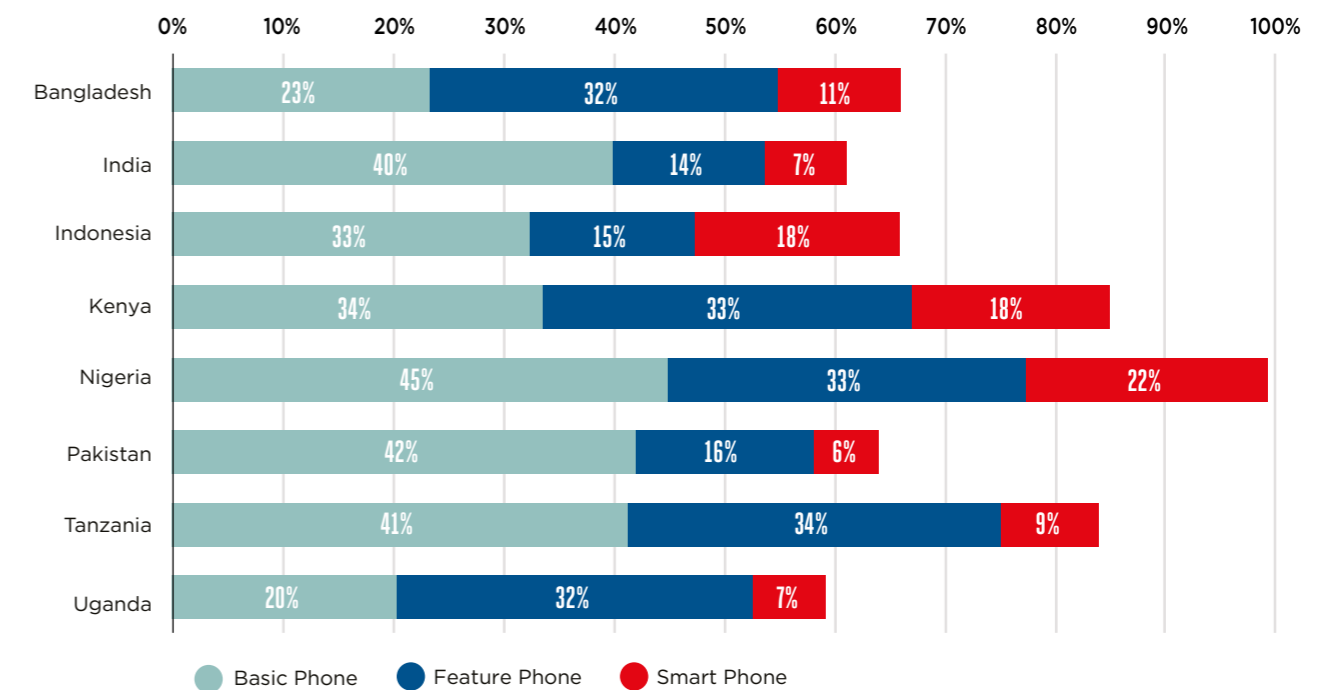


Mobile penetration and smartphone ownership in emerging markets are increasing at a significant pace, with a median of 37% reporting owning a smartphone in 2015, up from 21% in 2013.¹⁰

Despite this growth however, large populations still own basic phones that are lacking the necessary functions to use the internet as shown in Figure 4 below.

Figure 4

Mobile phone ownership by country (2015, Percentage of population owning each device type)¹¹



11. InterMedia. "Financial Inclusion Insights". 2015; Dalberg analysis note: Graph shows a breakdown of mobile phone ownership in each country. Percentages can add to over 100% because individuals can own more than one phone type and be represented in multiple categories.

Even some consumers who have moved on from basic mobile phones to internet-enabled feature phones have not been able or willing to adopt the mobile internet. For example, consumer research in South Asia has revealed how feature phone owners are not always aware of their handsets' internet capabilities, and believe they need to have smartphones to use online functions.¹² The upgrade from a basic phone to a feature phone is a smaller leap for lower-income consumers than from a feature phone to a smartphone, due to the higher purchasing cost. As a result ownership of feature phones continues to be higher than smartphones in developing world markets.



Henry

Henry is a tea picker in Limuru. He has been working in Gathika Farm in Central Kenya for 25 years, though he is originally from the Western part of Kenya. He is 52 years old and married with six children. In 2016, Henry purchased the Airtel-branded Katwin phone, an internet-enabled feature phone, through Copia.^{11a}



“It has been a year since I got this phone... with this phone I am able to receive money, pay for goods, [and] order for deliveries such as wheat flour. It is a phone with all features – it has everything! It was an easy experience [to learn how to use the phone] as I learn fast”

He chose to purchase an internet enabled phone over a basic phone because he saw it as being more advanced and reliable – an important consideration when sending mobile money back home. He needed to be taught how to use an internet phone when he first received it, but he now finds it easy to operate.

Henry notes two main benefits to an internet-enabled phone over a basic phone. First, he says that his internet phone has helped to boost his reputation. He believes that since many people in Kenya have internet-enabled phones, it would be a disadvantage not to have one.

“I like to stay in touch, especially with my family... and an internet phone helps me to do that.”

He does say that he would like to know how people get jobs online using their phones. Henry is a regular Copia customer and typically uses the service to purchase food and other household items to be delivered to Gathika Farm. He feels the Copia phone purchasing process was easy to understand, and he believes he paid a fair price for his phone while avoiding the cost of travelling to town.

“I tell people not to rush to town to buy a smartphone but instead order through Copia... the fare adds to the cost of buying the phone [and] the prices in town are higher.”

Second, Henry uses his phone to access news and information. Because Henry spends most of his days working on a farm far from the town centre, he appreciates that he can get both formal and informal information through various means like radio (accessed through his phone), internet (through Opera Mini), texts and calls. However, he does not see a value in using other social media sites such as Facebook, WhatsApp, and Twitter. He also says that he does not know how to use them, and no one he knows uses those platforms.

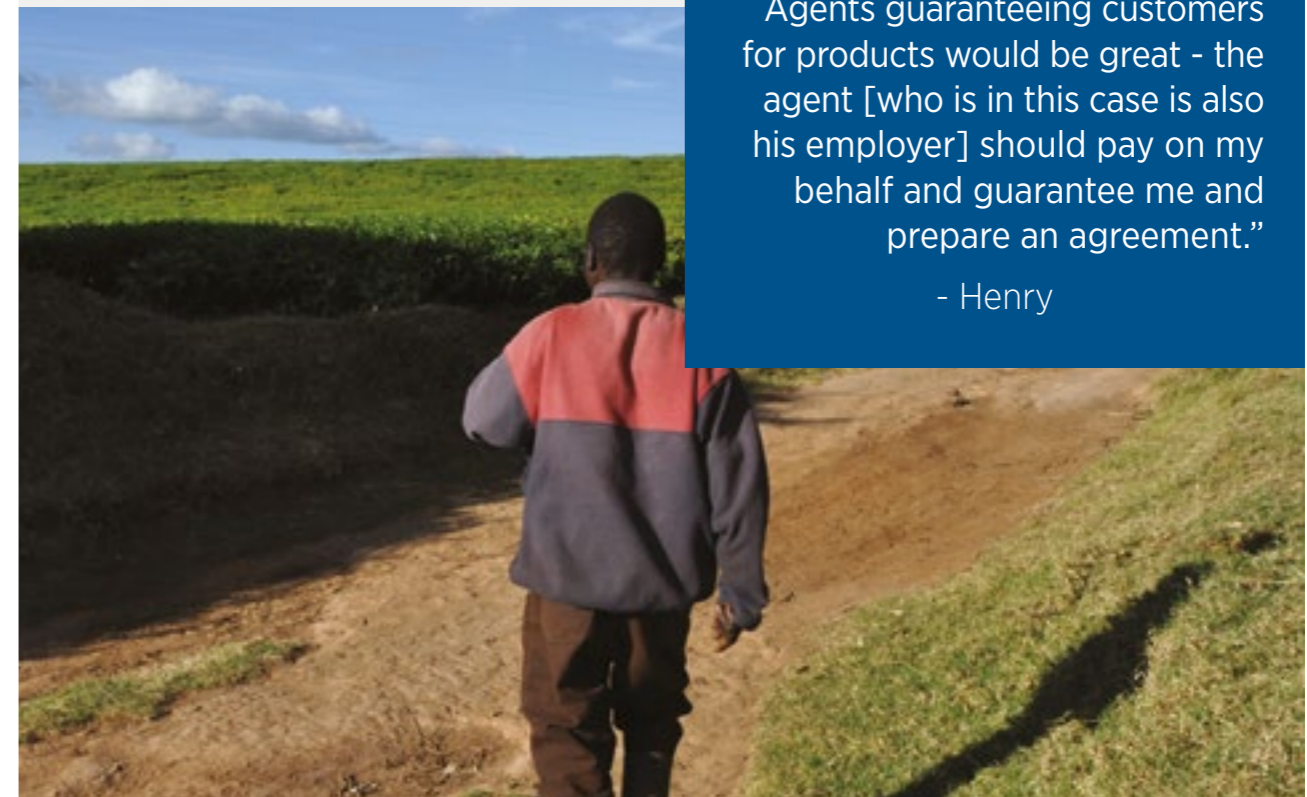
He also appreciates that his phone has a long battery life, good network reception, and is easy to use. He says he would be sceptical about purchasing a more expensive smartphone if it looked too difficult to use was too expensive, or had too many applications that he does not need. However, the appearance of a phone matters to him, and his aspirational phone would be a smartphone with a touch screen, slightly larger than his current phone. He would also like a name brand such as Samsung.

“I would like a Samsung branded phone -this is what I would really want. Samsung is my preference, but other people would have their own preference.”

However, he found it difficult to save enough money to purchase the phone in a lump sum and would have appreciated an option to purchase on credit. He felt that because he has been working for the same employer for 25 years and his supervisor on the farm is his Copia agent, the repayments could have been taken out from his salary and the agent could have vouched for his credibility.

“I am not able to raise the money all at one instant... if I want to save [KSH] 50,000 it will take a long time and I will not be patient enough – [but] payment in instalments is no problem. Agents guaranteeing customers for products would be great - the agent [who is in this case is also his employer] should pay on my behalf and guarantee me and prepare an agreement.”

- Henry

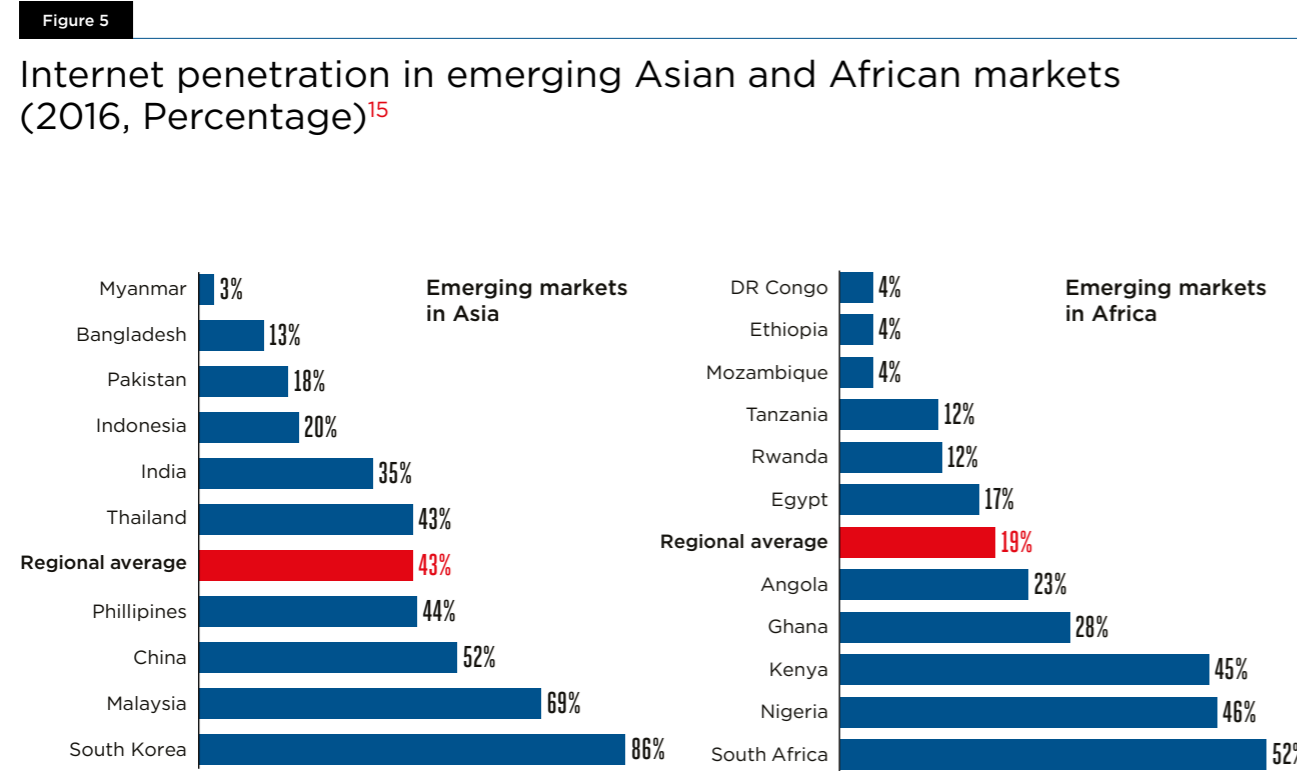


11a. Copia is a mobile retail platform launched in 2013 that uses an agency model to reach base of the pyramid consumers. For more information, please see case study on p. 62.

12. GSMA Connected Women and Connected Society qualitative consumer research in 2017 in India, Bangladesh, Pakistan and Sri Lanka. Sample = 212.

Large gaps exist in terms of both access to the internet and smartphone ownership for underserved populations. People in emerging markets are less likely to access – and benefit from – the internet. The World Bank estimates that nearly two billion people did not have a mobile phone in 2016,¹³ and about half of the world’s population has no access to the internet.¹⁴ Figures are lower in much of Sub-Saharan Africa, where the average internet penetration rate is at 19%.

Figure 5 below provides a breakdown of internet penetration in emerging economies in South Asia and Sub-Saharan Africa.



In addition, the digital divide across demographic groups is significant, especially for marginalised populations such as bottom of the pyramid, rural dwellers, women and the elderly. Women still lag behind in terms of smartphone ownership, as illustrated in Figure 6 overleaf. The gender gap in terms of smartphone ownership varies among countries and regions and is particularly significant in economies like Kenya, India, Nigeria and Pakistan. One of the reasons for this reduced ownership is that women typically have less financial independence than men,

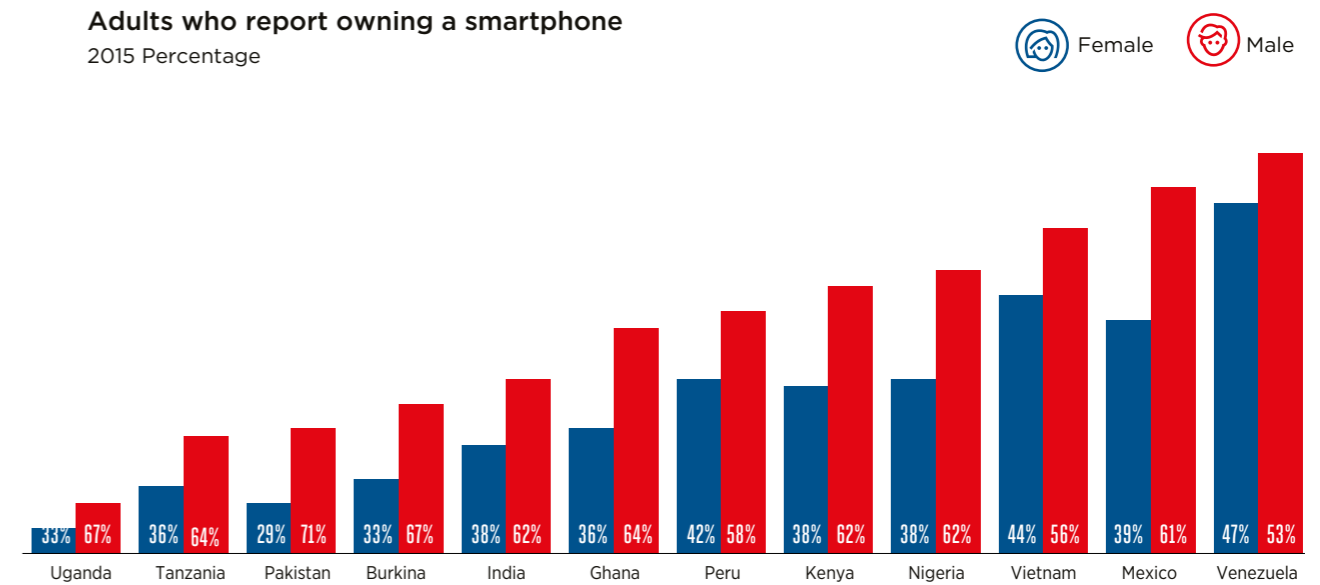
and therefore cost is an even more significant barrier to increased ownership of internet-enabled devices. Closing the gender gap in mobile phone access (any mobile phone, not just smartphone) and usage will not only enhance women’s economic empowerment, political participation and social inclusion but is also projected to generate an additional ~\$170 billion in revenue for the mobile industry between 2015 and 2020.

13. World Bank. “World Development Report: Digital Dividends”. 2016

14. ITU. “ICT Facts and Figures”. 2016”

Figure 6

Gender differences in smartphone ownership in select emerging economies (2015, Percentage)¹⁶



15. Internet live statistics; Dalberg analysis

16. GSMA. “Bridging the Gender Gap: Mobile access and usage in low- and middle-income countries”. 2015.

16 Pew Research Centre. “Smartphone Ownership and Internet Usage continues to climb in Emerging Economies”. 2016

What are the main drivers for connectivity and smartphone ownership for low and middle-income groups?

Smartphones are key to expanding access – they represent one of the most affordable internet-enabled devices available on the market¹⁷, and as a result, many low-income populations in emerging markets will have their first experience of the internet through a mobile phone. Alternatives would include shared devices (e.g. internet cafes, or through friends and family) or higher-end devices like computers or tablets, which can be more expensive and inconvenient. For populations in emerging markets, prepaid mobile broadband services remain the most common route to getting online.¹⁸

However, across emerging markets, handset cost remains a critical barrier to mobile phone ownership and internet access. According to the GSMA Intelligence 2016 consumer survey, 62% of basic/feature phone owners in low and middle-income countries cited handset costs as the top barrier preventing them from using the mobile internet.

Across a sample of non-mobile phone-owners in the countries surveyed, an average of 64% of respondents highlighted the cost of the handset and SIM as the largest hurdle for acquiring a handset. On a regional level, this was the top barrier for 58% of respondents in Asia, 70% in Latin America, and 64% in Africa.

In general, the cost of mobile phone ownership is more of an issue for women as they often have limited financial independence, lower incomes and worse access to external sources of finance. This, combined with other cultural reasons results in women being more price sensitive.¹⁹ Figure 7 below illustrates how handset cost was one of the highest perceived barriers to phone ownership in GSMA’s study measuring the gender gap in mobile phone ownership and usage across 11 low and middle-income countries in 2015. In the majority of the markets, women felt cost to be a more acute barrier than men.

Figure 7

Perceived barriers to mobile phone ownership and use in low and middle-income markets, split by gender (M/F)²⁰

	INCOME AND AFFORDABILITY								INCENTIVES TO OWN AND USE							
	Handset cost		SIM cost		Credit cost		Battery charging cost		Value		Family uncomfortable		Security & harassment		Operator or agent trust	
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M
Niger	57%	51%	50%	39%	34%	28%	33%	35%	5%	6%	11%	8%	18%	18%	21%	21%
India	50%	45%	29%	25%	39%	36%	16%	17%	15%	17%	16%	14%	34%	33%	21%	17%
DRC	44%	35%	14%	12%	23%	23%	22%	28%	8%	9%	15%	15%	18%	19%	20%	21%
Mexico	66%	65%	36%	41%	51%	54%	31%	30%	47%	53%	31%	37%	69%	68%	67%	68%
Indonesia	40%	37%	19%	16%	32%	28%	14%	16%	16%	17%	15%	12%	32%	30%	20%	25%
China	50%	49%	32%	36%	53%	53%	24%	32%	36%	39%	30%	31%	63%	64%	56%	58%
Turkey	65%	64%	63%	63%	62%	61%	19%	16%	35%	35%	19%	16%	44%	34%	45%	42%
Kenya	50%	45%	31%	31%	45%	39%	31%	27%	12%	9%	8%	5%	27%	17%	21%	17%
Colombia	66%	71%	19%	19%	58%	61%	24%	17%	60%	58%	28%	16%	75%	70%	68%	70%
Egypt	80%	80%	38%	36%	47%	49%	34%	35%	47%	50%	40%	31%	53%	48%	33%	36%
Jordan	76%	42%	56%	21%	69%	63%	17%	5%	21%	12%	21%	3%	57%	37%	40%	21%

	USER CAPABILITY & DESIGN		INFRASTRUCTURE									
	Technical literacy & confidence		Network quality and coverage		Agent service		Agent access		Identity documents		Battery charging access	
	F	M	F	M	F	M	F	M	F	M	F	M
Niger	30%	25%	39%	40%	17%	19%	23%	17%	29%	23%	32%	28%
India	35%	26%	45%	35%	17%	12%	20%	18%	27%	28%	10%	12%
DRC	21%	18%	42%	39%	18%	17%	16%	17%	N/A	N/A	23%	26%
Mexico	42%	46%	47%	45%	41%	47%	39%	46%	39%	34%	19%	23%
Indonesia	28%	21%	50%	47%	14%	17%	19%	17%	27%	28%	13%	14%
China	48%	46%	40%	43%	40%	44%	34%	33%	17%	20%	19%	26%
Turkey	24%	19%	24%	19%	31%	27%	25%	23%	18%	18%	16%	12%
Kenya	28%	22%	59%	60%	17%	12%	30%	24%	23%	22%	26%	23%
Colombia	43%	35%	42%	40%	39%	36%	41%	37%	31%	33%	17%	20%
Egypt	40%	40%	75%	74%	36%	37%	36%	35%	44%	26%	31%	37%
Jordan	34%	17%	65%	49%	36%	17%	31%	26%	8%	4%	17%	9%



1: Shows percentage who agree or strongly agree with Q 55 of the original survey conducted: "Now we are going to talk about some possible reasons that might be preventing you from using a mobile phone or using a mobile phone more often or for more varied usages than you are today. Please tell me the extent to which you agree or disagree with the following statements?": [Example] "Handset prices are expensive".

2: For the purpose of clarity, percentages for the following barriers have been calculated by taking a simple average from across 'sub-barriers': 'Value', 'Security & harassment', 'Technical literacy & confidence' and 'Agent service'; see Appendix 2 in the original report for responses to all individual barriers.

3: ID barrier question was not asked in DRC because at the time of the research for the original report, requirements for registration were unclear and, in practice, ID is rarely required to buy a SIM. Therefore, ID was assumed to not be a barrier in DRC.

4: Red-green demarcation includes sub-barriers

5: For each barrier in each country, N= 648 to 881 for women and N= 164 to 314 for men.

17. ITU. "ICT Facts & Figures". 2015

18. GSMA Intelligence. 2017.

19. GSMA. "Bridging the Gender Gap: Mobile access and usage in low- and middle-income countries". 2015.

20. GSMA. "Bridging the Gender Gap: Mobile access and usage in low- and middle-income countries". 2015.



GAJALAKSHMI

Gajalakshmi is a 50-year-old sari distributor and high-school tutor in Kanchivaram, Tamil Nadu, India. She has ambitions of starting a third business selling low-cost snacks to customers in nearby cities. By using WhatsApp on her recently acquired Samsung smartphone she will be able to convert her existing networks (e.g., members of her Self-Help Group, parents of tuition students, buyers of her saris) into customers of her new business.



“When everyone is having a smart phone why should I not have one? I speak with my family members [and] my customers.”

- Gajalakshmi

She believes that her new phone will help her immensely in advertising her products (i.e., by sharing photos), seeking inputs on new offerings and informing customers about new products in the pipeline.

However, her phone is not just helping her with work. It provides a much-deserved break from her life of managing two businesses and a household. Gajalakshmi takes the help of her daughter to download and listen to music as well as watch films whenever she can. She also likes to play the occasional round of Candy Crush when she has a couple of minutes to spare for herself.

Gajalakshmi believes status played a huge role in driving her purchase. She also believes a touch phone provides a seamless user experience. The benefits to both her work and her personal life were always clear to her. High upfront costs, however, discouraged her from getting a smartphone. But the asset financing facility of the Smart Snehidi^{20a} programme made it easier for her to buy the phone without borrowing from her husband, whom himself was pleased by the value the smartphone would add to her work. Gajalakshmi has completed two of her 10 monthly payments of \$10 each at an interest rate of ~7%. With the low monthly payments, she was not required to make any significant adjustments to her household expenditure.

“Hand in Hand is a trusted bank (organisation) so we bought phone from them. They asked can you pay monthly instalments or you wish to pay once in 3 months. I am happy when they give it for monthly instalments. We ourselves [the SHG] decided to take loan for 10 monthly instalments. Now we are paying it.”

Going forward, Gajalakshmi would like to be more independent with her phone. She says, “even though I am old, I want to learn how to use Google for my work and for downloading movies without my daughter’s help.” She attended training but couldn’t grasp everything that was taught. However, she thinks regular follow-ups and having reference material e.g., a booklet or a set of videos can really help in this regard. For other less educated women, she believes having texting facility in Tamil (the local language) will help. According to her, many women miss meetings because they cannot read English and tend to just avoid any messages in English that come on their phone.

“Actually, it is little difficult for us to use this smartphone. I [did] not know how to send messages. The message texting language should be in Tamil. We are not very educated. If they [Hand In Hand] can give monthly training on how to use it, how to contact people and how to improve the business through the smart phone, it will be then very useful for us. [At Hand in Hand] she taught me how to use Google. She taught me what all I can do with smartphone to improve my business.”

Seeing the changes the smartphone has had on her life, Gajalakshmi wants to support less educated women by bringing them into the Hand in Hand savings group programme and make them distributors of her snacks. She currently earns \$125 per month through her first two businesses but thinks the snacks business can go bigger, especially now, with her Samsung phone helping her to stay in touch with her friends and customers and strengthening those relationships.

20a. Smart Snehidi is a pilot program launched by Vodafone India for smartphone loans and free data bundles for women, collaborating with an NGO and a network of self-help groups. For more information, please see case study on p. 68.

In some contexts, gender norms compound high costs of devices, preventing women from acquiring phones.

This was also found in our field research despite the small sample and specific focus, particularly amongst women and older in India who had less control over major family purchases. Even in households where both men and women were engaged in gainful employment, our field research revealed several cases of men controlling decisions around high value purchases, and wives having to convince their husbands of the value of buying a device.

In these cases, women and older adults were either secondary users, or the final primary owners, of the smartphone (i.e., the last member to purchase a smartphone for self-use) in households that did own a smartphone.

In Kenya, which has less entrenched social norms, the barriers specific to women are less severe, and our field research suggests that women have more freedom to not only earn independent incomes but also experience fewer constraints around owning feature or smartphones. Female income earners who did own an internet enabled phone were more likely to own a feature phone or smartphone purchased from their own earnings rather than relying on a partner's. The primary barrier to women's ownership appeared to be around overall household affordability – if a household could only afford one internet-enabled device, it might belong to the husband rather than the wife.

The affordability barrier to mobile phone ownership accentuated in Nyarusugu Refugee Camp, Tanzania

In a socio-economic study exploring the impact of mobile connectivity in a refugee camp in Tanzania, around half of the 484 refugee respondents reported owning a mobile phone. Through having a phone, the refugees report gaining access to valued benefits, including the time and cost savings of communication, business opportunities, mobile money, education and well-being.

The majority of phone users are relying on a basic handset even though many desire access to use the internet. Only 40% of phone users are currently using the internet – which is much more common for men than women, and the cost of a feature phone or smartphone is a major preventative factor.

In the camp, basic phones are reported to cost approximately 20-35,000 TSH (\$9-16), while the cost of a smartphone ranges from 100-300,000 TSH (\$45-135). For the vast majority (92%) of non-mobile phone users, the cost of a handset is one of the main barriers preventing them from owning a phone, and means the refugees need to make significant sacrifices in order to afford a device, for example selling food as well as saving over the long-term.

Source: GSMA study in Nyarusugu Refugee Camp in Tanzania, 2017. Findings based on surveys, focus group discussions, and market observations. Survey sample: 484.

Smartphone affordability is driven by multiple supply and demand side factors.

As illustrated in Figure 8 on the following page, on the supply side these drivers relate to manufacturing, inbound and outbound supply chains and business and manufacturer decisions about pricing. On the demand side, drivers include people's ability to pay, their value perception of the device to justify the expenditure – coupled with levels of awareness and community influence and norms, and understanding of the total cost.²¹

It is important to note that a large number of consumers in emerging markets access devices via the open market, the black and grey market or through friends and family (second hand devices and gifts). This dynamic significantly impacts both the supply and demand side drivers, and can add another layer of complexity when designing solutions to improve consumers' affordable smartphone access.

Even in cases where consumers may be able to purchase relatively affordable smartphones through black market vendors, there are associated downsides to take into consideration e.g. the lack of warranty on handsets, no quality guarantee, often no help with repairs if the handsets malfunction after purchase and poorly made imitation phones, all of which can lead to bad user experiences. Governments cannot collect

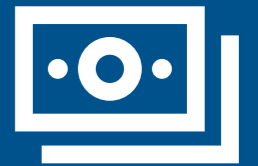
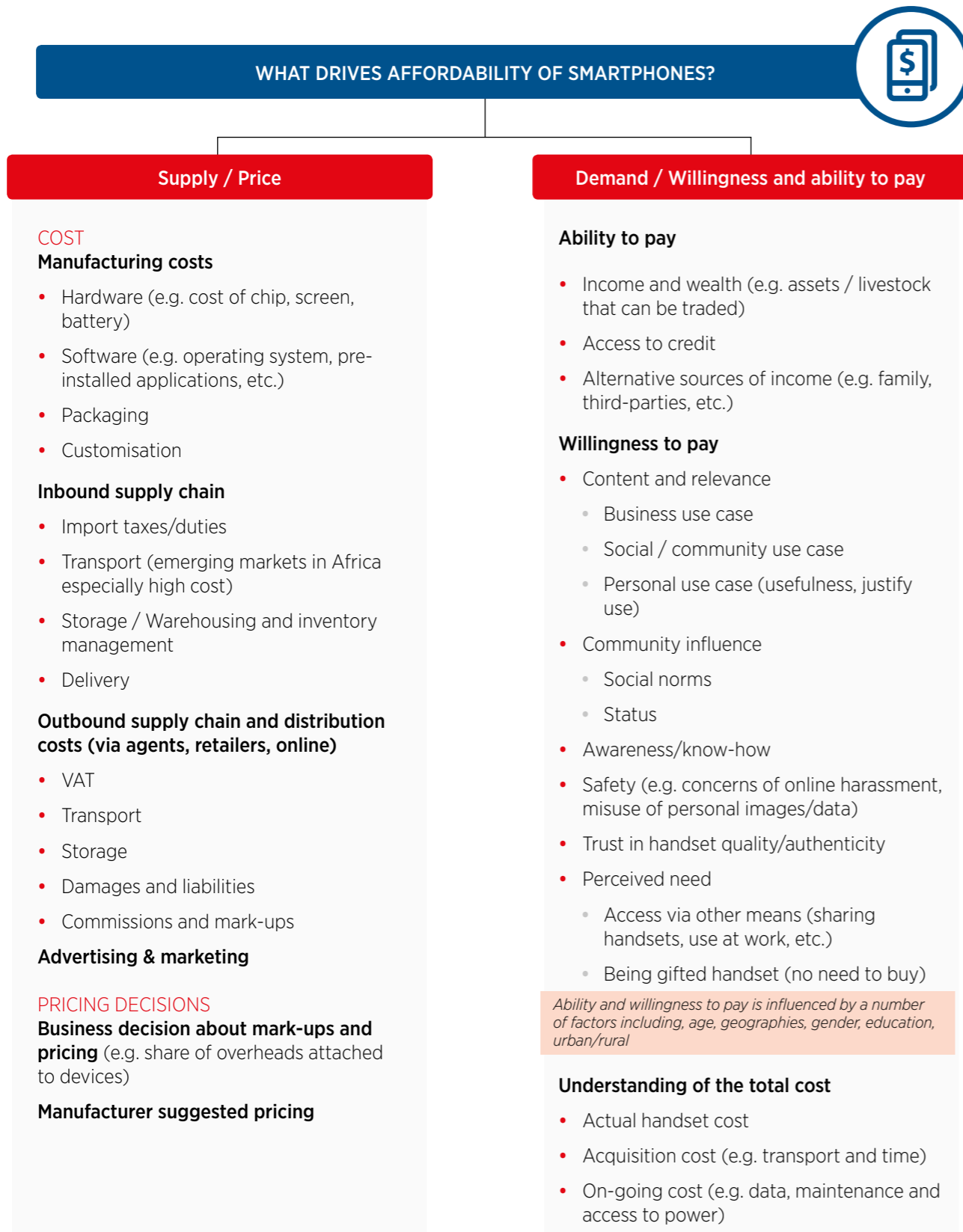
taxes on black market devices, and in markets where import duties and point of sale tax (VAT) is high, it creates the dynamic for the black market to be the main provider of handsets with the associated often poor after purchase experiences. The grey market is more legitimate in terms of tax payment, as it is reliant on currency fluctuation hedging by importers who look to purchase products overseas, and import based on the margins provided in the currency differentials. The grey market cannot always offer customers the same warranty or repair support, as manufacturers often restrict this to the original country or region of intended sale (e.g. Europe or North America).

A demand side issue associated with consumers' ability and willingness to pay for a smartphone, is the gap between the perception of and the actual reality of prices. Consumers commonly have an exaggerated view of smartphone costs, which leads to the belief that such handsets are unobtainable, even in cases where the consumer would, in fact, be able to afford the device. This awareness gap extends to common misconceptions that most entry-level smartphones are of bad quality, break easily, and do not provide the desired social-status, which makes consumers aspire to higher-end premium models that they might find challenging to afford.



Figure 8

Supply and demand factors that impact expanded access and usage of smartphones



The average smartphone cost in India & Tanzania is 16% of income for people on <US \$2/day

21. Note: smartphone affordability in this study focus solely on drivers related to affordability of device adoption, i.e. excluding the ongoing cost elements of smartphone ownership and use (mobile data, maintenance and battery charging).



2

The cost of smartphones and the purchasing power of low-and-middle-income groups



The cost of smartphones and the purchasing power of low-and-middle-income groups

The high cost of smartphones in relation to income levels continues to constrain universal access, especially in emerging markets.

Since 2008, the prices of smartphones have fallen by ~30% in Asia, ~25% in Latin America and the Caribbean and ~20% in Africa.²² Despite this, the average smartphone still costs between \$100 and \$200 in many emerging markets, as illustrated by Figure 9 below.

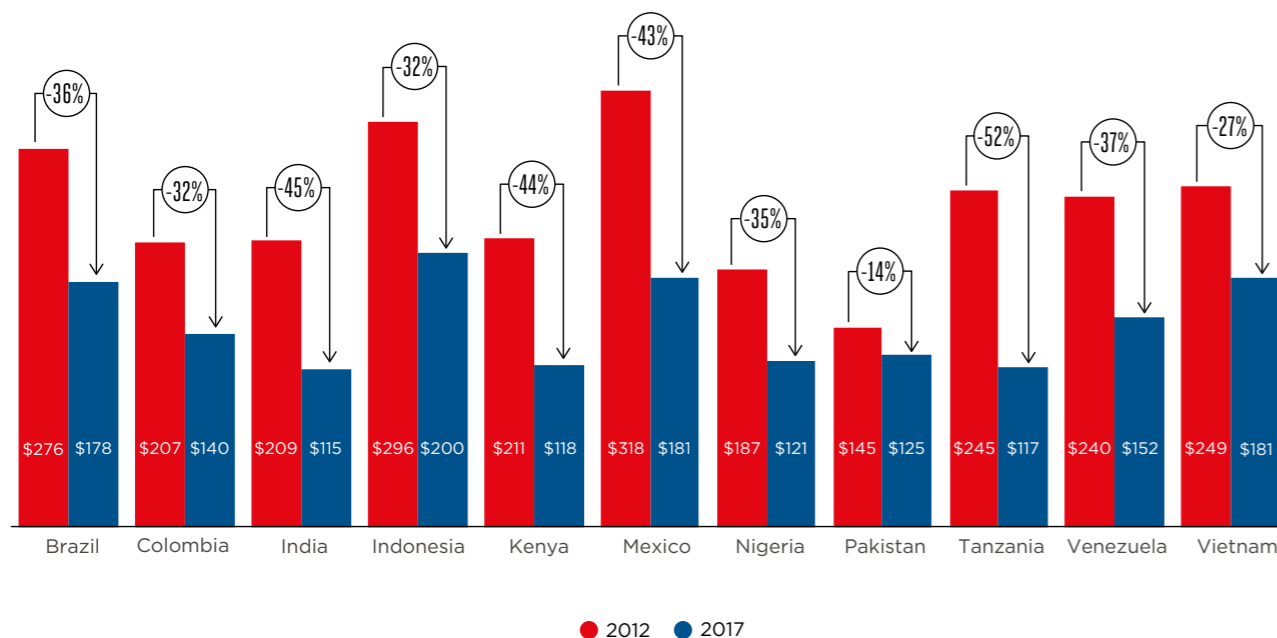
Such prices are unaffordable for extremely poor and many low-income people. For those living below \$2 per day, a \$100 handset accounts for 14% or more of annual income. A phone in the range of \$15 – 35 would be closer to the affordability threshold for this group.

Looking ahead, smartphone costs are not expected to drop low enough to make a significant difference to low-income groups in the near future. For example, the 2017 average smartphone cost in Kenya of around \$118 is expected to drop to \$109 in 2020. In India, the equivalent cost of \$115 is projected to decrease to \$97 within the same timeline.²⁴

Taking India and Tanzania as examples, Figure 10 further below shows how much low-and-middle-income consumers could realistically afford to spend on devices based on current GDP and average smartphone prices.

The income pyramid shows how the vast majority of both Tanzania's and India's population are found in the low-income and extremely poor income brackets. As a result, at current rates, an averagely priced smartphone represents up to 16% of these groups' income, which signifies a considerable burden for over 90% of both countries' respective population to purchase a device upfront.

Figure 9
Decrease in the average selling price of smartphones between 2012 and 2017²³



Source: Strategy Analytics. "Global smartphone ASP & Revenue Forecasts by 88 countries: 2012 – 2022". 2017; Dalberg analysis

22. A4AI. "A4AI Affordability Report 2015/16". 2016

23. Strategy Analytics. "Global smartphone ASP & Revenue Forecasts by 88 countries: 2012 – 2020". 2015; Dalberg analysis

24. Strategy Analytics. "Global smartphone ASP & Revenue Forecasts by 88 countries: 2012 – 2022". 2017. It is important to acknowledge that the entry price point for some lower-end smartphones is now at \$40 for the mass market. However, average smartphone prices are driven up by higher-end models.



Enoch

Enoch is a 30-year-old entrepreneur from Kimihurura, Kigali. He repairs electronic appliances and has a sound system that he rents out for events in the city. When he started using a smartphone, he would browse the internet using search engines like Google to find information and events for his businesses.

As he became more familiar with his smartphone he learnt how to use applications like WhatsApp and Facebook to market his business and engage customers. He has recently learnt how to use Instagram, to advertise his services to event

management companies in Rwanda. Enoch also uses his smartphone to search for parts and equipment online and can compare prices and place orders for items that he cannot procure in Rwanda.



“For example, if I want to order an item, I can take a picture of that item and then send it on WhatsApp to some Rwandan friends abroad, so they can help me buy it in another country.”

On average, Enoch earns RWF 150,000 (~\$180) per month, and uses approximately 2% of his monthly income to pay for his smartphone loan. Were it not for this loan he would have to use 30% of his income in one month (or save for 3-6 months for the smartphone to cost ~5-10% of his income) to be able to purchase a smartphone. The benefits of a smartphone in Enoch's trade is monumental, and asset finance helps him to access this device more affordably, without making significant adjustments to his household expenditure. Going forward, Enoch would like to purchase more internet-enabled products, like a tablet.

“I heard ... that [the Mobisol phone^{24a}] had an internet bundle of three years. It pleased me so much because I use the internet to search for information and keep in touch with family and friends. I believe free internet for three years is an added advantage, it has value and I can make money with it.”

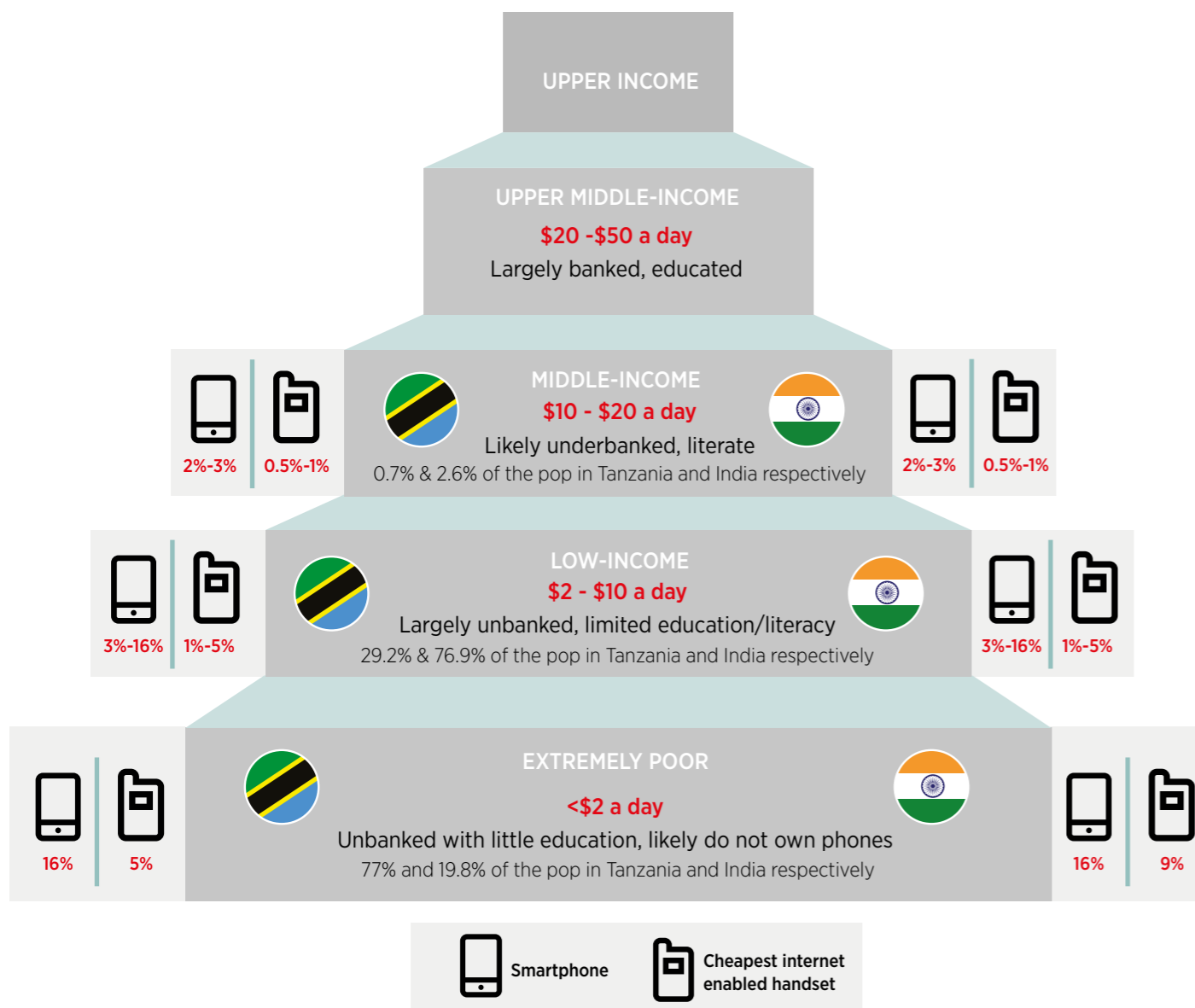


24a. Mobisol is a solar energy company in East Africa that has started to offer smartphones as part of the bundle with their solar home systems. For more information, please see case study on p. 80

Figure 10

Assessing affordability for internet-enabled devices in Tanzania and India²⁵

Income pyramid showing percentage of income required for a device, based on average smartphone prices and the cheapest available internet-enabled device in Tanzania and India



Note: Numbers on the LHS and RHS of the pyramid indicate what percentage of an individuals' annual income would be required to purchase an averagely priced smartphone, or the cheapest available internet-enabled handset at each income bracket in Tanzania and India. Average smartphone costs are approximated according to data for average wholesale selling prices of smartphones. Income brackets and share of population per bracket are defined in PPP terms.

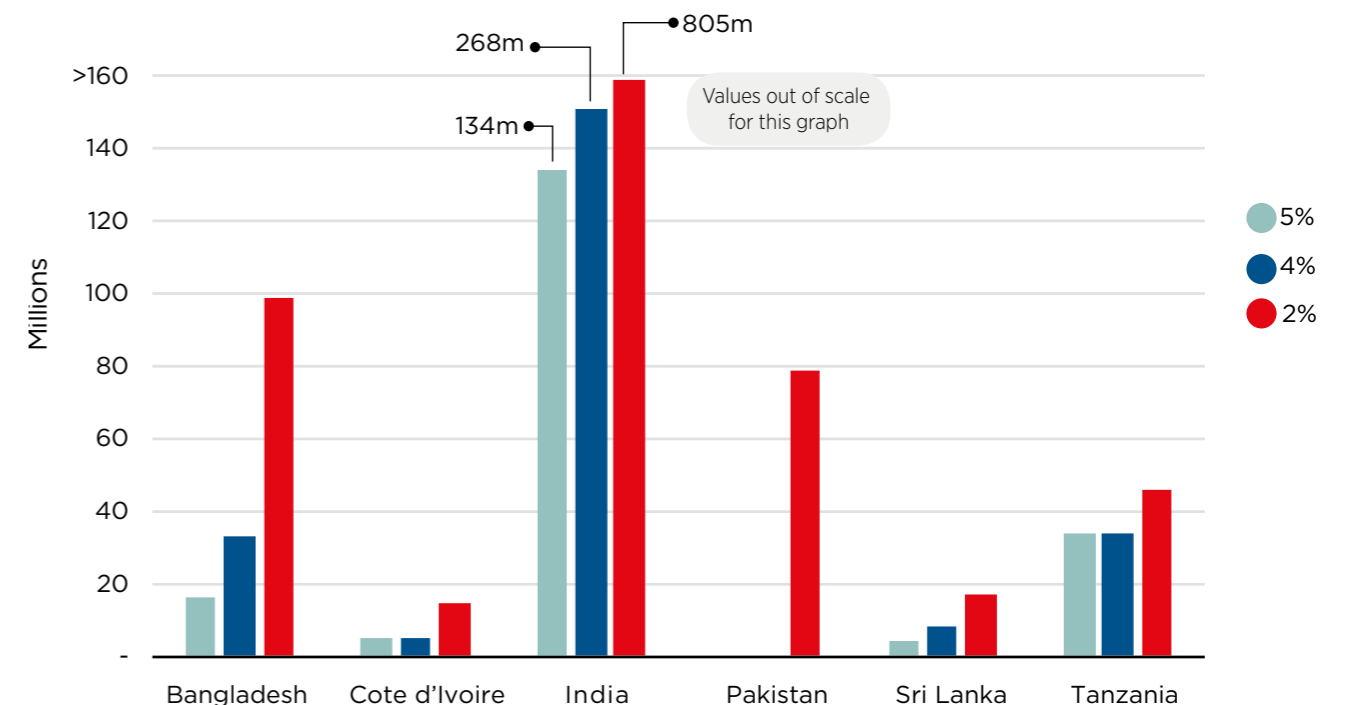
25. Tarifica pricing data for cheapest internet-enabled handset available via mobile operator channels, 2017; Strategy Analytics. "Global Handset ASP & Revenue Forecasts by 88 Countries: 2012 to 2022", 2017; Pew Research Centre. "A Global Middle Class is More Promise than Reality". 2015

Affordability is inextricably linked to the income level of consumers. Figure 11 below illustrates the number of people who would not be able to afford the cheapest available internet-enabled handset in different markets. A handset is deemed unaffordable if its price represents an excessive share of consumers' income, with levels of 2% to 5% of annual income being depicted in the figure. At a 5% affordability level, more than 134 million people in India would be unable to afford one of the cheapest available internet-enabled handsets. The respective figure for Tanzania would be around 34 million people.

Figure 11

Number of people who cannot afford the cheapest available internet-enabled device at different affordability levels²⁶

(2017) Population in millions



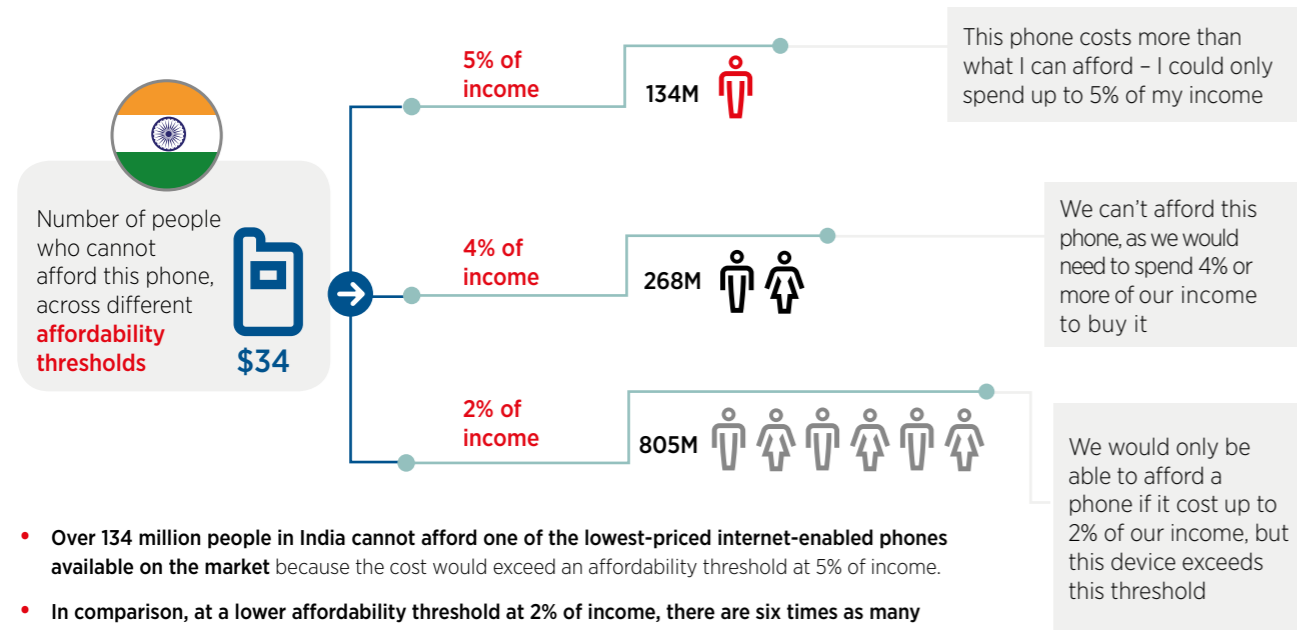
Note: Affordability thresholds expressed as the cost of an internet-enabled device, as a percentage of income. These thresholds represent different levels of conservativeness when defining affordability. The higher the threshold, the more likely it is for a particular device to be considered affordable. These estimates are based on conservative assumptions regarding income distribution.

26. GSMA analysis based on Tarifica 2017 data.

Figure 12

What would be an affordable device for people in India?

The cost of an entry-level internet-enabled phone in India, in relation to affordability thresholds



- Over 134 million people in India cannot afford one of the lowest-priced internet-enabled phones available on the market because the cost would exceed an affordability threshold at 5% of income.
- In comparison, at a lower affordability threshold at 2% of income, there are six times as many people unable to afford this device - over 805 million.

Source: GSMA analysis based on Tarifica 2017 data.

Among low-middle-income groups, the ability to purchase a smartphone varies widely, as does the ability to pay full cash payments versus payment in instalments. Our research suggests four primary affordability groups amongst low-and-middle-income consumers in relation to their ability to afford smartphones.²⁷ These are described in more detail below, with examples from the primary research in Kenya, Rwanda and India.

1. Beyond their means: primarily comprising of the extremely poor, often with no reliable income source, this group needs to make major trade-offs in household expenditure to afford even a basic handset. To obtain a device, members of this group would typically rely on funds from family or friends.



GATIMAYU, CENTRAL KENYA

In Gatimayu, Central Kenya, a group of unemployed young people aged 22-30 years old frequently spend their time at the local shopping centre looking for work. Most do not have feature or smartphones. The only exceptions are those who received money for phones from friends or family. They say they would love to own internet-enabled phones – such devices bring improved status and enhance communication – but they cannot afford the ones on the market. Some say such phones are not a priority because they need to focus on meeting basic needs.

27. Segmentation is based on qualitative observations made during Dalberg field research.

2. Cannot afford lump sum but could afford instalments: comprising of the working poor, members of this group find it difficult to adjust household expenditure to purchase smartphones through upfront payments. However, many see value in purchasing a smartphone, and they can afford one if they can access financing that breaks up the financial outlay so as to not disrupt monthly cash flows.

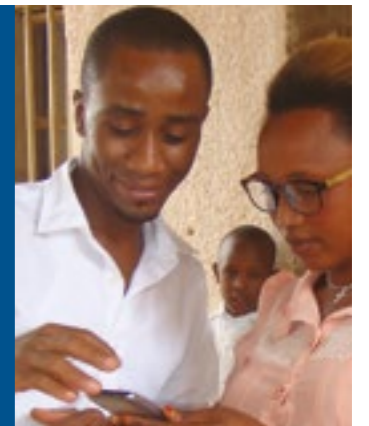


RURAL KANCHIPURAM, TAMIL NADU

Ammu runs a tailoring shop in rural Kanchipuram, Tamil Nadu. Given her monthly income of \$50 per month, she could not afford to purchase a smartphone through the open market in Kanchipuram city. However, with monthly instalments, she purchased a smartphone without adjusting her expenditure in household necessities, her son's school fees, etc. Now that she has a smartphone, Ammu is able to share her blouse designs with customers on WhatsApp while constantly learning new designs on YouTube, which allows her to increase the value of her products.

KIGALI, RWANDA

Ezira is a male construction worker who is employed in the new industrial development zone in Kigali. He earns around \$70 a month. His wife supports the family through her own tailoring business in the countryside. Ezira applied for the Mobisol²⁸ 200W SHS, TV and radio bundle in 2015, to ensure his family has reliable electricity which is cheaper than being on the grid. Last week, using credit he bought a smartphone from Mobisol as a gift to his wife so it could help her market her business to customers through WhatsApp. He spends ~5% of his income on monthly instalments to pay back the smartphone loan. Through her smartphone, Ezira's wife is also able to WhatsApp Ezira and share pictures of their family with him.



3. Can save and pay lump sum: this group consists of people at the higher end of the low-income segment. Individuals have the ability to save over time to purchase a smartphone. They are typically quality and cost conscious and look to purchase phones when there are offers or savings schemes available. They also benefit from access to credit, which allows them to obtain smartphones more quickly.



LIMURU, KENYA

Nadiso is a 32-year-old vegetable seller in Limuru, Kenya. She wanted a smartphone to talk to her friends and family who are not in the country, particularly through WhatsApp. She decided to buy a smartphone for ~\$50, using Copia's²⁹ layaway service to save towards the product. She found the price fair given the features of the phone and the quality of the brand. She is constantly teaching herself, as well as learning from her friends, how to use her phone to access news and information through various apps.

28. Mobisol is a solar energy company in East Africa that has started to offer smartphones as part of the bundle with their solar home systems. For more information, please see case study on p. 80.

29. Copia is a mobile retail platform launched in 2013 that uses an agency model to reach base of the pyramid consumers. For more information, please see case study on p. 62.

4. Can afford lower priced smartphones through a lump sum payment: this group comprises of middle-income customers, typically with a reliable source of income. Members can make direct payments to purchase lower cost and mid-range phones. They have some flexibility to select among brands and product features.





GATHIKA, CENTRAL KENYA

Justin is a 32-year-old agribusiness owner who sells kale and other farm produce from his farm in Gathika, Central Kenya to customers in Nairobi. He purchased a smartphone to increase his social status and help him improve his business. He paid for the phone using his business earnings, and his first criteria when purchasing the phone was not price but a good camera. He uses his phone to take pictures of farm produce, send images to potential customers and coordinate pick-ups and drop offs. Though he paid the lump sum price for his phone, he says he would need to save a bit if he chose to upgrade.

GATSIBO, RWANDA

Phillipe is a security professional and farmer in Gatsibo – a rural town in the Eastern province of Rwanda. As an existing Mobisol customer, he was informed of the smartphone offering and saw an opportunity to complement his children’s formal education with e-learning at home accessed via the smartphone. Seeing the value add, he chose to purchase the device in cash and tapped into his personal savings to pay the upfront cost. He cannot afford to purchase a tablet (given limited access to finance for higher end products), and since he trusts Mobisol products, he opted instead to purchase the smartphone.

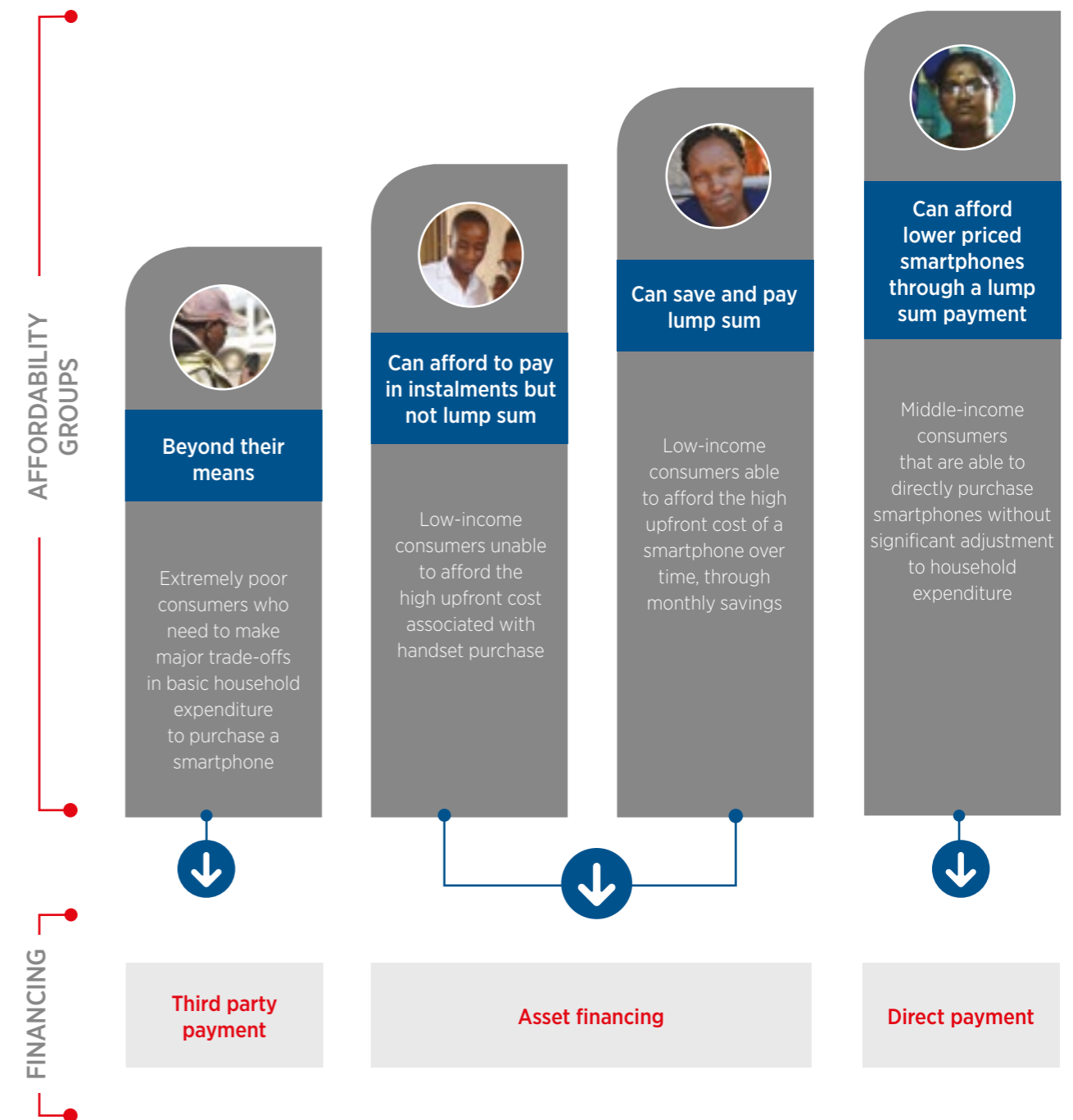
RURAL KANCHIPURAM, TAMIL NADU

Sangeetha runs her own tailoring shop in rural Kanchipuram. Her husband was the first smartphone user in the family. He was able to purchase it through earnings from his successful carpentry business. In order to take out a phone loan to secure a phone for herself, Sangeetha had to convince her husband that the smartphone would be useful for her tailoring business and could increase the overall household income. Sangeetha can order supplies (e.g., thread rolls) from the internet and share the latest designs she is able to make with her customers on WhatsApp. Much of what she knows about using the phone was taught to her by her husband who also uses the phone for business development.

“I CONVINCED MY HUSBAND ABOUT THE BUSINESS BENEFITS OF BUYING SUCH A PHONE AND TOLD HIM THAT I COULD, WITH INCOME FROM MY OWN TAILORING SHOP, PAY FOR THE PHONE. HAVING SEEN THE BENEFITS IN HIS OWN WORK, HE WAS CONVINCED”

Figure 13

How the business models work to improve smartphone affordability³⁰



There is a possibility that people would be able to ‘save and pay lump sum’ for an internet-enabled feature phone, but would have to opt for instalments for a smartphone. We are basing our analysis on low cost smartphones which typically start at -\$40 – 50.

30. Hypothesis based on our findings from over 50 end user interviews.

3

Models for
increasing
affordable access
to smartphones



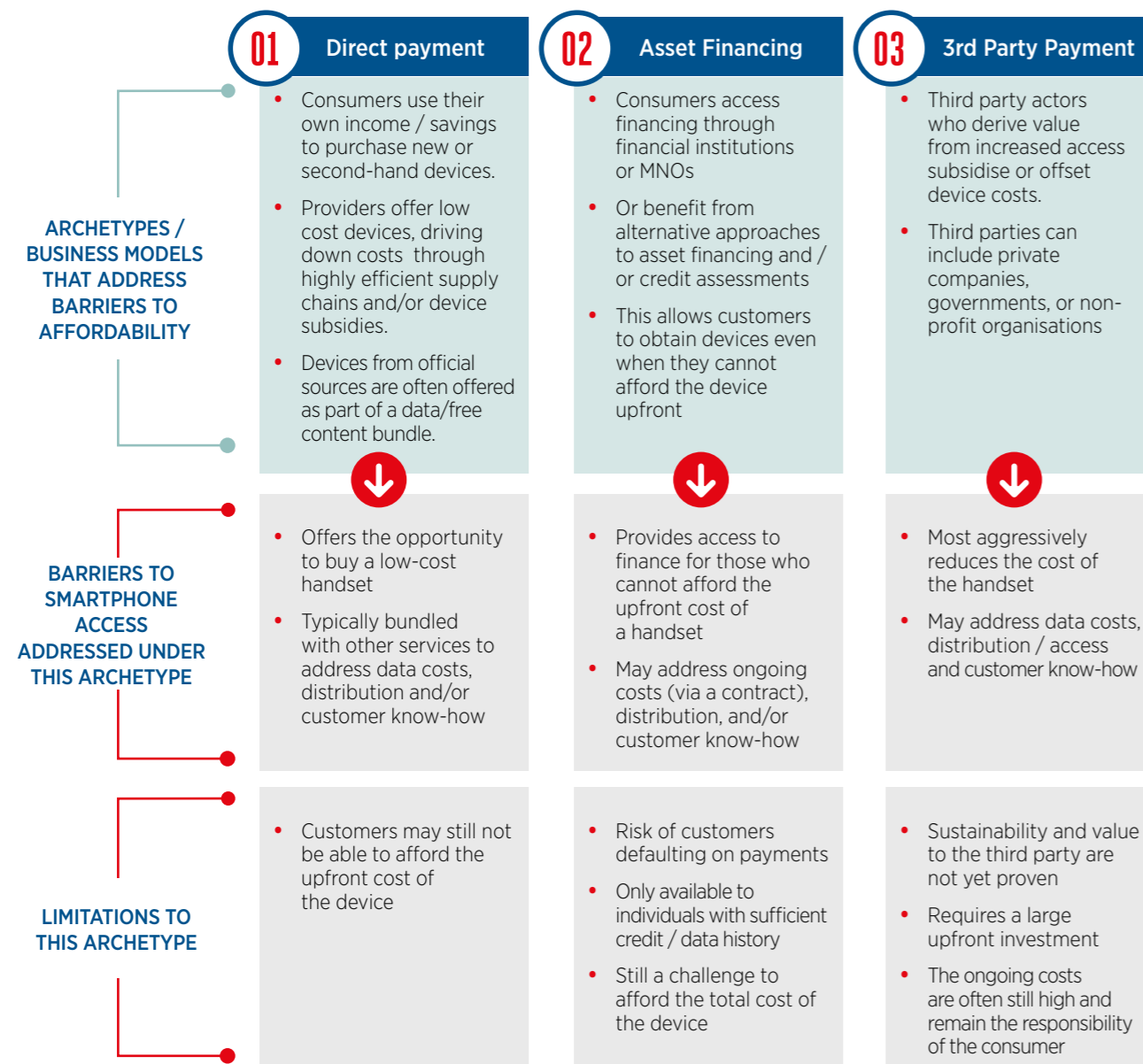
Models for increasing affordable access to smartphones

The emerging business models that address the barriers faced by low- and middle-income consumers in accessing smartphones can be categorised into three archetypes.

Each of these archetypes drives affordable access for the consumer by either reducing the supply cost directly or supporting the purchase through financing or third parties.

Figure 14

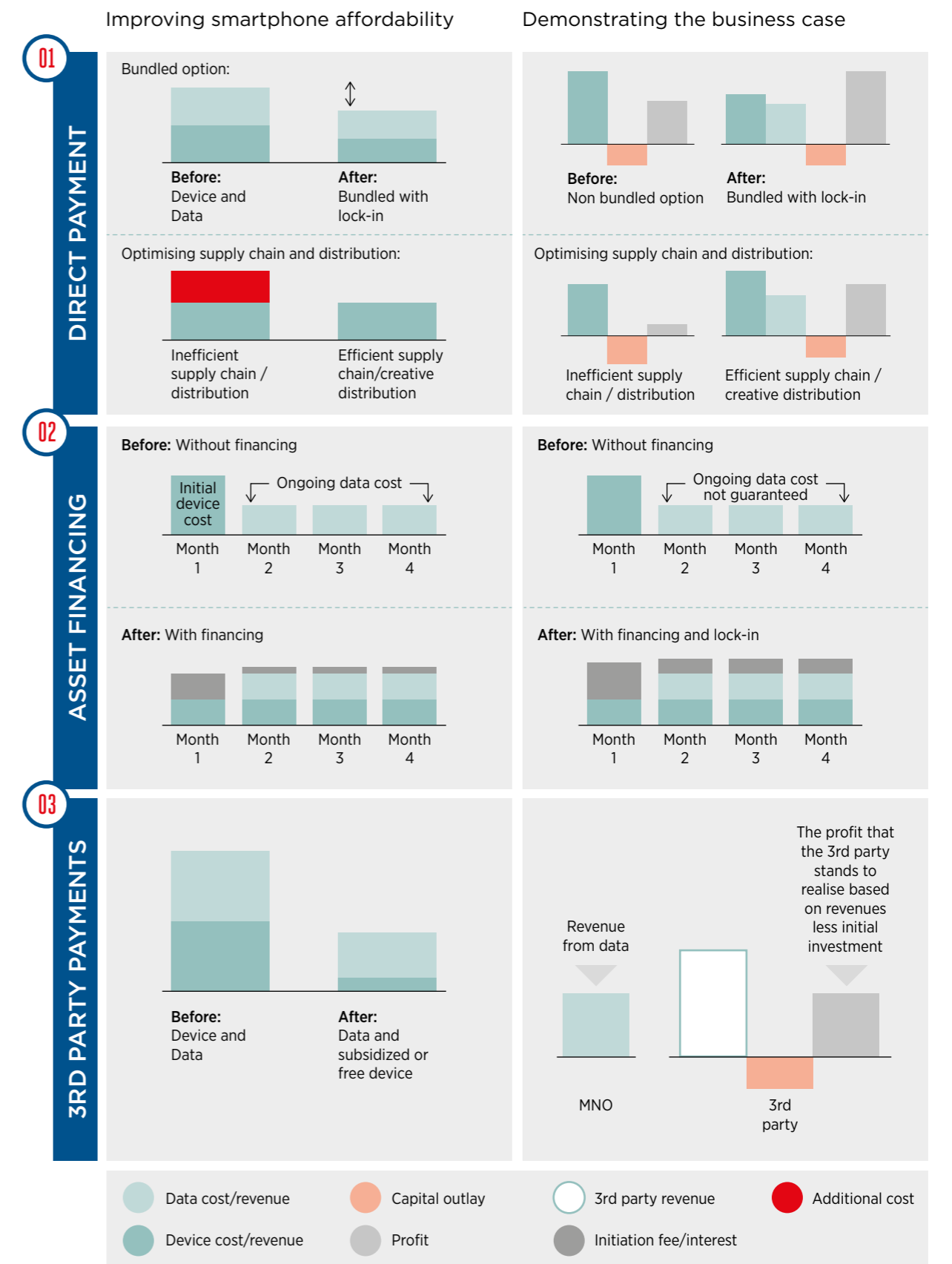
Business model types that address affordability barriers faced by low-and-middle-income consumers in accessing smartphones³¹



31. To ensure that these strategies are effective they should be implemented in a manner which considers other barriers to access. See Appendix for more detail.

Figure 15

How the business models work to improve smartphone affordability



Archetype I: Direct payment

In the direct payment model, consumers use their own income and/or savings to purchase new or second-hand devices. Providers can take two main approaches under this archetype: a) they can optimise supply chains, including through creative distribution approaches; or b) they can offer bundles and subsidise devices, recouping costs through sale of data or other revenue streams.

(a) Supply chain optimisation: Providers can drive down costs by building more efficient supply chains and can pass savings on to consumers. Devices pass through numerous supply chain players before reaching end consumers, as outlined in Figure 16. Further, supply chains in developing world markets are not as structured as in Europe or North America, therefore making it costlier to reach customers, especially those in peri-urban and rural settings.

Inefficiencies across the supply chain can drive up prices and affect end consumers negatively in several ways:

- **MNOs typically procure devices from branded device companies and sell them through retailers or bulk business / government buyers.** This supply chain path can be costly when MNOs purchase devices in many varieties of models but each in low quantities, or due to numerous intermediate players and high transport costs. In addition, this path has traditionally offered fewer low cost handsets, and MNO retail outlets may reach only urban middle-and-upper-income people.
- **Many devices are sold through the grey and black market, reaching consumers through various independent retailers.** The Black Market is defined by the import of goods into a market mainly to avoid payment of tax at import or at point of sale. The grey market does pay some or

all duties and taxes but is importing products from other global territories where currency exchange rate variation allows for increased margins for speculative importers. This market segment is not regulated, does not offer asset financing, and follows a more complex supply chain, making it less efficient. It is estimated that the combined black and grey market will increase to 257 million mobile phones by 2017, in effect reducing total revenues to manufacturers from smartphones by as much as a quarter.³² The black and grey market, sometimes referred to as the 'dark market' presents some advantages to first-time consumer groups compared to the formal market because: retailers can offer them lower prices for unbranded handsets by circumventing intellectual property laws, taxes and other regulations; the opportunity to buy phones in locations where other retailers do not operate; prevalence of independent small-scale DIY phone repair shops. On the other hand, no warranty is included on device purchase as the manufacturer will not support grey market goods if intended to be sold in other markets, and many grey market players sell imitation phones and often offer no customer support. In an attempt to compete in this context and help address security concerns associated with unlicensed and outdated devices, smartphone manufacturers and some network operators have started to offer incentives for phone trade-ins, as demonstrated by the Airtel Nigeria model (see Fig. 17).

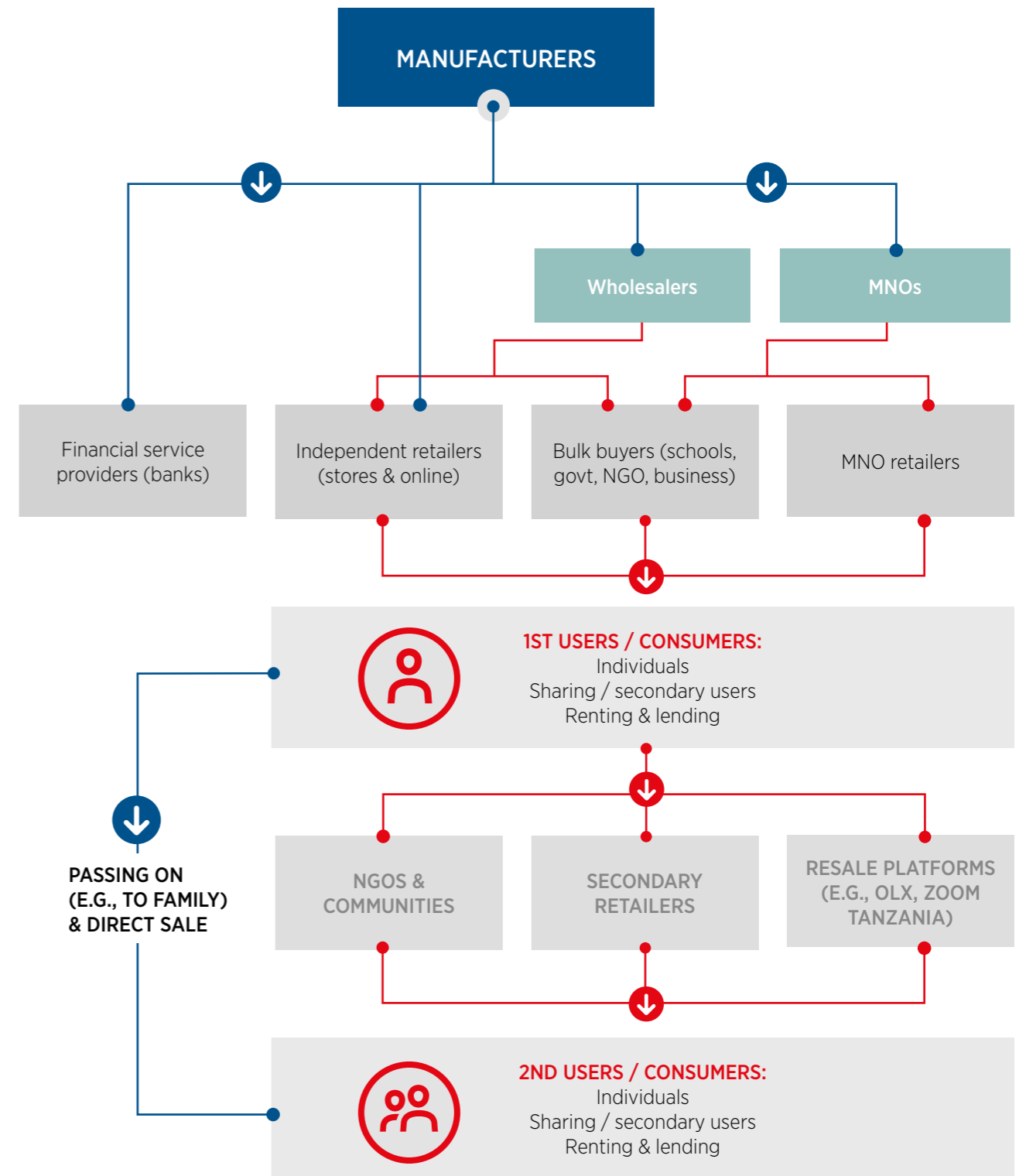
- **Existing channels do not adequately support most low-income and rural populations** - meaning that these groups either have not got easy access to sellers of smartphones due to location (distance from urban centres), pay a high marginal premium to a local grey market retailer who is incurring high transport and inventory costs, or incur extra transport costs to access devices in urban markets.



Selling smartphones via rural agent networks helps people save on travel

Figure 16

The smartphone supply chain in emerging markets



32. McKinsey. "Offline and falling behind", 2014

To reduce inbound supply chain costs, providers can minimise the number of players in the supply chain in two main ways:

- **Direct sourcing:** several MNOs are partnering directly with handset manufacturers³³ to provide self-branded handsets, avoiding royalty fees from branded device companies and potentially benefitting from bulk purchasing prices, allowing them to pass on the savings to consumers.
- **Vertical integration:** Tecno Mobile³⁴ and others combine device manufacturing capabilities and knowledge and experience in African markets to effectively cut out other players in their supply chain. With a focus on African markets, Tecno Mobile has developed and delivered high quality yet low cost smartphones that meet the demand of African consumers in both price and features, and currently account for ~50% of the market share on the continent.³⁵ AfriOne is a pioneer local manufacturer of low cost smartphones in Nigeria, combining cutting edge technology with sleek design and providing phones with integrated services such as mobile banking, health and education³⁶.

In addition to reducing the number of players in the supply chain, providers and retailers can explore various inventory management strategies to reduce overhead costs, thus creating savings that can be passed on to the customer. MNOs and other device retailers typically take one of two approaches to inventory management:

- **Demand responsive bulk buying:** MNOs can purchase a smaller number of devices in higher volumes, realising volume discounts. To succeed in this approach, MNOs must select low cost products that match customer demand. For example, Tecno Mobile's main focus on African markets allows it to provide an offering that meets the demands of African consumers while removing costly features such as NFC, fingerprint readers, and high quality displays, which customers are willing to forgo. Bulk buying is often implemented **in conjunction with centralised distribution**. For instance, one MNO operating in multiple markets in Africa sourced handsets directly from handset manufacturers and then centrally distributed the handsets out to their retailers in the markets in which they were operating.

- **Just in time buying (JIT):** In contrast to bulk buying, just in time buying allows MNOs and retailers to offer a broad choice of products in markets where the demand for niche products is relatively small. Retailers can source just before they run out of stock, or on order, to avoid carrying high inventory costs for a large number of stock keeping units (SKUs) that may not sell at high volumes. JIT strategies are relevant to small volumes of devices purchased from distributors who have stock already in a market who sell at marked up wholesale prices which drive higher end user prices. Bulk purchase of stock directly from manufacturers is very difficult to manage in JIT methodologies due to slower and more complex supply chains in many emerging markets.

Beyond employing the more traditional sourcing and inventory optimisation approaches described above, MNOs and manufacturers are innovating in various ways to strengthen their outbound supply chains. The goal of these efforts is to extend their footprint in a cost-efficient manner. Providers can partner with well-established retailers, leverage online and third-party retailers, or work with rural agent networks.

Through creative distribution partnerships, MNOs and retailers can offer low cost devices to rural and Base of Pyramid (BoP) populations. To do so, MNOs may partner with agent networks and retail chains that procure through a structured distribution system and have systems in place to manage liquidity. This approach solves two problems: 1) by working through more efficient supply chains, it can offer better prices than rural or BoP grey market retailers; and 2) they eliminate the need for rural people to travel to urban areas to purchase devices. To succeed, models must maintain low distribution costs, for example by economies of scale and optimized warehouse planning.

- **Structured agent networks, like Ruma in Indonesia³⁷ and Copia in Kenya³⁸,** can offer a range of priced products on demand to peri-urban and rural people. Customers liaise with a local agent to order from a catalogue of products – including such items as cookstoves, appliances, and smartphones. Customers may be able to take advantage of an individual or group-based savings plan, depending on the model. Products are delivered to the agent in a short time frame through an established distribution system. Models may be connected to savings groups or offer savings plans. They can also use mobile money as a payment mechanism.

- **These networks play an important role in increasing access for women** because rural women are often time poor and have lower disposable income. Firstly, they bring the offering to the village level, reducing the cost and time barriers related to having to travel to an urban centre to purchase a device. Secondly, agent models can be connected to savings groups and savings schemes, which are accessible to financially excluded women.
- Further, from the perspective of the agent, e-commerce platforms like **Copia allow agents to offer products without requiring them to have the capital to purchase stock** – a critical factor in locations where sales volumes for any individual product may be very low.
- **For customers with some level of internet access, online platforms like Jumia, Alibaba and Killimall³⁹** provide alternatives to accessing goods including smartphones without necessarily having to travel to an urban centre.
- **Partnerships between MNOs and retailers can broaden MNO customer bases, particularly in rural and peri-urban centres.** For example, MTN South Africa, partnered with the Edcon retail group to launch the MTN Steppa. This partnership helped MTN leverage the footprint of the Edcon group (1,273 stores nationally)⁴⁰ to expand reach while also providing consumers access to credit through an Edcon retail account.
- **MNOs can consider expanding their retail footprint in rural areas and smaller cities.** Though not an MNO, Tecno Mobiles' success of establishing broad Africa-wide franchise network suggests that the market may be able to support an expanded MNO retail footprint.

(b) Device subsidies and bundling: Providers can offer subsidised devices as part of a contract or bundled plan. Low cost, subsidised devices may be offered as part of a data/free content bundle. By addressing device and ongoing costs, such plans improve affordability in both the short and long term. Bundles also add value for MNOs, allowing them to lock consumers into their networks, increasing ARPU and reducing churn. Providers have offered various types of bundles to drive down prices, including:

- **Selling 'locked' devices at subsidized rates and recouping costs through sales of airtime and data credit.** However, this implies selling devices at a loss and many MNOs are moving away from this strategy, instead seeking out low cost sourcing approaches and passing savings on to customers.
- **Creating opportunities for customers to trade in devices to access higher-end smartphones.** Low-income consumers often struggle to raise the funds required for upfront payments. As such, ideas such as the Airtel Nigeria initiative that allowed customers to swap their current handset for a new or used high-end device helps drive affordability by reducing the upfront cost required to purchase a smartphone.
- **Developing a loyalty programme which encourages customers to generate points that can be used to subsidise products and services.** Safaricom for example, offers Bonga points, which is a loyalty scheme for all pre-paid and post-paid customers. Customers earn points for usage – voice calls, SMS or data - and can redeem their points for a range of rewards including data and merchandise. Safaricom also allows customers to use their Bonga points towards a device purchase for themselves or family and friends.

37. Ruma combines a savings group and catalogue ordering model to help peri-urban and rural people in Bali and Java access goods at fair prices. For more information, please refer to the selection of business models for affordable access to smartphones on p. 99.

38. Copia is a mobile retail platform launched in 2013 that uses an agency model to reach base of the pyramid consumers. For more information, please refer to the Copia case study on p. 62.

39. Jumia, Alibaba and Killimall are all online marketplaces that offer customers access to goods and services without having to travel to a specific location or store

40. [Edcon Group website](http://www.edcon.co.za)

33. Stakeholder interviews

34. Tecno Mobile is a Chinese mobile phone manufacturer focussed on African markets. For more information, refer to Figure 18 on p. 51

35. Stakeholder interviews

36. <http://www.afrione.com/>



MARY

Mary is a 31-year old farmer with one child, living in rural Kenya. She bought a smartphone through Copia because she thought it would enable her to communicate more and improve her social status.



“I am jobless... [but] I decided to buy this phone, [to] communicate with people [and] connect to the internet to search for a job [using] Opera Mini.”

- Mary

Mary uses her phone to generate income, as well as to communicate with friends and family. She uses applications such as WhatsApp and Instagram to post and send pictures of her produce (potatoes) to potential clients, who then call her to arrange payment and delivery terms. She says that this method allows her to reach a broad customer base and increases her efficiency. To augment her income, she has been looking for jobs on the internet, though she has so far been unsuccessful.

She mainly taught herself to use the phone, but she also learned from people around her, including her young child. There are other features on her phone that she would like to use such as mobile banking and micro-financing (through an application called Tala), but she does not know anyone who can show her how to use it.

She found out about Copia through her local Copia agent, who runs a kiosk near her home. What attracted her to Copia was her trust in the platform – she believed her phone would be genuine, unlike in the large urban shopping centres

where many phones are fake. She decided to buy her Tecno smartphone after hearing good reviews from the Copia agent, who owns a similar Tecno model. The qualities she was looking for in a phone included long battery life, good network reception, and a high-quality brand.

“The phone is very good, especially the battery in that it saves charge for a very long time.”

It was hard for Mary to save for her phone, and she would have liked to use a layaway plan. She was not aware that Copia currently offers such a feature. She would have preferred to save specifically through a Copia or other agent, locking her money away so that it could only be used to purchase a phone. To her, it is difficult to save through other platforms, like m-pesa’s m-shwari – when money is easily accessible, it is too tempting to spend it on other things. For Mary, it would also not work well to save jointly with a friend, as she trusts only herself with her money.



Localising smartphone design & offers can cut costs and drive local uptake



Figure 17

Examples of models under Archetype I

DEVICE SUBSIDIES AND BUNDLING	
Airtel	Airtel Nigeria allowed customers to swap their current internet enabled handset for a new/used high-end device at Airtel showrooms or an online website developed by Airtel called Phonetrader
MTN	MTN South Africa introduced the self-branded \$45 MTN Steppa with preinstalled applications, sold across Edcon retail outlets and MTN stores nationally
Google & Orange	Orange and Google launched the Orange Rise 31 Special Edition Android smartphone at \$40 in 14 African markets and Jordan, bundled with data, voice and SMS and with pre-installed Google applications.
MTN	MTN Ghana launched the -\$49 Ascend Y21 for -\$38 to their pre-paid customers, with a 12 month reverse subsidy up to the total cost of purchasing the device
Safaricom	Safaricom Kenya introduced the -\$38 Neon smartphone, which could be purchased with a discount to the value of customer's Bonga loyalty points (a loyalty scheme for all Safaricom PrePay and PostPay subscribers)
Vodacom	Vodacom South Africa introduced a -\$38 Smart Kicka smartphone, which came with preinstalled applications and free data
CREATIVE DISTRIBUTION NETWORKS AND RETAILERS	
Alibaba	The online retailer Alibaba and China Telecom sell low-cost internet enabled handsets to rural communities across China
Kilimall	Kilimall, an online marketplace, sells new and refurbished feature phones and smartphones in Kenya on their online platform In Uganda, they have partnered with device manufacturers (Infinix) and MNOs (Safaricom) to find more affordable ways to sell phones
Jumia	The online retailer Jumia partnered with MTN Kenya, MTN Nigeria and Tigo in Ghana to sell a series sub-\$100 smartphones on their platform
Tecno Mobile	Tecno Mobile has established a franchise retail network that has been successful in providing low cost smartphones across Ghana, Cameroon, Nigeria, Mozambique, Kenya, Tanzania, Uganda & Ethiopia since 2010
Ruma	Ruma enables members of community based savings groups to purchase smartphones through authorised RUMA agents in rural/peri-urban Indonesia
Copia Kenya	Copia Kenya is a consumer catalogue order and delivery company that enables peri-urban and rural populations to purchase smartphones using mobile money. Individuals can also pay for the device through a 'layaway' plan

Figure 17 above provides a summary of models that fall under the direct payment archetype.

Limitations of the archetype:
Despite the reduced cost of the device, depending on income levels consumers may still not be able to afford the upfront cost to purchase a smartphone.

Figure 18

Spotlight on TECNO Mobile: a franchise retail network offering low-cost smartphones

TECNO Mobile first entered the African market in 2006 and since then has sold more than 45 million mobile phones across the continent. Operating exclusively in Africa, the company sold over 9 million smartphones last year alone, and currently accounts for about 50% of total market share. Tecno Mobile has achieved an even greater share in certain markets, for example, in Tanzania, it has achieved 63.4% market share and sells ~100,000 phones each month.

The TECNO brand has worked hard to reposition its brand perception over the last couple of years to move away from being seen as only a manufacturer of value for money smartphones with the introduction of the higher-end Phantom series. The brand is now seen to be a trusted alternative providing durable lower priced devices that continue to innovate.

Tecno has introduced four models into their markets –

1. the **Phantom series** which is a higher-end device offering 4 GIG RAM, 32 GIG internal storage and a 13MP camera;
2. the **Camon series** targeting social media users and offers 16MP front camera with dual flash and a 16MP AF back camera with ring flash and photo editing capabilities;
3. the **Boom series** targeting music and entertainment customers and owns deep bass and full range sound for a superior audio experience; and
4. the **W and Y series** which are value for money handsets targeted at low-income consumers

Tecno Mobile's success can be attributed to two distinct strategies:

- **Selling through diverse channels**, including sales through MNOs, other retailers, and Tecno's own franchise retail network. Retail stores serve multiple strategic purposes for Tecno: they serve as a point of sale; build brand awareness; function as service centres, further strengthening Tecno's brand and customer loyalty; and are a collection point for customer feedback. This channel strategy is supported by a network of warehouses and a streamlined supply chain. In countries like Tanzania, this franchise retail network has a significant presence in secondary cities and more rural areas facilitating access to harder to reach populations in peri-urban and rural areas.
- **Design approach that takes into account the preferences of the market in each of the countries they operate in.** Tecno Mobile invests significantly in understanding the needs of the customer and designs handsets to meet demand – for example, understanding that for customers in West Africa battery life is an important factor as opposed to their East African counterparts who place a higher value in better cameras. Tecno works effectively with manufacturers to source products at a low cost.

Tecno continues to build on their success, including moving part of their manufacturing capabilities to plants in Ethiopia and Egypt.



Source: Nsehe.M. "Tecno launches new selfie smartphone for Africa". 2017; Stakeholder and end-user interviews

Figure 19

Spotlight on Orange & Google partnership: offering MNO branded high spec smartphones at low cost



Google and Orange jointly launched an affordable digital communication package in early 2016, offering a high-quality smartphone at the low-price point of \$40 bundled with voice, SMS and data. The Pamoja partnership leverages Orange's mobile networks and Google's applications to accelerate mobile internet access and enrich the online experience for consumers across Orange's footprint in Africa and the Middle East. Pamoja has been a collaborative project all way through down to retail level, with Google involved also in the go to market strategy and the project's consumer education campaign. To date, the offering has been launched in 14 African markets and Jordan.

The handset included in the package is the 3G Orange Rise 31 Special Edition, with Google's OS Android 6.0 Marshmallow, and features including, 4-inch screen, 8 GB internal memory, 3.0 megapixels camera, 1500mAH battery and dual SIM. It comes pre-loaded with Google Search, YouTube and Google Maps, as well as popular content in sport, music and fashion. The aim is to further tailor the content to each market by developing local services and content over time.

The Pamoja project also incorporates an educational campaign, where outreach activities take place in the markets to educate consumers in basic smartphone skills, and how to operate the Android functions and applications.

The competitively low pricing of the package was made possible through having an Orange branded device, thus forgoing additional margins to cover, e.g. marketing and sales expenditures. These costs could be offset through future revenue of new mobile data subscribers. Google's involvement in the go to market-planning and expenditures helped to drive the cost down even further.

Beyond motivations of providing affordable access and services to ensure customers in the region get the most out of the mobile internet, for Google, it is an opportunity to gain more users to their suite of mobile services across multiple markets. Orange are seeing more feature phone users converting to smartphones, and are ultimately gaining more mobile data subscribers to their network.



Source: Stakeholder interviews; Orange. "Orange and Google sign strategic partnership to increase access to mobile internet services across Africa and Middle East". 2016.

Archetype II: Asset financing

In archetype II, consumers access financing from financial institutions, MNOs or alternative credit providers. Many low and middle-income people could potentially afford smartphones if they were able to pay in monthly instalments. Access to credit allows consumers to do just that, obtaining devices even when they cannot afford them in one upfront payment. As hypothesised by our model, low and middle-income populations that cannot afford a lump sum payment but can afford instalments spread out over several months stand to benefit from access to credit. Further,

access to credit can help this segment to afford the high cost of smartphones, through monthly savings, giving them access to these devices earlier than they would otherwise have had them. Alternative credit approaches are a particularly important element here because they expand access to traditionally excluded groups. In all asset financing models, the credit provider – financial institutions, MFIs, or MNO – benefits from the interest that consumers are charged on the loan they acquire.

Figure 20

Examples of models under Archetype II

ASSET FINANCING VIA AN MNO	
Equitel	Equity Bank & Airtel launched Equitel to would provide loans for Samsung & Alcatel handsets over a 12-month period
FNB Connect	Cell-C & First National Bank launched FNB Connect to provide loans for high end (Samsung, Sony & Apple) and later FNB branded smartphones (ConeXis Z1 & A1 manufactured by ZTE) over a 24 month-period
Warid	Warid and Bank Alfalah offered bank customers 6 – 12 month instalment plans (at 0% interest) to purchase smartphones
ASSET FINANCING VIA AN MFI	
Smart Snehidi	Vodafone launched a pilot program for smartphones loans (for -\$10 per month for 6 months) and free data bundles for women in partnership with Hand in Hand – an MFI and NGO providing the customer base and digital literacy services to new users
Sonata Finance	Sonata Finance is a MFI that offers loans to low-income women to access smartphones as part of a joint liability group.
Tameer Bank	Tameer Bank, Telenor and the Government of Punjab have partnered to disburse Rs79 billion (-\$11.4 million) in interest-free loans for nearly 485,000 farmers to purchase smartphones in the state
Alternative approaches to asset financing and/or credit assessments	
Afzal	Afzal Electronics provides 6 -12 month higher purchase loans for customers to purchase low cost smartphones
Fenix	In partnership with MTN, Fenix International offered free internet enabled handsets for customers who purchased their solar systems, to incentivise them to use MTN's mobile money platform
M-Kopa	In partnership with Safaricom, M-Kopa began offering loans for customers who had completed the payment plans on their solar home systems, to purchase internet enabled handsets through Safaricom
M-Shwari	Safaricom and M-Shwari offered 6-month loans to M-Shwari customers who were in good standing, subject to a facility fee of 15.6% and a 30% deposit to the value of the purchase price of the smartphone
Mobisol	Mobisol offers new and existing customers the opportunity to access a smartphone loan in conjunction with their solar home system, paying it off in 18 – 36 months
Paymax	Paymax is an online application that uses non-traditional data to provide smartphone loans to the working poor.

Asset financing for smartphones can be made available by banks, MNOs or MFIs.

In these instances, credit providers rely on more traditional approaches to credit assessments, often preferring to expand the offering first to existing customers who have built up a substantial credit profile and history. While each model may differ slightly, they all offer credit over a minimum of 6 months to a maximum of 36 months. Examples of this include the partnership between a leading South African bank, FNB, and the MNO Cell C to provide asset financing for FNB customers who wished to purchase a smartphone, but could not necessarily afford the upfront payment. Some observers believe traditional banks will look to offer more value to customers through bundled handsets and airtime offers, to slow the migration to mobile financial services such as M-Pesa. The banks are in strong position to assess credit risk based on tenure of accounts and income vs outgoing history of potential mobile customers who want a smartphone and airtime bundle on a monthly payment plan.

Further, asset financing can also be an important tool for increasing access amongst specific sub-sets of the population, as demonstrated by the Sonata Finance and The Vodafone India Smart Snehidi models, both of which specifically targeted women, or the Tameer Bank and Telenor partnership which targets small holder farmers in the State of Punjab in Pakistan.

To help low-income and underbanked populations take out loans for smartphones, providers are increasingly taking alternative approaches to credits scoring. Alternative credit assessments rely on information not traditionally used by financial service providers, such as verification of a farmer's plot size or mobile money transaction history. Mobisol, for example, uses multiple data points including family size, household income and expenses, land tenure, to build a credit profile for an individual. This information is further augmented by data collected over time on customer demographics and purchasing history that help build benchmarks around specific customer segments. Such approaches have the potential to vastly expand ownership of smartphones while also improving financial inclusion.

Three types of alternative credit scoring can be employed to expand access to smartphones:

- **Customer information:** Mobile companies have access to four basic categories of data – location data, income data, demographic data and social network data. Unlocking and analysing this data can provide information related to customer purchase history, income streams and levels, mobile money

transaction history, depth and breadth of social networks; all of which can be used to build a credit profile for consumers. The M-Shwari and Safaricom partnership for example took advantage of data related to mobile money usage to extend 6 month loans to existing customers that were looking to access a smartphone.

- **Informal financial institutions:** Financial data that falls outside of the typical banking and credit system. This could include data from savings and credit co-operative societies (SACCOs) prevalent in East Africa. For example, the Sonata Finance and Smart Snehidi case studies used savings and credit history of the women's Self Help Groups and Joint Liability Groups to determine creditworthiness and surety to extend additional smartphone loans.
- **Specialised data providers:** Data provided by third party companies that look at new sources or aggregate and analyse data from multiple sources.

Further, mobile money has the potential to drive savings and/or access to credit. In 2016 mobile money accounts surpassed half a billion globally, with total revenues for the top service providers surpassing \$1 billion.⁴¹ In Sub-Saharan Africa, there are now more mobile money accounts than registered bank accounts, suggesting that this has become the primary channel for financial transactions for the unbanked market. Mobile money savings platforms have the potential to increase smartphone penetration, in peri-urban or rural communities as it provides a vehicle for customers to access credit to purchase a smartphone from MVNO, banks or MNOs who can monitor usage; or purchase devices using their savings pocket upfront.

Further, mobile banking can help to strengthen informal savings groups, such as village savings and loan associations or rotating savings and credit associations. For example, Airtel Uganda launched a mobile wallet service tailored to the needs of savings groups, Airtel Weza, in 2014. Through Airtel Weza, savings groups were offered group accounts, record management, and mobile banking. As a result, savings group members reported improved security, transparency and trust that their money were kept safe.⁴²

The role of mobile money is no longer restricted to financial transactions alone. Service providers, including financial service providers are now offering additional products such as access to credit and insurance products through this platform. This has become an effective way for banks to offer their suite of products and services to customers that would otherwise be out of their reach.

Limitations of the archetype: From the point of view of the consumer, traditional sources of asset financing are only available to those that have a sufficient level of credit history and identity documentation. A small number of new initiatives rely on alternate approaches to credit assessment, but these initiatives are still limited to specific contexts and regions. Another potential limitation is how consumers may face the risk of loans charging excess interest, ultimately ending up paying a higher device cost when interest is taken into account. Also, very few products are tailored to meet the needs or circumstances of low-income populations and fail to take into consideration lumpy income streams or seasonal income (in relation to smallholder farmers for example). As a result, there is a risk for MNOs and the financial services providers, that consumers will default on payments. In this regard, flexible payment terms – allowing consumers to boost payments in months that they experience high incomes – provide an important mechanism that limits the risk of default.



CHRISTOPHE

Christophe is a 29-year-old self-employed taxi driver, based in Kigali. He left high school with one year remaining and supports his family (wife, 2 kids and a younger brother) on the income he generates as a taxi driver. He acquired a new smartphone through Mobisol after his feature phone was stolen in the past two months. He decided to buy a smartphone because he realised a lot of his customers used WhatsApp to contact him, and so it would be a good investment for his business. This is Christophe's first smartphone.



“I use my smartphone mainly for business.... My smartphone enables me to communicate with my customers by calling, texting with them [and to] chat by using WhatsApp or Facebook applications.”

Christophe taught himself how to use his smartphone by exploring the applications. Before, he used to use RWF 4,500 (-\$5.46) of airtime per month in his business, but applications like WhatsApp and Facebook have made it 30% cheaper for him to keep in touch with his customers. Christophe earns more than RWF 200,000 (-\$240) per month, with the smartphone loan costing an affordable share of his income. The low instalments make this an affordable option for him as he can always afford the device cost each month without sacrificing household expenses, and the fees he pays for his younger brother's university.

“I used RWF 150 per day for calling and texting, [but] because my customers [now] mostly call me I only use RWF 100 per day. [The loan is] not too much considering how big a loan it is. 3 years are enough for me because I am familiar with long-term loans.”

41. RGSM. “[State of the Industry Report on Mobile Money](#)”. 2016

42. GSMA “[Airtel Uganda: A Mobile Money Solution for Savings Groups](#)”. 2015.

Archetype III: Third party payment

Under archetype III, third party actors subsidise or offset device costs on behalf of the consumer.

Third parties can include private companies, governments, or non-profit organisations interested in helping consumers to access devices, as illustrated in Figure 21 below. The third party subsidises the cost of the device, reducing the cost to the consumer. Data usage is paid for by the consumer to the partner MNO.

This category of affordability programmes is new and speculative. No model(s) prevail or stand out as “best in class” – rather, governments, employers, and others are considering and testing new and interesting approaches. Over time, a winning model may emerge with vast potential to expand access to internet enabled devices.

Figure 21

Examples of models under Archetype III

PRIVATE SECTOR	
SocialEco	This pilot project aims to leverage a pre-loaded advertising application on \$50 Social Eco smartphones to generate funding, which subsidises the cost of a handset by \$49 for low-income end users
NON-GOVERNMENTAL ORGANISATIONS	
CELIAF	A network of 700 NGOs called CELIAF is advocating to the Ministère Des Femmes in Chad to remove taxes on mobile phones for female entrepreneurs in their network.
Mozilla Foundation	In 2014, Mozilla introduced a \$25 smartphone with a Firefox OS to incentivise feature phone users to migrate to smartphones. The phone was introduced into a number of emerging markets including Brazil, Colombia, India, Indonesia and Venezuela.
GOVERNMENT	
Argentina Government	The President of Argentina launched a national program, termed “Plan Mobile Internet Access” to provide asset financing for 8 million individuals to move from 2G feature phones to 4G enabled smartphones costing ~\$138
Colombian Government	The Colombian government allocated ~\$90 million over three years to the “Internet Móvil Social para la Gente” policy - of which a component focuses on offering subsidies to low-income citizens for mobile data plans and smartphones
Malaysian Government	The Malaysian government launched a national program, termed “Youth Communications Package” to encourage youth (21 – 30 years old) to purchase 3G enabled smartphones with a RM200 rebate offered on RM500 smartphones reducing handset cost by 40%
Pakistan Government	The Pakistan government utilised their Universal Access and Service Funds (USF) to provide smartphones to 30,000 low-income women nationally

Third parties increasingly recognise the positive social and economic effects in helping customers access devices. For example, an NGO may be interested in expanding access to broader educational or health outcomes. Governments on the other hand may develop and implement initiatives as part

of a broader ICT strategy, or in relation to broader economic and social goals. Advertising companies may see an opportunity to capture revenues from customers who own smartphones. Businesses may benefit from easier communication when workers have access to phones.

Governments for example, can employ the following levers to drive device affordability:

- **Subsidisation:** governments can effectively subsidise handsets for marginalised populations in partnership with MNOs to remove the affordability barrier. For example, the Malaysian government in 2013 utilised a rebate system in partnership with MNOs to reduce handset prices for youth to purchase entry level smartphones. Similarly, the government of Colombia recently launched the Internet Móvil Social para la Gente initiative to address total cost (handset and data costs) of ownership for low-income and marginalised populations.
- **Tax policy:** removing handset import duties reduces the cost of handsets for consumers and could significantly improve affordability and penetration. Further, total government revenues from the telecommunications sector would rise through such policy interventions. For example, in 2015, Ghana removed custom duties on smartphones, which were 20%. A joint GSMA and Deloitte report predicted that this tax reduction would result in an additional 3 million handsets being sold between 2015 and 2020 and would result in \$37 million in additional tax revenues for the Government of Ghana.⁴³ Similarly, in 2009, the Government of Kenya, exempt mobile handsets from VAT, resulting in a 200% increase in handset purchases, and a 20% increase in the penetration rate.⁴⁴
- **Capital for asset financing:** governments can partner with financial institutions, including MFIs, by providing risk capital for smartphone loans at lower interest rates, where there are target populations that would commercially benefit from access. For example, in Pakistan, the government of Punjab is partnering with Telenor and Tameer Bank on a pilot that aims to increase access to smartphones amongst small-holder farmers across the province.

Limitations of the archetype: While the upfront cost may have been subsidised by the third party, consumers may not be able to afford the ongoing maintenance and usage costs, which become their responsibility. Further, these initiatives most often depend on a large upfront investment from the third party and given that this is a fairly nascent area, the sustainability, scalability and value add of the third party involvement has yet to be proven.

Figure 22

In support of ICT transformation policies, governments are launching programmes to reduce the cost of smartphones

ARGENTINA

In 2016, the President of Argentina launched a national program, termed “Plan Mobile Internet Access” to provide asset financing for 8 million individuals to move from 2G feature phones to 4G enabled smartphones costing ARS 2,200 (~\$138).

MALAYSIA

In 2013, the Malaysian government launched the “Youth Communications Package” to encourage youth to purchase 3G smartphones. The government offered a ~\$65 rebate on phones costing up to ~\$165. Youth registered with the Ministry and visited an MNO retailer to purchase the handset. MNOs received a rebate from the government.

CHAD

Tigo and CELIAF are partnering to increase smartphone access among women. CELIAF is working with the Ministère Des Femmes in Chad to remove taxes on mobile phones. Following the removal of VAT, Tigo Chad will subsidise 20,000 smartphones over 3 years for Chadian women, with pre-set features (Tigo Paare, beauty app, health app etc.).

PAKISTAN

Launched in 2016, Telenor, Tameer Bank and the Government of Punjab partnered to launch a pilot for ~\$11.4 million in interest-free loans to 485,000 farmers for smartphones; pre-installed with Agri-apps for the target customers.

Sources: The Next Web. “How the Malaysian government aims to increase smartphone usage among youngsters in 2013”. 2013; Phone World. “Tameer Bank Partners with Punjab Govt to Give Interest Free Loans to Farmers”. 2016; Stakeholder interviews

Note: The Government of Punjab is a provincial government in the federal structure of Pakistan.

43. Deloitte/GSMA. “Digital inclusion and mobile sector taxation in Ghana”. 2015

44. GSMA. “Mobile Telephony and taxation in Kenya”. 2011

Figure 23

Spotlight on the sharing and on-demand economy



Sharing and on demand economy businesses rely on a digitally equipped workforce. In emerging markets, such businesses are confronting a challenge around device affordability: workers on their platforms, or who would like to join their platforms, may not own internet enabled devices. While no 'clear winner' model has emerged, these businesses are considering various approaches to help workers access phones.

What is the sharing / on demand economy?

- **The Digital Sharing Economy** refers to the sharing of assets – physical, financial, and/or human capital – between many, without transferring ownership, via a digital platform, often in the form of a smartphone app, to create economic value for at least two parties.
- **The On-Demand economy** refers to the economic activity created by digital marketplaces that fulfil consumer demand via immediate access to and convenient provisioning of goods and services. The negotiation and procurement of goods and services is typically done via a smartphone app.

How could sharing and on demand economies offer an opportunity to increase affordable access to smartphones?

- **Scalable success requires an increase in the digital footprint.** Nearly all sharing and on-demand economy models are built around smartphone apps. Without the ability to interact with a digital platform – via a computer or smartphone – digital sharing is not possible. This implies potential to grow their worker platforms, businesses need to ensure worker access to phones.
- **Digital sharing models are poised to flourish in emerging economies.** The heart of the model, sharing via technology, converts market liabilities – scarce assets and abundant labour – into opportunities.
- **The job-creation potential alone is significant, especially for low-income and marginalised populations who would otherwise be excluded from the formal market.** In 2016, it was estimated that there were more than 7500 sharing platforms globally and that the sharing economy would generate more than 1 million jobs globally. We are seeing the effects in emerging economies as well - since mid-2013, Uber has created over 4,000 economic opportunities for driver-partners in South Africa, and 1000 such opportunities in both Nigeria and Kenya in the last two years. E-retail is also set to boom: an estimated 90% of Internet users in Nigeria either currently shop online or expect to do so in the near future, with 60% of Kenya and 70% of South African users reporting the same sentiment.

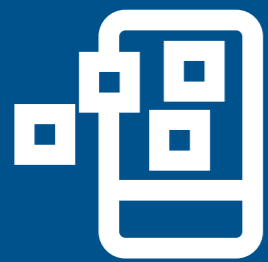
Levers that can be used to increase affordable access

Sharing and on-demand economy businesses and the space in general is evolving rapidly, with companies seeking out solutions to provide access in a way that makes commercial sense. Some models that are being considered or tested include:

- **Volume purchasing:** Procuring Internet-enabled handsets directly from device manufacturers and/or wholesalers in bulk, thus creating efficiencies within the supply chain and passing on those savings to sharing or on-demand economy workers.
- **Leasing of phones:** Leasing or renting phones to sharing or on-demand economy workers, thus allowing them to access work opportunities to improve their livelihoods while also saving and/or building a credit profile to be able to access their own Internet-enabled device.
- **Asset financing:** Providing financing (in partnership with an MFI or financial institution) to sharing and on-demand economy workers so that they can access an Internet-enabled device. This will then allow them to access jobs via digital platforms, and a percentage of the earnings can go towards paying off the loan.

Challenges facing both sectors in terms of access and affordability

- Given the reliance on digital platforms, a business' ability to grow and reach scale is hindered by low levels of internet-enabled device penetration and consumers' lack of affordable access.
- Sharing and on-demand economy start-ups do not always have access to the capital and/or credit that may be required to launch initiatives to directly increase access to Internet-enabled handsets. Financial institutions that are unfamiliar with the business model may also be hesitant to extend credit, opting to have the business reach a certain level of sustainability before considering applications.
- Limited access to appropriate and affordable insurance products means that sharing and on-demand workers have limited ability to absorb the shocks when phones are stolen or lost.



There are circa 4bn smartphone connections globally. A median of 37% own smartphones in emerging markets



4

Case studies

Copia, Kenya:

Mobile catalogue shopping for the rural base of the pyramid

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Working with an established NGO to expand access to smartphones among women

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Mobisol, Rwanda:

Alternative credit assessment and rent-to-own models for smartphones






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Case studies

Copia: Mobile catalogue shopping for the rural base of the pyramid



	PROJECT LAUNCH	2013
	TARGET MARKET	Women and men in rural and peri-urban areas in Nairobi County and Central parts of Kenya
	CURRENT REACH	Copia has a customer base of 50,000, some of whom have purchased smartphones via the catalogue
	ARCHETYPE	Direct payment
	MARKET CONSTRAINT	Efficient and cost-effective distribution to rural and peri-urban populations

DESCRIPTION

Copia is a mobile retail platform launched in 2013 that uses an agency model to reach the base of the pyramid (BoP) consumers who buy products from an online platform via a sales agent. It is operational in Kenya and one of the only catalogue / e-commerce models targeting the rural and peri-urban BoP demographic in Africa. Agents sell through of a catalogue or tablet through a Copia mobile application and are the ordering and delivery point for rural and peri-urban customers. They earn commission from each sale as a percentage of goods sold. Copia has a rapidly growing network of agents in Central Kenya (currently standing at 1,200+). The platform sells a variety of household and commercial goods, including construction equipment, food items, and household supplies, as well as smartphones, feature and basic phones. Device prices are comparable to those in Nairobi and typically lower than prices offered by independent grey market vendors in rural and peri-urban areas. The model, therefore, reduces the direct price paid by customers and eliminates transport and time costs associated with purchasing goods in rural areas. Copia offers a selection of feature phones and smartphones including devices by Tecno, Samsung and Huawei, as well as Airtel and Safaricom branded phones.

KEY INSIGHTS

- Smartphones are more expensive for rural and peri-urban people:** To purchase devices, these groups must either a) travel to the nearest urban centre to purchase a device, and spend time and money making the trip or b) purchase a smartphone from a local independent / grey market vendor, who typically charges higher prices and are likely to sell an imitation or low quality phone.
- An agent based rural distribution model, like Copia's, offers an innovative approach to resolve this challenge:** Such a model relies on a network of agents making orders on behalf of customers, who select products in a catalogue. Once the order is made, goods are delivered within a week. The platform offers high quality products at urban prices, eliminates agent liquidity challenges, and allows for a wide selection of products.

Such a model succeeds because it employs: 1) a time and cost efficient approach to rural distribution, allowing for a comparable price to that offered in urban centres; 2) an efficient high-scale operation – with a broad product offering and customer base; 3) a trusted brand, cultivated by local agents; and 4) savings plans that allow customers to “force themselves” to save enough cash for phones.
- Combining the model with financial products and digital literacy training is increasing impact:** Copia is currently pursuing opportunities that include 1) providing credit to customers based on alternative credit scoring and/or partnerships with MFIs and 2) expanding awareness and digital literacy through agent training, partnerships, or promotional initiatives.



HOW THIS MODEL IMPROVES ACCESS TO AFFORDABLE HANDSETS

- Reduced handset cost:** Copia offers smartphones for rural and peri-urban people at prices comparable to those offered in Nairobi and on Kenya's e-commerce sites. For example, Copia currently offers the FERRO A4001 smartphone at KES 4,232 (-\$41). This models sell online in Kenya for KES 4,200 (-\$41) plus a shipping fee starting at KES 150 (-\$1.50).⁴⁵
- Delivery to an easy point of access:** Copia agents are located in customers' communities and serve as points for ordering and delivery. This proximity reduces lost time and costs of travel that would be incurred by customers purchasing phones in Nairobi. A typical central Kenya customer could avoid a KES 500 (-\$5) roundtrip bus fare and a 2-hour each way journey to Nairobi.
- Savings plans:** Customers can save in instalments through their local Copia agent until they accumulate enough money to purchase a handset. There is no limit on the savings time and amount. Customers who are aware of the layaway plan appreciate the option to save using the Copia platform. Some see it as a useful forcing mechanism, recognising that it's hard to save on their own.
- Informal access to credit:** Some Copia agents offer short term loans to customers whom they know and trust. In our research, one tea farm provided informal, interest free payday loans for workers making Copia purchases, deducting purchase amounts from regular pay checks. Copia could consider formalising a credit offering, working with agents and companies to establish employment and creditworthiness.



INNOVATIVE FEATURES

- **Layaway savings:** Copia allows customers to save through the agents account at no extra charge until they save enough to purchase the product
- **Online catalogue:** Copia agents can view an updated catalogue, view prices, and place orders through a mobile application. A variety of low-cost feature and smartphone models are available, and the offering is updated frequently. Some agents use a traditional paper catalogue and place orders by phone – this represents an area of opportunity for agent training
- **Direct marketing:** Once a customer orders from Copia, the company can send them text messages informing them of new products and promotional discounts
- **Agent model:** Copia can credit its broad reach to embedding its systems into the well-connected M-PESA and Equity agents already present in communities. It recruits agents to be the point of contact between the customers and the company. The agents are also highly trusted by the community and market the service on behalf of Copia
- **Direct delivery:** Copia delivers its products to agent kiosks. Locations are typically physically close to the customer

END USER IMPACT

- **Expanded business opportunities for Copia's rural and peri-urban user base, which includes many smallholder farmers:** Because Copia targets rural and peri-urban people, many customers are smallholder farmers. This group frequently uses applications such as WhatsApp and Instagram to share pictures of produce with potential buyers, avoiding the time and resources consumed by traveling to Nairobi to sell products at market stalls.
- **Access to information for commercial farm workers:** In addition, Copia customers include many commercial farm workers, especially tea pickers in Central Kenya. These workers may work and live several kilometres' walk from small town centres, and they may rarely leave their farms. Phones can offer a unique opportunity to read the news and connect with friends and family.

Read the Copia end-user stories on pp. 12 and 48

"I trust of the quality of phones from Copia, a lot of times the phones from town end up being fake and you spend so much money on fare to go to town to buy and fix them."

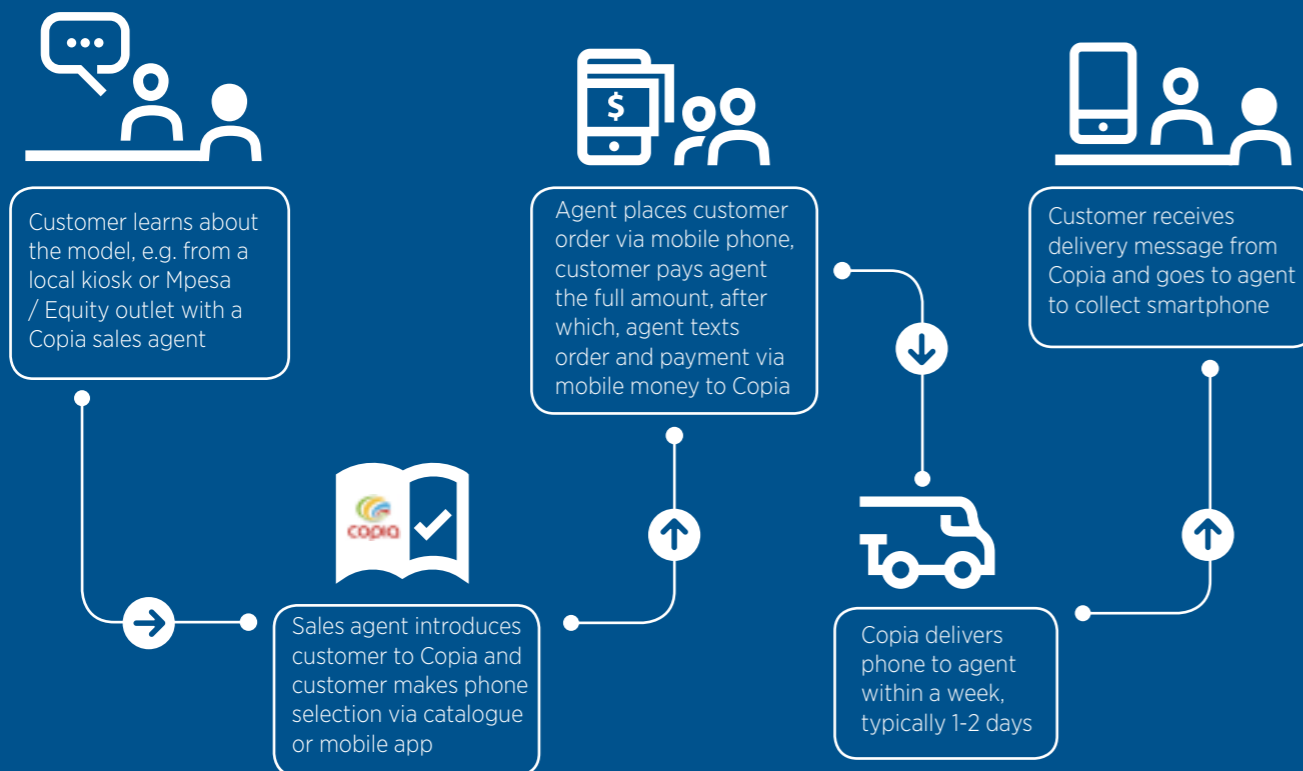
- Copia customer

"I don't know how to use a lot of these apps.. I mainly use my smartphone to talk to my family and friends using Whatsapp. I feel like I have advanced because these days everybody has a smartphone"

- Copia customer

Figure 24

Copia activity flow



COMMERCIAL SUSTAINABILITY

- **For Copia, a growing customer base can lead to increased revenue:** Smartphones are a component of Copia's broad product offering and allow it to realise higher revenues.
- **Increased income for the wider economy:** Agents earn commissions, augmenting their incomes, which they then spend in other goods and services.

SCALABILITY

- The current model has seen Copia grow rapidly since the company began its expansion phase in 2016. Since then, the company has grown from 200 agents to -1,200 agents and -100,000 customers.
- The Copia model could be scaled in areas where there is 1) an existing structured, trusted agent network; 2) the potential scale and infrastructure to build an efficient distribution supply chain; 3) understanding and trust in mobile money, especially among agents. Currently, the success of Copia's model is rooted in its agents, who schedule deliveries through mobile phones and pay for deliveries through mobile money. Agents

are typically members of the community who have established businesses and can gain the customers' trust. The customer base lives close to the agent, effectively supporting the direct delivery system. Additionally, Copia relies on a supply chain that spans the central parts of Kenya, close to Nairobi, where goods can be restocked and delivered easily. To expand, a similarly efficient supply chain would need to be developed in the target country or region. Kenya has a trusted and widely used mobile money structure, allowing for immediate placement of orders and payment for goods by agents as well as traceability of transactions.

45. Prices are from the Copia catalogue as of March 2017 while the online market price is based on quotations on 13 April 2017 from Jumia (https://www.jumia.co.ke/fero-a4001-8gb-512mb-ram-2mp-camera-dual-sim-metallic-black-256517.html?seller_product=1) and Price Kenya (<http://www.pricekenya.com/718/fero-aura-a4001.html>).

LESSONS LEARNED AND IMPLEMENTATION CHALLENGES







- Increased awareness and understanding would drive uptake:** The service has a extensive reach in rural areas, and awareness is higher among organised commercial farm workers, but a significant number of people in informal rural areas remain unaware either of Copia or of its mobile device offering. Further marketing, particularly through training agents, could expand awareness and know-how.
- Agent training is essential to drive this awareness and scale:** Despite having a wide reach, the model has not achieved saturation in its current operating locations. Success is heavily driven by the agent – if an agent is not well versed in the model in general, or the smartphone offering, customer uptake is limited. Additionally, some customers are not fully aware of the services offered by Copia, such as the savings plan.
- Efficient supply chain and payment systems are critical to the success of the model:** Copia adds value to customers because it offers lower, urban prices to rural people. To offer such prices, it is critical that the model maintain low inventory, storage, payment, and transportation costs. Scale is also essential to keep prices low.
- Savings options help people access phones, and this offering could be expanded.** Copia users state that saving through an agent is most effective as a “forcing mechanism” – saving in cash or through mobile money is considered harder because it is tempting for people to spend money on other items. Copia offers a layaway plan through its agents and could extend awareness and usage of this option.
- Financing is a major barrier that limits smartphone purchases:** Copia is working on offering asset financing, to address limiting access to smartphones and other higher value products. To circumvent this challenge currently, some customers make informal arrangements with agents or borrow from friends. However, a customer who cannot obtain such informal financing may not be able to purchase a smartphone through Copia. Asset financing for retail products, including smartphones, could expand impact, and at the same time ensure that Copia retains its existing customer base and attracts new users.
- Customers would be more likely to buy phones if they could see samples:** First-time smartphone customers are often apprehensive about purchasing a device that they have not physically seen. They are more likely to order the precise model that an agent or family member owns, or else to incur transport costs to view and purchase a device in Nairobi. To address this, Copia could consider product roadshows. Alternatively, it could provide agents with a non-functioning sample of its bestselling phones, or offer incentives to help agents purchase that phone themselves to show it to customers.
- There is an opportunity for partnership between MNOs and models like Copia's:** In some contexts, MNOs could fruitfully partner with Copia, thus expanding distribution of MNO-branded devices. In other contexts, where Copia or a similar network is not present, MNOs themselves may have the best available rural agent networks and could create a system whereby rural agents sell phones on offer, providing a mobile money-based layaway plan.



Customers are more likely to buy smartphones if they can see samples



Vodafone India's Smart Snehidi: Working with an established NGO to expand access to smartphones among women

	PROJECT LAUNCH	2017
	TARGET MARKET	Low and middle-income women micro-entrepreneurs in Tamil Nadu, India
	CURRENT REACH	2,000 customers
	ARCHETYPE	Asset financing through a Microfinance Institution
	PARTNERS	Hand in Hand
	MARKET CONSTRAINT	Access to finance for underbanked and marginalised populations to access higher priced goods

DESCRIPTION

Initiated in 2017, the Smart Snehidi programme seeks to improve access to internet-enabled smartphones among low and middle-income female micro-entrepreneurs. The programme is led by Vodafone and Hand in Hand (HiH), a non-profit organisation focused on empowering Rural & Small Town women through financial independence. In its general programming, HiH assists women to build microenterprises, access finance through self-help groups (SHGs)⁴⁶ (over 1.2 million members enrolled), and to learn digital skills (over 750k women trained).⁴⁷ As a partner in Smart Snehidi, HiH facilitates Microfinance loans for smartphone purchase among members of its SHGs and trains women to use these devices in their businesses. Loans are offered at an interest rate of 24% per annum. Vodafone works with HiH to ease financial barriers through attractive talk time and data plans. The Smart Snehidi programme is accessible only to members of HiH SHGs who earn at least INR 2000 (or -\$31) per month. As of April 2017, the programme has enabled 2,000 women to access smartphones in 3 districts across Tamil Nadu, India, with an ambition of enrolling 50,000 women across 19 districts of Tamil Nadu within the next three years.

KEY INSIGHTS

- Asset financing can broaden access and catalyse smartphone purchases:** Prior to the Smart Snehidi programme, women delayed the purchase of smartphones or allocated scarce resources to purchasing phones for younger family members, who are believed to be able to utilise the phone better. Providing asset financing is allowing micro-entrepreneurs to purchase the phone with minimal trade-offs in household expenditure (assuming a certain income threshold). The programme is perceived as highly affordable – an offer not to be refused – and therefore family members encourage women to take up the loan offer.
- Women are more likely to purchase and retain devices when they have a clear use case:** Vodafone and HiH have designed the Smart Snehidi programme around a clear use case wherein programme participants can use their smartphones for sourcing supplies for their microenterprises, marketing and sales. By targeting business use cases, the programme mitigates cultural pressures, especially from husbands, that otherwise prevent women from owning phones.
- Digital literacy is essential to ensure sustained use:** Gendered and generational norms mean that women typically share phones with other members of their households, and they may spend less time with their phones than family members. These norms are often internalised by women themselves who believe that they are not equipped to fully utilise a smartphone. To address this barrier, HiH, as part of the Smart Snehidi program, conducts regular training programs and connects with the women entrepreneurs to ensure that they are able to derive benefit from their purchased smartphone. Women who realise use cases for themselves are showcased for sharing their experiences and achievements with the broader micro-entrepreneur community

HOW THIS MODEL IMPROVES ACCESS TO AFFORDABLE HANDSETS

- Access to finance:** The model provides a unique opportunity for women to finance smartphone purchases. Customers state that they would not have been able to obtain a loan for a smartphone from a bank, MNO, or other source.
- Affordable repayment structures:** The loan is paid over 10-12 months, with a fixed lower threshold on monthly instalments which allows customers to repay on or ahead of schedule. Typically, customers do not perceive that they are making trade-offs in monthly household expenditure to account for such payments.
- Low ongoing cost for customers:** Vodafone provides a generous set of benefits to first-time customers which include free talk time of INR 50 (-\$0.8), a free monthly quota of data (200 MB per month), subsidised data for pre-installed applications, and 50% off on additional data purchases.

46. SHG model unlocks access to finance among low – income populations (especially women) through joint liability. In joint liability, all group members vouch for each other, i.e., if any one member is unable to payback a loan, the entire group is responsible for repayment. Such models create social pressures among group members, enabling higher repayment rates.

47. HiH takes a multi-pronged approach: 1) it assists low and middle-income women to set up microenterprises, build capacities, and support business operations, including backend (e.g., sourcing supplies) and customer facing activities (e.g., advertising); 2) HiH supports women to access financing through self-help groups (SHGs), with over 1.2 million members enrolled; and 3) HiH provides digital skills necessary to realise higher incomes, with E-literacy training completed for over 772 K women.

INNOVATIVE FEATURES

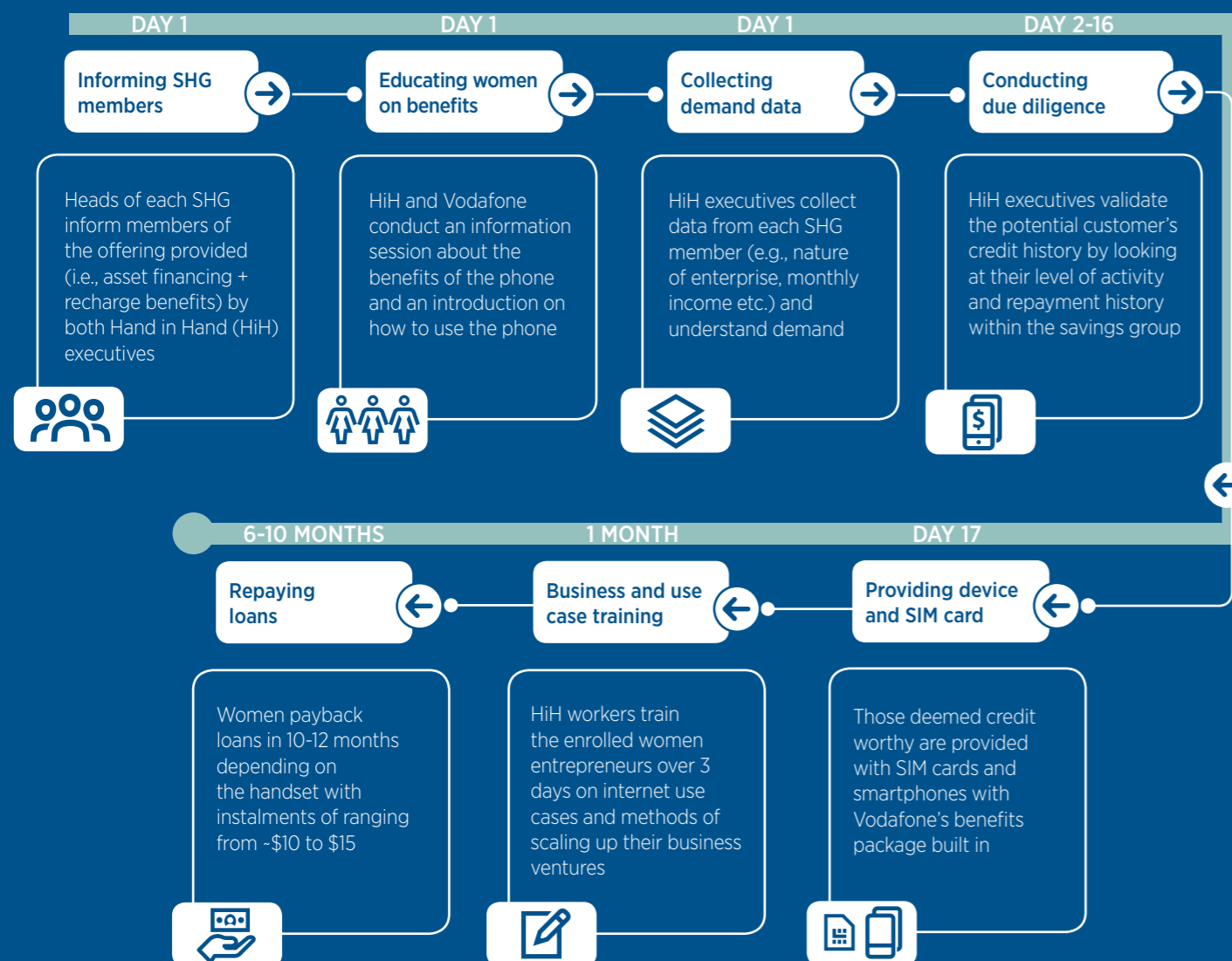
- **Using savings group credit history for MFI loan:** Over time, micro-entrepreneurs have built up a strong credit history within their savings group that is then used by HiH to understand a potential customer's creditworthiness. HiH uses the potential customer's credit history to assess loan eligibility, and uses the joint liability model as guarantee for repayment.
- **Bundling marketing services to strengthen the use:** HiH sees smartphones as a centrepiece to unlock internet-enabled marketing services for micro-entrepreneurs. Having built comfort with the smartphone, HiH is now developing a marketplace application custom made for micro-entrepreneurs to market their products and services.

END USER IMPACT

- **Business benefits for micro-entrepreneurs, especially efficiencies in customer interface:** Smart Snehidi users are textile micro-entrepreneurs. They can share recent designs and finished products with customers, eliminating errors and building trust.
- **Increase in confidence and self-esteem:** Adult women are typically the least digitally savvy in the family, but as new owners of smartphones, they can begin to bridge the digital divide within the family, which in turn increases their confidence and self-esteem. Also, the women feel empowered since they can provide better support to their household income.

Read the Smart Snehidi end-user story on p. 24

Figure 25
Smart Snehidi activity flow



"I am able to learn new blouse designs, which my customers appreciate a lot and I am able to speak into Google and order supplies which are delivered at home"

- Smart Snehidi rural customer

"I love watching YouTube videos on new designs for blouses, for new recipes to cook for my family and even watching Tamil TV shows I missed this week"

- Smart Snehidi urban customer

COMMERCIAL SUSTAINABILITY

- **Driving increase in ARPU, driven by increased data usage:** When provided with a smartphone, ARPU increased by 30% for the enrolled women entrepreneurs in Tamil Nadu.
- **Expanding the customer base:** As MNOs reach saturation in urban markets, new data customers will be sourced primarily from India's ~500 million rural adults. Establishing distribution channels now could provide Vodafone with a competitive advantage in the future.
- **Customer loyalty:** Smart Snehidi users benefit from a Vodafone data bundle. They may become more loyal to the brand and say they are unlikely to switch networks - a major concern in India's highly competitive MNO market.

SCALABILITY

- Currently, at a nascent stage, the programme can be rolled out with the help of HiH, which is active across India, as well as other non-profits who complement Vodafone's core competencies and that can rely on a strong credit history database, customer relationships, and SHG model.
- Outside of India, similar programmes could be created around existing microfinance and NGO networks, especially those supporting women-focused saving and lending groups. High quality data about customer payment history is essential.







LESSONS LEARNED AND IMPLEMENTATION CHALLENGES

- **Strengthened digital literacy would ensure sustained usage of devices:** gendered and generational norms mean that women typically share phones with other members of their households, and they may spend less time with their phones than family members. These norms are often internalised by women themselves who believe that they are not equipped to fully utilise a smartphone. To address this barrier, affordability programmes should be coupled with the support that helps women achieve literacy and become self-reliant learners. Women can then realise use cases for themselves and share these with the broader micro-entrepreneur community.
 - **Literacy training should take place shortly after women receive phones:** Training around business use cases is being rolled out slowly, potentially limiting women's use of phones over the long term. In the first weeks and months after women receive smartphones, households establish usage norms, often with women using devices less than children and spouses. These habits may already be entrenched, meaning that they are less likely to change when women do receive more detailed training around business use cases. Quick and regular training post disbursement of handsets will propel programme to greater success.
 - **Strong use cases – especially business use cases for women micro-entrepreneurs – could help ensure that women retain their phones. Even so, some women are likely to pass devices on to family members:** Currently, smartphones help Smart Snehidi's female users realise small efficiency gains in their businesses, like sharing blouse designs with customers on WhatsApp. Some women keep phones for their personal or shared family use, in part because of these business use cases; however, others pass phones on to family members.
- HiH is developing, but has not yet rolled out, an in-house smartphone application connecting buyers to micro-entrepreneurs. This application could strengthen the business case for women to own phones, potentially increasing the share of women who own devices.
- **The model is successful because it relies on a pre-existing, trusted network with access to credit history about women. Similar conditions will be essential for the model to achieve scale:** Smart Snehidi's initial success is heavily reliant on the SHG model to counter challenges around creditor trust (i.e., leveraging credit history established through past participation in the programme), buyer's trust (i.e., customers prefer HiH over commercial banks, MNOs, e-commerce players as creditors), leveraging group affiliation to drive adoption (i.e., marketing spend is much lower given that SHG members engage each other constantly and conversion is organic) etc. These exact conditions might be much harder to find as the programme tries to scale through either a different combination of actors or in different geographies.



Instalment plans and device savings schemes help people overcome the barrier of high upfront smartphone costs

Sonata Finance: Microfinance supporting women's access to smartphones

	PROJECT LAUNCH	2013 ⁴⁹
	TARGET MARKET	Women in rural and peri-urban communities across three states in India ⁵⁰
	CURRENT REACH	15,000 users (1,000 customers have finished paying for their loan)
	ARCHETYPE	Asset Financing through an MFI
	PARTNERS	Sonata Finance, Samsung and Savex ⁵¹
	MARKET CONSTRAINT	Access to Finance for underbanked and marginalised populations coupled with an effective distribution mechanism to efficiently reach rural populations

DESCRIPTION

Established in 2001, Sonata Finance is a Microfinance Institution that provides loans for income generating activities to women in India. They currently have 355 branches across India and support ~680,000 women in rural and peri-urban locations. In 2013, Sonata launched a pilot project to provide a Samsung J2 smartphone to 3,500 women in Bae Raelli, Northern India in partnership with Samsung and Savex. Specifications of the device include: 1.3GHZ Quad-Core Processor, 8 GB internal memory and a 5MP camera with LED flash. The J2 normally retails for ~\$120, but customers receive a 4% discount and purchase at ~\$115 through Sonata.

To access the offering, women must be existing customers of Sonata for at least six months and members of a joint liability group (JLG).⁵² The loan amount is INR 7,650 (~\$117) and is subject to an interest rate of 18% - 22%, over 9 to 12 months. There are two repayment terms that customers can use: a weekly repayment of INR 250 (~\$3.90) or a fortnightly repayment of INR 350 (~\$5.40). The initiative has since scaled up to 15,000 smartphone loans accessed across three states in India.

KEY INSIGHTS

- 1. Micro-finance institutions are well positioned to drive smartphone penetration for underserved populations.** Sonata Finance is well placed to help women access smartphones because it has a structured network of women's groups in place and can extend credit to low-income women through joint liability models that do not require collateral.
- 2. By leveraging joint liability groups in place of traditional collateral, microfinance institutions can offer smartphone loans to women.** In communities where it is a disgrace to default on your commitment to other community members, microfinance institutions and banks can develop models that leverage this cultural dynamic to offer group loans.
- 3. Addressing cultural barriers improves access to smartphones for women.** Sonata Finance takes the time to educate men/elders in rural communities on the benefits of women accessing smartphones, removing a key barrier for their customers by building rapport with village elders. Addressing such cultural barriers improves Sonata's ability to convert sales faster whilst increasing smartphone penetration for women.
- 4. Distribution partnerships can enable financial institutions to offer access to devices.** Since Sonata Finance does not have distribution capabilities, they partnered with Samsung / Savex, who have established logistics capabilities to deliver goods to customers in remote communities.



HOW THIS MODEL IMPROVES ACCESS TO AFFORDABLE HANDSETS

- Access to finance for women:** Sonata provides access to finance for customers whose only alternative for purchasing a smartphone would be through an upfront lump sum payment. By customising the loan term over 9 to 12 months, existing customers typically access smartphone loans at repayment amounts that are lower than their first Sonata consumer finance offer, ensuring that they can afford to pay off both loans. Furthermore, providing a flexible weekly/bi-weekly repayment structure caters to varying income cycles of women in informal employment.
- Lower initial costs of ownership:** the partnership with Samsung enables Sonata to receive a discount on the handsets provided to women, and furthermore, Samsung (through its distributor Savex) delivers handsets directly to communities where customers reside, removing travel costs for their customers.



48. This refers to the launch of the partnership with Samsung, which is ongoing. Prior to this Sonata undertook a pilot in partnership with Nokia.

49. The 3 states being covered are Uttar Pradesh (45%), Madhya Pradesh (50%) & Bihar (5%)

50. Savex is a national electronic distributor which manages the outbound supply chain processes for Samsung.

51. A Joint-Liability Group (JLG) refers to an informal group comprising of 10-20 individuals coming together to access a loan either singly or through the group mechanism against mutual guarantee. Group members who want to borrow, sign a contract in which they accept liability not only for their own individual loans, but also for the loans borrowed by other members of their group.

INNOVATIVE FEATURES

- **Creative and complementary partnerships:** a complementary partnership between Sonata and Samsung and Savex enabled each party to meet the unique needs of its rural customer base. Savex is an efficient national distribution channel able to reach rural and peri-urban areas, whilst Sonata is well versed in lending to market segments with little to no collateral.
- **Addressing the cultural barriers.** Sonata first educates the men and elders in rural communities on the benefits of women accessing smartphones, thus gaining support from them to speak to joint liability groups about the smartphone offering and removing a key barrier to women's access.
- **Proactive agents:** while Sonata requested smartphones in their feedback to the MFI, direct marketing is still required in communities to build awareness of the offering, improving the rate of uptake of these loans.
- **Specific product offering:** Sonata offers just one device (Samsung Galaxy J2), which simplifies the sales agent training process for trouble-shooting techniques and enables them to provide better customer support to first-time buyers.

END USER IMPACT

- **Sonata's smartphone offering enables affordable device ownership for a marginalised group (women) in India:** Sonata addresses a key gender gap between men and women accessing smartphones by providing loans to women alone.

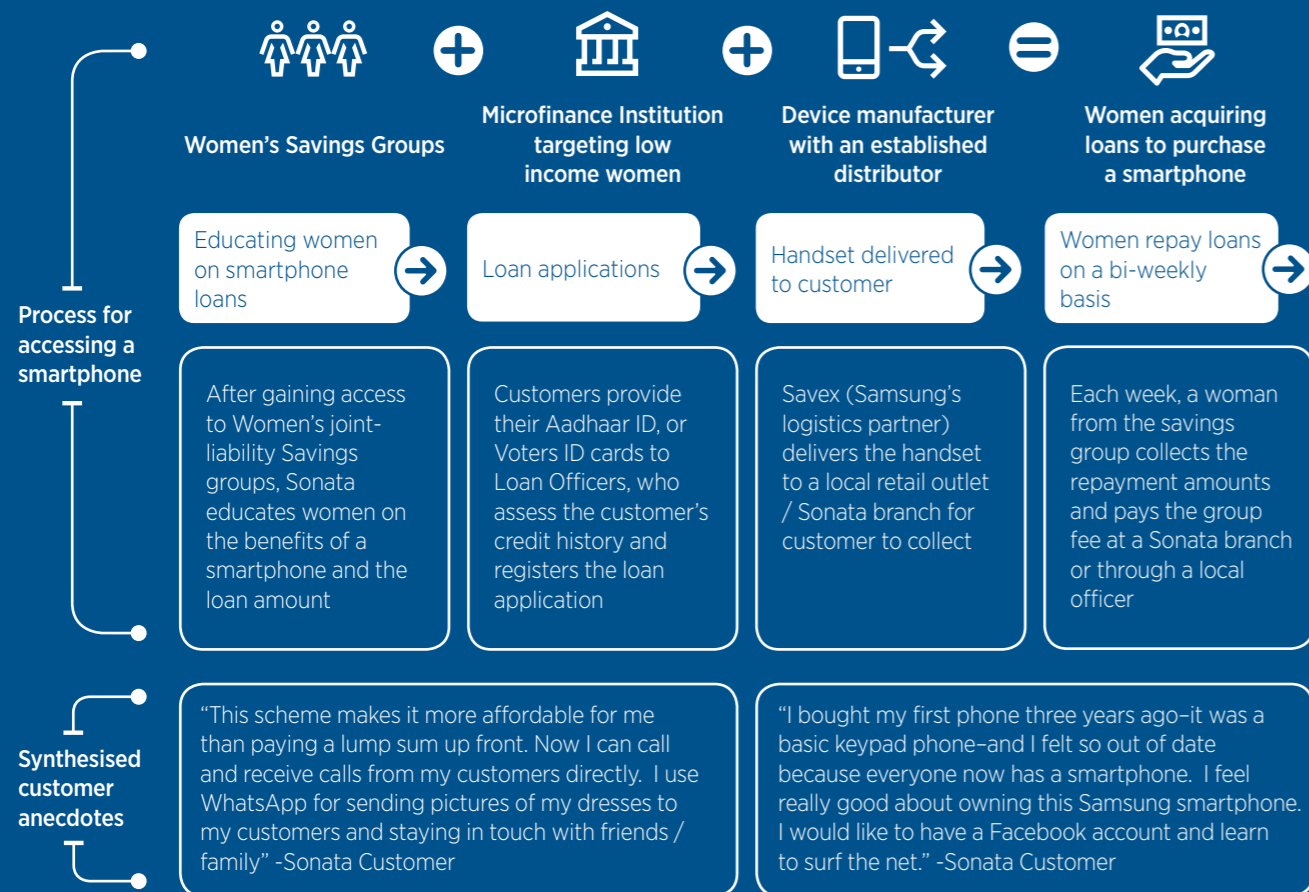
"I bought my first phone three years ago – it was a basic keypad phone – and I felt so out of date because everyone now has a smartphone. I feel really good about owning this Samsung smartphone."

- Sonata rural customer

"This scheme makes it more affordable for me than paying a lump sum up front. I use WhatsApp for sending pictures of my dresses to my customers and staying in touch with friends / family"

- Sonata customer

Figure 26
Sonata Finance activity flow



COMMERCIAL SUSTAINABILITY

- **Growing the Sonata Loan book:** as of 2017 Sonata's consumer finance loan book has grown by 2.5% of total base due to smartphones loans with a ~4% default rate.⁵³
- **Customer retention:** by offering additional products to existing customers, Sonata can retain its customers over the long term.
- **Increased ARPU in hard to reach populations for MNOs:** Sonata's initiative successfully targets first time smartphone users, allowing MNOs to benefit from higher smartphone penetration through increased ARPU from new customers.

SCALABILITY

- The model has already been scaled to 3 states, now reaching 15,000 women since the pilot phase. It can be replicated in other contexts where Sonata or another MFI has an established customer base, and underserved populations (e.g. women, farmer or microentrepreneurs) can be targeted.

53. Previously default rates were below 1%. However, in November 2016, the Reserve Bank of India withdrew the old Rs. 500 and Rs. 1000 notes - the two highest currency denominations available in India - as an official mode of payment, and this has led to an increase in the default rate. There is no immediate penalty on customers who default.

LESSONS LEARNED AND IMPLEMENTATION CHALLENGES







- **Consumer training could expand the impact of the programme.** Customers would benefit from being taught how to use their smartphones and about the services and information they can access through their devices, such as mobile money applications, online retailers and marketplaces etc. Leveraging a train-the-trainer model, Sonata sales agents could identify one member of a JLG to train others on how to use the device.
- **Use cases for women – and expanded understanding of these use cases – could help ensure that they retain devices.** To ensure that phones remain in the hands of women instead of being passed on to their family members, there is a need to educate women on the benefits of using a smartphone. Furthermore, applications that are relevant and appealing to women – whether for business, social / community, or personal use – could be developed and/or installed on devices to encourage them to use phones. Absent such programming, women are likely to pass on phones to others in their families.
- **Sonata is positioned to drive access to devices for women because it has a joint liability network in place. Partnering with other stakeholder can increase Sonata's capability to offer loans to a broader customer base and ensure adoption of mobile technology.** Sonata deep understanding of how to offer credit to this market segment could be scaled nationally with an MNO partner backing their loan portfolio. Furthermore, an NGO partner with expertise in digital literacy could support Sonata by offering training to Sonata customers who are first time smartphone users.



Women are often more price sensitive, and lag behind men in smartphone ownership



Mobisol: Alternative credit assessment and rent-to-own models for smartphones

	PROJECT LAUNCH	March 2017 ⁵⁴
	TARGET MARKET	Off grid and marginalised populations in rural and peri-urban Rwanda
	CURRENT REACH	43 customers signed onto the pilot in its first two weeks (between 17 and 31 March 2017). Mobisol Rwanda has installed over 18,900 solar home systems since 2014.
	ARCHETYPE	Asset financing with alternative approaches to credit assessments and rent-to-own models
	PARTNERS	MTN Rwanda and Tecno Mobile
	MARKET CONSTRAINT	Access to finance for low-income and off-grid populations

DESCRIPTION

Established in 2010, Mobisol is a solar energy company that leverages alternative approaches to credit assessment and pay-as-you-go technology to expand access to low-income and peri-urban populations in East Africa. Currently operating in Kenya, Tanzania and Rwanda, Mobisol has installed over 78,000 solar home systems (SHSs) in households and businesses with a reach of ~350,000 customers.⁵⁵

	EXISTING CUSTOMER	NEW CUSTOMER
Down payment	RWF 6,900 (-\$8.31)	Not applicable
Monthly repayment	RWF 3,550 (-\$4.28) over 18 months	RWF 2,015 (-\$2.43) over ~36 months

Building off its success offering asset financing for SHSs for off-grid populations, Mobisol is expanding its product line to include a range of devices and appliances that can operate on the solar home systems, including a smartphone. Mobisol has partnered with MTN Rwanda and Tecno Mobile in a pilot that allows existing customers the option of purchasing a Tecno W2 handset. New customers can purchase the smartphone as part of a bundle when buying a SHS. MTN supports acquisition of new customers by providing free data bundles over the period of the loan (18 or 36 months) to customers that are registered on their network through Mobisol. Existing customers that have been with Mobisol for a minimum of six months and already own a SHS must meet the criteria which considers past payment behaviour to be eligible for the loan. They are required to pay a down payment of RWF 6,900 (-\$8) to access the smartphone offering, and then continue with a monthly repayment of RWF 3,550 (-\$4) for 36 months. New Mobisol customers that are purchasing the smartphone as part of their SHS pay RWF 2,015 (-\$2.50) monthly⁵⁶ over an 18-month loan term for the smartphone in addition to a new solar system loan. Customers can also choose to pay for the device upfront, at a cost of RWF 49,000 (-\$59).

KEY INSIGHTS

- 1. Developing tools to process alternative credit information improves access to finance for low-income groups** In developing processes and tools that leverage alternate sources of credit information, Mobisol and others have positioned themselves as niche financial service providers (FSPs) with deep insight into the financial constraints of the working poor. Customers typically provide identity cards, proof of land ownership, and household size and income levels as part of the credit assessment process.
- 2. MNOs can leverage alternative credit scoring to assess creditworthiness and expand customer bases while limiting default risk** MNOs can benefit from partnerships with players like Mobisol and others, who have access to customer information, to develop a credit scoring tool. MNOs could also develop similar tools for their broader customer base – including on-grid customers – by purchasing data or using information that they already have in-house, such as top-up history and length of SIM ownership.
- 3. Mobile money is effective in providing efficient repayment services for Mobisol customers.** MTN Mobile Money is a reliable payment method for unbanked customers in remote communities, and low transfer fees. Additionally, this platform enables Mobisol and MTN to gather customer insights by collecting information about their repayment patterns on their mobile money accounts.
- 4. Retailers/service providers with alternative credit assessment tools for marginalised communities can significantly expand and drive new products, including smartphones:** Mobisol has expanded its product line to include a range of devices and appliances including smartphones, allowing them to retain customers while growing their loan book. Moreover, a diversified product line also offers opportunities to back a more diverse range of loans. For example, if a customer does not repay a smartphone loan, Mobisol can reclaim the customer's SHS.
- 5. Customers are more likely to purchase from a brand they trust.** Mobisol is a trusted brand in Rwanda and customers often cited their efficiency and after sales support as key strengths. Trust plays an important role in encouraging uptake, especially when introducing new products to the market. The smartphone offering appealed to several customers, even in instances when individuals had a limited understanding of smartphones, because it was backed by Mobisol.



54. This refers to the number of smartphone loans administered since the pilot launched on 17 March. Mobisol has an existing customer base (those accessing the solar home system) of ~18,900 in Rwanda.

55. Mobisol. "Mobisol". 2017

56. New customers pay a down payment on the solar home system and not the smartphone.

HOW THIS MODEL IMPROVES ACCESS TO AFFORDABLE HANDSETS

- **Low-cost handset:** The Tecno W2 handset is a popular entry level smartphone, specifically designed for low and middle-income consumers in emerging markets and retails at RWF 49,000 (~\$59). Specifications of the device include: 1.3GHZ Quad-Core Processor, 8 GB internal memory and 8MP camera with LED flash.
- **Asset financing with flexible payment terms:** Access to finance is highly constrained in Rwanda, and even if customers could access affordable loans, interest rates would average 17.5%.⁵⁷ Mobisol offers an alternative avenue for low-income populations and a competitive interest rate, at 15% over three years, for customers looking to access affordable asset financing. In addition, loans are structured in a way that considers seasonal income and allows customers to pay above the minimum required amount when they have higher disposable income. This then provides some level of relief in months when they may earn less.
- **Low running cost for customers:** Because customers receive the smartphone with a solar system, the maintenance cost barrier of charging a smartphone is removed. In addition to the handset, MTN is offering a free data bundle (110MB for six months, then 10MB for the remaining 30 months, implying an average of 27MB per month for 36 months) to customers who purchase the device, reducing ongoing costs related to data.

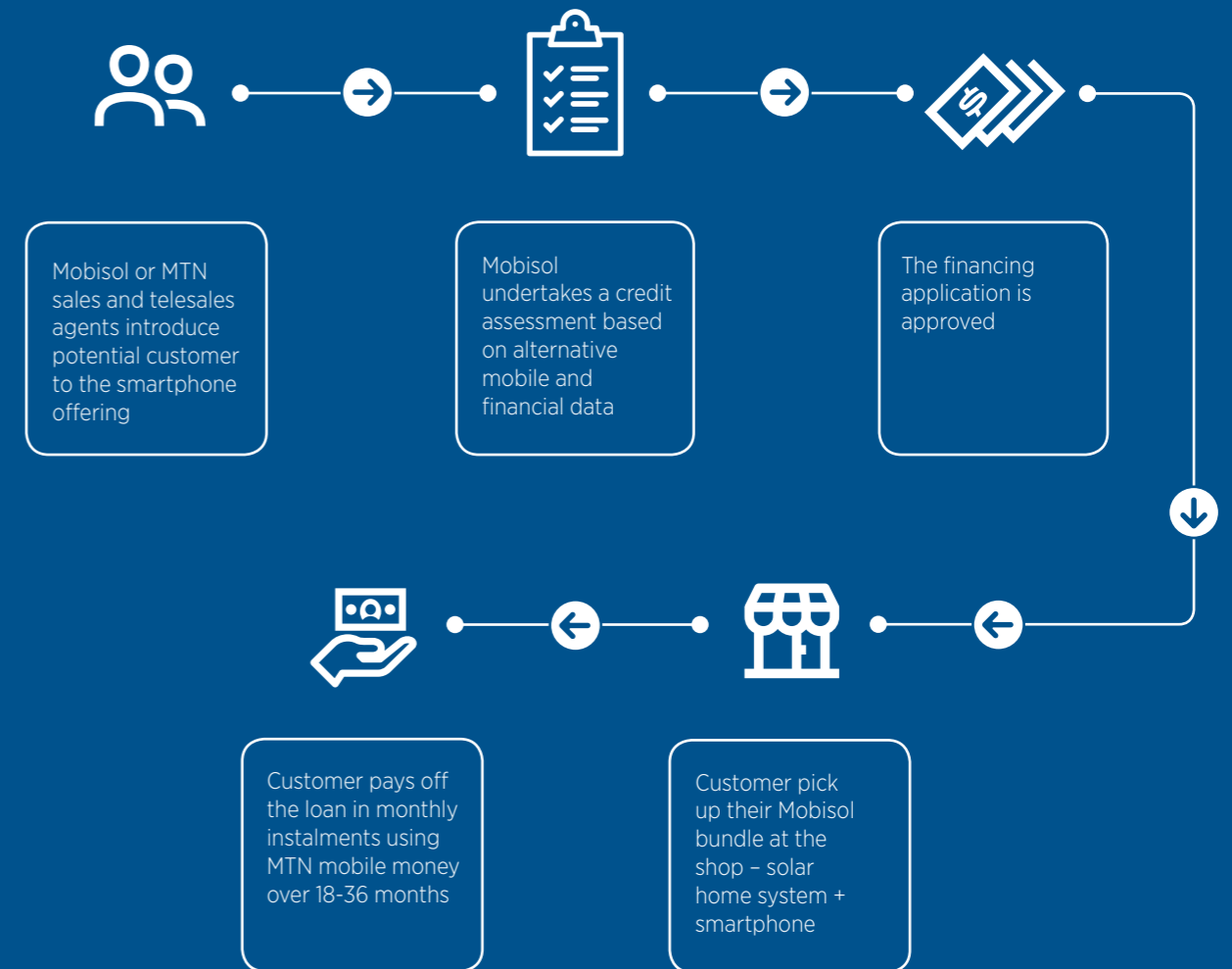


INNOVATIVE FEATURES

- **Leveraging alternative data for loan approvals:** Mobisol substitutes traditional approaches to credit assessments when offering loans for customers who have limited financial information and no prior credit history. Mobisol builds a credit profile for customers based on a myriad of data points including confirmation of land ownership, family size, household income, and expenses. In addition to this, Mobisol continues to monitor customers over time, collecting data on demographics and purchasing history to build benchmarks around specific customer segments. These data points are then triangulated using other publicly available sources of information, such as national credit bureau data. This benefits customers, whose only alternative would have been to use their savings to purchase a smartphone. By utilising multiple data points and existing customers' repayment history and track records on their SHS loans, Mobisol can offer products to an income segment that is not banked or supported by other retail financial services providers.
- **Specific product offering:** Mobisol offers just one device (the Tecno W2). This simplifies the agent training process for basic troubleshooting and hardware problems, enabling Mobisol to provide better customer support and after sales support to first-time buyers. While customers are excited about the Tecno W2, they would prefer a selection of devices.
- **Complementary partnerships:** MTN Rwanda's extensive and high quality network coverage across the country, Tecno Mobile's understanding of affordability and access amongst low-income populations, and Mobisol's experience lending to the working poor enables the partnership to holistically meet the needs of a niche market. Further, MTN and Mobisol agents are encouraged to sell smartphones provided through the partnership and stand to earn a commission for every sale.

Figure 27

Mobisol activity flow



57. Gasmore, B., "Central Bank maintains lending rate at 6.5%". 2015.

END USER IMPACT

- **The complimentary MTN data bundle reduces ongoing costs of ownership whilst enabling affordable access to the internet:** Customers mentioned that a strong motivation to move from a feature / basic phone to a smartphone was the monthly data bundle allocation from MTN. The bundle enabled consumers to familiarise themselves with the benefits of being online. Customers who used their smartphone for business (i.e., commercial farmers and business owners) mentioned that the internet provided access to information and a wider selection of suppliers, enabling them to have a competitive advantage and bargain for lower prices when sourcing goods and services.
- **Access to smartphones complements other Rwanda-based initiatives to expand digital literacy:** The Government of Rwanda is supporting growth in the ICT sector through initiatives in education, by encouraging investment, and by implementing mobile P2G / G2P payments. In one example, an end user's children accessed the internet at school through Rwanda's One Laptop per Child programme. The parents wanted to offer a similar experience at home and purchased a Mobisol smartphone in part so that their children could use it to access the internet.

Read the Mobisol end-user stories on pp. 55 and 33

"I am able talk to customers about my sound business, and order supplies from overseas using Google and WhatsApp

- Mobisol urban male customer

"I send my customers pictures on WhatsApp of the food I prepared in my shop and they all want to come and eat because it looks so tasty"

- Mobisol urban female customer

COMMERCIAL SUSTAINABILITY

- **Customer retention and brand loyalty:** By offering secondary products to existing customers, Mobisol can retain its customers for another 18 to 36 months. Additionally, partnering with recognised brands such as MTN could improve brand loyalty and awareness for Mobisol.
- **Growing the Mobisol loan book:** Offering additional consumer finance products enables Mobisol to extend their loan portfolio beyond solar home systems.
- **Customer acquisition:** Leveraging new customer segments, especially off-grid and rural populations, is often high-risk and requires a significant capital outlay. In this programme, MTN can leverage Mobisol's existing customer base and reach, to expand their customer base with minimal investment.
- **Increased ARPU:** Over the longer term, as customers become more familiar with their smartphones and their use cases increase, MTN stands to benefit from increased ARPU and lifetime value of the customer.
- **Access to new subscriber transactions:** MTN will accrue substantial customer transaction records through this programme, enabling it to identify behavioural trends in the BoP's utilisation of smartphones and offer additional services and innovative products targeted at this market segment.
- **Increased sales and brand awareness for the manufacturer:** Tecno benefits from increased sales, given that the W2 is the only device offered. In addition, Tecno will benefit from increased brand awareness amongst rural and peri-urban customers accessing the offering.

SCALABILITY

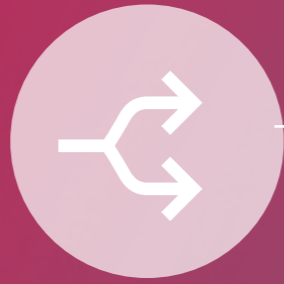
- Mobisol is a major player in several rural African markets and plans to replicate and scale this pilot to other markets depending on the success of the Rwandan pilot.
- While the Mobisol model is specifically relevant where there is a business case for off-grid solar, the concept of providing smartphone loans based on alternative credit scoring is more broadly applicable – and Mobisol proves that other service providers with a similar customer base and credit assessment capabilities can be effective at driving access to devices.

LESSONS LEARNED AND IMPLEMENTATION CHALLENGES

- **Consumer training could help the programme achieve greater impact.** Mobisol customers who would benefit from migrating to 3G phone have limited awareness of how to use a smartphone or even how to load airtime and data. This placed a burden on MobiShop operators who had to take the time to teach customers the basics. Additional training related both to introducing the customer to the basic functionalities of a smartphone as well as working with them to understand the different use cases would go a long way in increasing their comfort and usage of the product.
- **The model would benefit from expanded local content and local language applications.** Customers used their smartphones in a similar fashion to their basic / feature phones, and expressed that it took long to get familiar with the device because all applications are run in English. Local applications in Kinyarwanda, such as Igihye and Umuseke,⁵⁸ have become gateway apps for first time users to familiarise themselves with the additional functionality of a smartphone. MNOs, governments, or other ecosystem players could invest in developing and pre-installing local applications for their handsets in markets like Rwanda. This would expand impact and drive up ARPU among the working poor, who aspire to access information through the internet on their smartphone.
- **Credit assessments based on alternative information can expand financial access – but they are not a catch-all, and some would be borrowers remain financially excluded.** Despite efforts to build credit profiles based on a myriad of data points, there are limitations on to Mobisol's ability to extend credit given the type of information required. For example, some low-income and rural customers may not have a land title, making them ineligible. Further expansion of data points used in the credit scoring system could help Mobisol extend loans to more people – but new algorithms would need to be tested to ensure that Mobisol maintains its low default rate.
- **Expanded distribution, for example through an agent network, could improve the user experience for Mobisol's most rural customers.** Customers must travel to a MobiShop to acquire the product and sign the contract with Mobisol. This places both a financial and time cost on the model's most rural customers, who must travel long distances to visit a MobiShop.
- **Purchasing behaviour is influenced by a customer's ability to see and test a device.** Customers indicated that they would have liked to touch, test and see the device before they decided to purchase it.
- **Customers are excited about the Tecno W2 but would prefer a selection of devices.** Mobisol currently offers customers only one choice of device, the Tecno W2. Customers have indicated that they would welcome a choice of range of devices and brands.



⁵⁸ Umuseke is a local application for listening to local music artists.



5

Emerging recommendations



Emerging recommendations

There is ample opportunity for the mobile industry and ecosystem players to improve smartphone affordability for the millions of people currently unable to afford a device. In exploring the dynamics of the smartphone ecosystem landscape, and initiatives aimed to facilitate handset ownership, we see a pattern of common challenges that unconnected consumers face across different regions and strategies that could be adopted to help tackle them.

Three strategies stand out above others:

1	Making the purchase price more manageable through financing: potentially the most meaningful support that can be provided is to break up the upfront cost of the device into more manageable sums, supporting the consumer through offering affordable loans, alternative forms of credit scoring and savings schemes.
2	A key area for ecosystem collaboration would be to ensure efficient distribution channels are in place for handsets to reach people, especially in locations with limited retail presence where prices are often inflated due to low supply.
3	Localising devices, reflecting market demands - Beyond access channels, offering affordable smartphones that respond to the handset needs and value perceptions of the local consumers, ensuring that they are not paying for features that they will not use, could be an equally important area to focus industry efforts.

These approaches are explored in further detail below.

1. SUPPORT CONSUMERS TO SPREAD THE FINANCIAL LOAD OF THE SMARTPHONE COST

- **Enable consumers' ability to buy smartphones on credit**
 - **Partner with microfinance institutions, banks and other financial institutions to offer device loans to a broader group of people**
 - **Engage organisations supporting low-income and rural groups with credit products** (e.g., Rural banks, Co-operative banks, Savings groups support organisations, MFIs etc.), especially those that have strong last-mile networks and constantly engage customers. MNOs could also identify organisations with scale and those that use technology to expand access rapidly while staying within the confines of their core competencies. This will reduce distribution, awareness and troubleshooting costs for MNOs/manufacturers. Further, it will allow MNOs to de-risk the investment and potentially reach new and additional customer segments. Lastly, these organisations are well-trusted by their users and can drive adoption if they are the face of the programme.
 - These could be offered in partnership with a MNO's mobile money platform, with the credit specialist backing the scheme and providing the capital but the mobile money platform providing the channel for payments
 - **Target specialist partners with experience in working with different groups of low-income.** For example, target agricultural development banks to expand the customer base among farmers; MFIs to work with micro-entrepreneurs; self-help groups to work with women etc.. Such specialist partners understand well the cash-flow of their own target groups, and build that into their existing capacities/products.

- **Use alternative data sources – including MNOs' proprietary customer information – to assess consumer credit and extend financing for devices to underbanked and financially excluded populations. Work with groups that offer alternative forms of data** that can be used to assess default risk for potential customers. Given that credit is often accessed informally and data collection is poor, leveraging the latest research in social sciences and innovations in digital payments can be a low-cost method to ascertain a customer's ability to repay. Data sources can include:
 - Proprietary MNO data (e.g., airtime top up history, length of SIM ownership, mobile money transaction information)
 - Other mobile wallet/E-wallet players
 - Employer data
 - Government documents (e.g., land title records)
 - Payment banks
 - Other asset financing companies (e.g., agriculture lease financing companies)
 - Organisations providing other kinds of asset financing (e.g., sanitation loans)
- **Using this data, partner, build, or pay to access alternative credit scoring models to assess creditworthiness and expand customer bases while limiting default risk.**
- **Partner with entities/initiatives that understand the specific and relevant data on underserved groups such as women, the rural poor and other underserved segments.** Relevant entities could include women-focused microfinance institutions or specific professions that tend to be dominated by women (health workers, teachers, women focused Co-Ops). In designing products that leverage alternate data and approaches to credit assessments, alternative credit scoring models can be built to incorporate information that is available for specific population segments.
- **Enhance consumers' ability to save towards a handset**
 - **Design simple savings products that are easy to implement and compel customers to put away funds for a specific product.** Offer savings and layaway plans through agents, MNO Mobile Money platforms or retail outlets and raise awareness and understanding about savings options, and the long-term returns. By personalising savings schemes, customers can have the flexibility to pay as much as they want at any time interval until they have accumulated sufficient funds to purchase a device.
 - **MNOs can offer a savings platform for the provider's and consumer's mutual benefit.** For instance, saving schemes can include a mobile money - or airtime top-up-based loyalty programme, where the consumer can earn points based on their mobile money transactions or airtime top-ups, and redeem points for discounts on the handset they are saving towards.
 - **Leverage the power of savings groups and/or Savings and Credit Co-operative Organisations** to enforce discipline towards saving for a device. This is a particularly effective tool in driving increased affordable access for women.
 - **Whether offering consumers the option to pay for the handset through savings schemes or on credit, ensure the associated instalment payment plan takes into account consumers' cash flow**
 - **Add flexibility to instalments such that they account for the difference in cash flow and seasonality of income.** For example, some customers would prefer flat monthly instalments for their simplicity and consistency, while others would prefer greater flexibility in order to allow instalments to be adjusted based on less predictable cash flows. Monthly or weekly payment schemes can be aligned to deduct on payday to ensure end users do not default.

2. LEVERAGE DISTRIBUTION NETWORKS THAT CONSUMERS TRUST

- **Efficiently distribute devices to rural areas by working through or partnering with rural agent networks.** The distribution approach of devices is a particularly important point for consumers in rural areas, where the distance to retailers is a barrier in itself, and handset prices become inflated due to the lack of competition. Rural distribution models must achieve low transport costs, short timelines and strategies to manage inventory and agent liquidity. For example, MNOs could incentivise rural agents to sell smartphones on order.
- **Identify and sell devices through channels that people trust.** Agents must be able to manage liquidity and accept deliveries. Examples might include local village shop owners that double as mobile money or bank agents, roving sales agents, the postal service, or microfinance representatives. Agents can sell phones on order, preferably showing customers a sample device.
- **MFIs and agent networks can partner with an MNO or handset manufacturers to become an agent network for device sales and distribution.** If the partner does not play a distribution role, consider decentralising decision making so that local leadership can determine the best sourcing and delivery approaches (e.g., a peri-urban entrepreneur can self-source inventory from a nearby warehouse).

3. RELEVANT LOCALISATION OF PRODUCTS TO REDUCE COSTS AND IMPROVE VALUE PERCEPTIONS

- **Handsets are generally designed with features that are relevant to mature markets, but it is worth considering how to tailor the phone with the specific market in mind.** It is possible for device designers and manufacturers to cut costs by excluding expensive handset features that are not a priority to the specific consumers. For example, in certain markets battery longevity can be a more attractive feature than technologies such as NFC and connected home integration that are not yet relevant to emerging markets. The opportunity to develop own branded smartphones, potentially in partnership with content providers and local distribution partners, could be an option for premium positioned operators with a strong established brand amongst consumers, to ensure customer confidence in the handset.
- **Improve value perception of handsets by personalising them with locally relevant bundles and offers.** Value to the local consumer can be improved by investigating market appetite for specific popular local content and services, and marketing the smartphone bundled with such applications. Beyond content, including an insurance plan in the handset offer, tailored to suit the local conditions of the specific location or consumer segment could add perceived value. For example, when targeting a smartphone offer to rural consumers, it might be beneficial to include an insurance plan with favourable cover for dust or water damage. Including accessories that often have low manufacturing cost for vendors but high perceived value for customers can also enhance the desirability and durability, e.g. selling devices bundled with protective covers, power pack or portable music speakers.
- **Where perceptions of smartphone costs are higher than in reality, educate consumers about the real cost of handsets.** Inflated cost misperceptions around smartphones acts as an unnecessary consumer barrier that actors can address through straightforward messaging to consumers clarifying how much a smartphone really cost. Further promoting the features, quality and durability of entry level handsets can also help to improve their appeal, and overcome people's biases towards lower-priced models due to their perceived lack of social-status.

ADDITIONAL IDEAS THAT REQUIRE FURTHER EXPLORATION

- **Private sector players and on-demand and sharing economy businesses could explore opportunities created by the growth of the on-demand and sharing economy.** This could include:
 - **Tailoring devices** to sharing and on-demand economy workers, including handsets that support specific applications related to financial management, job or task trackers, or word processing applications that allow users to generate quotations and invoices.
 - **Developing affordable and tailored insurance products** targeting low and middle-income workers concerned with device theft or damage. Given the structure and worker-customer-employer relationship of sharing economy models, MNOs can potentially offset risk linked to handset cost and payment.
 - **Exploring new models for establishing credit history**, e.g. offering smartphone loans associated with sharing economy income history; or, explore models for risk sharing based on verification of income history and/or partially back loans for workers.
- **Operators, content providers, investors and donors could explore partnerships for subsidisation of smartphones through ads and pre-loaded content**
 - The business model of subsidising the cost of a device through revenue from adverts, and/or pre-installed applications has been utilised for a handful of years to offer consumers products such as e-readers and tablets at cheaper rates. More recently Amazon began to apply this subsidised model also for smartphone sales in the United States.
 - Since ads-subsidisation offers an aggressive cost reduction to consumers, whilst content providers stand to benefit from accelerated usage of their services, this approach could be worth exploring on a broader level for actors in emerging markets, and in different partnership constellations. Initiatives such as SocialEco's \$1 smartphones is an example of an actor trialling this model in the emerging market context.
- **MNOs can work with larger employers to provide smartphones through salary sacrifice schemes.** Salary sacrifice schemes can offer operators an affiliate marketing opportunity to sell devices bundled with recurring data/airtime allowances to a closed user group of employees with established regular payment and therefore creditworthiness.
 - **The employer can underwrite the credit risk with the operator** for the payment of devices by ensuring the debt risk can be recovered by taking payment at point of earnings from the end user.
 - **The operator benefits by offering unique offers to a closed user group** who may have established digital skills (working professionals) and can extend the schemes to family and friends if the employee proves to be credit worthy in a lower cost of acquisition model.
 - **The operator's airtime offer can be pre-pay to post-pay hybrid** if the recurring payment reloads the SIM with the relevant voice, data and SMS allowance driving primary SIM use in multi-SIM markets.
 - **The employer benefits from improved staff loyalty and productivity** associated with giving staff a smartphone, which can link to a work exchange enabling a bring-your-own-device scheme. This can be further enriched where a company airtime allowance is given for working hours and employees pay for an allowance outside work time.
 - **The employees benefit from getting access to devices, also for friends and family.** In addition, they could take advantage of potential unique airtime offers that would be made possible through the scale of purchase power. An employee base is a closed, but also often quite a sizable user group.

- **Exploring possibilities to utilise tax incentives and G2P payments to accelerate smartphone penetration**
 - **Governments could look into offering tax incentives for employers to provide devices to workers.** Employers could provide phones to workers as a non-taxed benefit.
 - **Explore how G2P payments could be leveraged as a mechanism to expand access to low-income consumers.** For example, individuals receiving government grants could opt to have a portion of those grants paid directly toward a smartphone loan or savings product.
 - In mature markets government have viewed schemes such as cycle to works and gym membership worthy of giving tax incentives to improve health and fitness through paying for such benefits from pre-tax earnings.
 - Such schemes could offer great incentive in emerging markets for smartphones adoption where government recognise the benefits for wider digital inclusion through removing cost barriers for smartphones. These schemes would be offered to citizens that are within the formal economy and contributors of fiscal revenues.
- **Anchoring multi-party partnerships to encourage banks to offer smartphone loans**
 - **Work with government-supported banks who have a large rural or low-income customer base.** In countries where commercial banks are involved with low-income groups through other kinds of offerings e.g., agricultural loans, housing loans etc., governments can work with MNOs and NGOs to create a multi-party partnership wherein financing is provided by a bank, the loan is backed by government, the product and data package is sourced by an MNO and/or handset manufacturer, and customer education is provided by an NGO. Similar partnerships have worked well in agriculture and ensure high repayment rates.
- **Donor financed backing for device loans** offered to low-income populations, and for device financing programmes testing new alternative credit scoring models. Donor funding for trials of new, alternative loan schemes and other similar promising, but not yet tried and tested, methods, could offset actors' financial risk and increase their confidence to explore new routes and partnerships for decreasing smartphone costs to the consumer.

TOPICS FOR FURTHER RESEARCH:

- **Understanding the grey market.** The grey market exists because it responds to gaps in the market – for example by offering lower price points, through importing products from lower priced countries, and the opportunity to buy phones in locations where other retailers do not operate. In order for the mobile industry to understand how to compete in this space, a market sizing and additional research into what the average price points are for smartphones purchased through grey market/unlicensed vendors would be useful.
- **Consumer demand for specific device attributes.** Market-specific research into what handset attributes different consumer groups value the most, will help improve the design and marketing of smartphones. Beyond features of the handset itself, it can also help us understand what importance consumers attach to e.g. the brand, and customer service. Acting on these insights could, in turn, enhance consumers' value perception of the handset, and streamline device manufacturing costs.
- **Consumer willingness to pay in relation to income levels.** Research into what price points consumers are prepared to pay for a smartphone in relation to their level of income, would help actors make informed decisions on device pricing for the specific consumer segment they want to reach with smartphone offers.

CONSIDERATIONS FOR DELIVERING SUCCESSFUL AFFORDABLE SMARTPHONES SCHEMES*

- ✓ Ideally provide a handset from a brand trusted (and desired) by the target consumers
- ✓ Prioritise a smaller, more focussed range of handset models for economies of scale and to avoid consumer confusion.
- ✓ If launching pre-installed content on the smartphone, aim to include locally relevant (and generated) content in the local languages of the specific market, in order to drive uptake among a broader customer segment.
- ✓ Capitalise on happy customers' word of mouth, by encouraging them to recommend the smartphone to friends and in return reward them (e.g. with a free data pack).
- ✓ Make sure smartphone sales agents are well trained in the product, to be able to confidently explain and sell the smartphones to novice smartphone users.
- ✓ Provide agents with live network active handset samples to let apprehensive first-time smartphone customers see and test the device before buying.
- ✓ Incentivise agents to sell and to encourage regular use of smartphones through carefully constructed commission schemes.
- ✓ Consider partnering with trusted NGOs to help deliver not only alternative distribution methods but training on smartphone usage.
- ✓ For smartphone financing initiatives - combine customer financial education about savings and loans options, with training about business use cases for the smartphone, so that consumers realise how the device purchase will "pay off" over time.
- ✓ Begin planned education schemes for smartphone offers immediately after the handset purchase, to maximise the consumers' benefits of use, and to establish healthy usage habits early on.
- ✓ Ensure the marketing of the smartphone initiative utilises effective channels to reach the target consumers, and is clearly explained.
- ✓ Consider the value of post-sale customer care, e.g. smartphone repairs and customer queries, and establish a plan for how to distribute such services especially for more rural customers.
- ✓ For smartphone trade-in schemes - ensure outlets are provided with the required resources and know-how to verify used handsets' authenticity.
- ✓ To maximise the impact of the smartphone initiative, take a holistic approach to address the broader consumer barriers to smartphone uptake. For instance, encourage increased usage by including an attractive mobile data bundle, combined with training to improve the consumer's digital literacy and ability to explore more sophisticated internet use.

*Non-exhaustive list - based on lessons learnt from implementers of initiatives presented in this report.





6 Appendix



Appendix

A. Selection of business models for affordable Smartphones

Archetype I: Direct payment

	COMPANY AND INITIATIVE	DESCRIPTION	INDICATORS OF IMPACT
DEVICE SUBSIDIES AND BUNDLING			
1	Airtel Countries: Nigeria Primary Actors: MNO and a device manufacturer	In 2015, Airtel Nigeria introduced an online trade-in service where customers could trade in their old feature phones or entry-level smartphones for a higher-end device on a website called Phone Trader. Customers could either purchase a new or second hand Samsung or Apple device on the platform. The trade in value of the device is discounted from the cost of the new handset up to 60% of the new device cost on purchase. ⁵⁹	Commercial benefit: The trade in service reduces churn and increases customer retention for Airtel, as customers are less likely to switch to other operators when upgrading to a new device. Airtel also benefits from higher average revenue per user (ARPU) as customers migrate to more sophisticated devices that utilise more data. Target group: Working Poor and Middle-income
2	MTN South Africa Country: South Africa Primary Actors: MNO, national retailer and a software provider	In 2013, MTN teamed up with Qualcomm to introduce the \$45 MTN Steppa into the South African market. The Steppa was sold across Edcon ⁶⁰ retail outlets as well as MTN stores nationally. The handset had preloaded applications - Facebook, Gmail, Google+, Maps, News24, Opera Mini, the Play Store, Soundhound, Twitter, Traffic Monitor, WhatsApp and YouTube, enabling MTN to develop Steppa-specific prepaid product bundles for their target market. ⁶¹ Consumers could either purchase the handset using a lump sum upfront payment or on credit if they had an access to an Edcon group store account. ⁶² The massive success with the MTN Steppa in 2013, led the MNO launched a Steppa 2 smartphone and a \$85 MTN Steppa tablet in late 2014.	Commercial benefit: In less than three months, over 31,000 customers bought the Steppa device. The product was the second best-selling smartphone in South Africa, with 200 000 units of stock sold by April 2013. More than 80% of the people who bought the Steppa were making the move from a 2G feature phone to a smartphone and their data usage increased by an average of three-fold. ⁶³ Target Group: Working poor and emerging middle class

59. Phonetrader. "Airtel - The Smartphone network". 2015

60. Edcon is the largest non-food retailer in South Africa, with a footprint to include over 1,273 stores nationally.

61. MTN Blog. "Introducing the MTN Steppa, the most affordable smartphone ever!". 2014

62. The Edcon retail account enables customers to purchase retail products interest free for 6 months. Customer require 3

63. HTXT Africa. "MTN launches the next-gen budget Steppa 2 smartphone". 2014

3	Orange and Google Countries: 14 African markets and Jordan Primary Actors: MNO and Google	In 2016 Orange and Google jointly launched their partnership Pamoja, an affordable digital communication package, offering a high-quality smartphone at the low-price point of \$40 bundled with voice, SMS and data. The device offered is the Orange Rise 31 Special Edition, with Google's OS Android 6.0 Marshmallow and pre-installed Google apps; Google Search, YouTube and Google Maps. The aim is to further tailor the content to each market by developing local services and content over time.	Commercial benefit: For Google, it is an opportunity to gain more users to their suite of mobile services across multiple markets, and Orange benefits from seeing more feature phone users converting to smartphones, ultimately gaining more mobile data subscribers to their network. Target Group: Working poor to middle-income.
4	MTN Ghana Country: Ghana Primary Actors: MNO and a device manufacturer	In 2013, MTN Ghana and Huawei launched the Ascend Y210 at ~\$38 when the market price was approximately ~\$49 ⁶⁴ in that year. Additionally, the full price of the device was reverse subsidised in the form of voice and data services (65 minutes of voice calls and 200MB monthly) over a 12-month period, by recharging a minimum of ~\$0,23 worth of airtime. ⁶⁵	Commercial benefit: In 2013, MTN recorded up to 25,000 new data subscriptions due to the promotion of internet use and its benefits. ⁶⁶ Target Group: Working Poor
5	Safaricom Country: Kenya Primary Actor: MNO and a device manufacturer	In 2015, Safaricom launched a self-branded ~\$38 handset called the Neon Smartphone. The 3G smartphone, available from Safaricom shops was purchased with 200MB and 20 SMSs daily for 30 days. ⁶⁷ Customers could also use their Safaricom Bonga loyalty points, earned through M-Pesa transactions to receive a discount on purchasing the handset from their stores.	Commercial benefit: Safaricom launched its own branded entry-level smartphone, which results in a 182% increase in average revenue per user (ARPU) when a user moves from a feature phone to a smartphone. ⁶⁸ Target Group: Working Poor
6	Vodacom Country: South Africa Primary Actors: MNO and Alcatel	In 2014, Vodacom and Alcatel launched a Vodafone branded low-cost handset called the Smart Kicka at ~\$38, distributed through their retail outlets across South Africa. The entry-level device was also available on a 24-month contract through the MNO for customers with a traditional credit history, or through direct payment for pre-paid customers. Beyond enabling internet access, the product came with pre-installed applications and free data bundles (subsidised by Vodacom) to catalyse access to the internet for first time users. The phone retailed for ~\$38 or \$4.50 monthly on a 24-month contract (airtime included). ⁶⁹	Commercial benefit: In 2014 Vodacom, had sold more than three million low-cost smart devices (i.e. Smart Kicka and Smart Tab) with over a million having been sold in the operator's third financial quarter (September to December) of that year. ⁷⁰ Social benefit: Vodacom established a partnership with Top Dog ⁷¹ to provide an Educational Voucher (worth ZAR 10,000) with online content for Grade 4-12 learners. This material provided a social benefit to communities who purchased smartphones from Vodacom. ⁷² Target Group: Working Poor, Middle-income, Children and Youth

64. My Joy Market. "Mobile Phones: Other - Huawei Ascend Y210". 2013

65. MTN Group. "MTN And Huawei launch the Ascend Y210 Handset". 2013

66. Douwona, S N. "Affordable smartphones drive data consumption on MTN". 2014

67. Otieno, D. "What is the Safaricom Neon Smartphone?". 2015

68. Kemibar, M. "A Review of the entry-level Safaricom Neon Android Smartphone". 2015

69. Goldstuck, A. "Vodacom makes smart push to become handset player". 2016

70. Tech Central. "How Vodacom is outsmarting MTN". 2014

CREATIVE DISTRIBUTION NETWORKS, MANUFACTURERS AND RETAILERS			
7	AfriOne Country: Nigeria Primary Actors: MNO and an online retailer	Launched in 2017 AfriOne is a pioneer local manufacturer of low cost smartphones in Nigeria, combining cutting edge technology with sleek design and providing phones with integrated services such as mobile banking, health and education. ⁷³	Broad customer base: The production has just launched and will be able to produce 300,000 products per month. Target Group: Middle-income rural and urban
8	Alibaba Country: China Primary Actors: MNO and an online retailer	Alibaba, is an online retail platform in China, that sells feature phones and smartphones in addition to other electronics and retail apparel. In 2015, Alibaba launched a pilot programme with China Telecom to sell low-cost internet-enabled handsets to rural communities across China. The "Tianyi Taobao" handsets, came pre-loaded with the Taobao shopping application or the YunOS mobile operating system developed by Alibaba as a default feature. ⁷⁴	Broad customer base: by 2014 Alibaba had captured 80% of the e-commerce market in China with approximately 300 million customers. ⁷⁵ Their ability to creatively distribute products in rural communities improves access to low cost devices in China. Target Group: Rural poor
9	Kilimall Country: Kenya, Uganda Primary Actors: Online retailer, device manufacturers and a MNO	Kilimall is an online retail platform in Kenya that sells feature phones and smartphones in addition to other electronics and retail apparel. In 2016, Kilimall Uganda partnered with a global smartphone manufacturer Infinix Mobility, to launch the Infinix Note 3 for (-\$148) ⁷⁶ and Hot 4 (-\$115) ⁷⁷ in the Ugandan market. ⁷⁸ The group also ventured into selling refurbished Apple devices on their platform; and has partnered with Safaricom to allow their customers to use their 'Bonga' loyalty points to subsidise handsets purchased online.	Broad customer base: the Killimall messenger delivery network enables them to provide goods to individuals in rural/peri-urban areas across Kenya and Uganda. Target Group: Working Poor to Middle-income
10	Jumia Country: Nigeria, Kenya & Ghana Primary Actors: MNO and an online retailer	In 2015, MTN partnered with Jumia, to offer two of their self-branded handsets in Nigeria - the MTN Smart S720i (-\$57) and Smart Mini S620 (-\$47). ⁷⁹ In 2016, they expanded the functionality to allow Jumia customers to register onto the MTN network instantly when they bought any device. Subscribers could browse for free afterwards, reducing total cost of ownership in the short term. ⁸⁰ Jumia also partnered with Tigo Ghana in 2015, to sell smartphones on their platform. Customers received 1GB free data, 1 month unlimited music and six-months double data for every top-up. ⁸¹	Commercial benefit: MTN and Tigo Ghana benefit from higher customer acquisition when new users access their network through the Jumia online platform. Target Group: Middle-income

11	Tecno Mobile Countries: Ghana, Cameroon, Nigeria, Mozambique, Kenya, Tanzania, Uganda & Ethiopia ⁸² Primary Actor: Secondary retailers (franchisees)	Tecno Mobile has been successful in providing low cost smartphones across Africa since 2010. The group operates a franchise distribution network across various countries, to sell Tecno feature and smartphones. Their feature phones costing -\$15 would come with camera and internet surfing capabilities. ⁸³ The group has successfully reduced handset prices relative to other players in the African market, by selling their own manufactured devices and utilising centralised distribution to lower sourcing and distribution costs. More recently, Tecno stores have transitioned to provide branded (Samsung, Huawei) devices in their stores.	Commercial benefit: by 2013, Tecno was operating in 12 countries across East, West and Central Africa, with an average of 20% device market share in each market. ⁸⁴ Target Group: Middle-income
12	Rekan Usaha Mikro Anda (Ruma) Country: Indonesia Primary Actors: Informal Retailer	Ruma ⁸⁵ combines a savings group and catalogue ordering model to help peri-urban and rural people in Bali and Java access goods at fair prices. Each savings group member selects an item from the Ruma catalogue to save for – some select smartphones, while others choose items such as appliances, furniture and clothing. Typical smartphone customers are first time users ordering devices in the sub \$100 price range. Ruma offers prices comparable to those in urban centres and delivers orders to customers' communities, eliminating the transport and delivery costs associated with purchasing items in town; and providing an alternative to informal or grey market smartphone vendors who may sell poor quality devices and offer no maintenance and support. With income levels at -\$2-10 per day, members rely on their savings groups to afford smartphones and other high value items	Commercial benefit: Ruma purchases goods at wholesale prices and sells at retail prices, using margins to pay delivery and overhead costs. MNOs can benefit from Ruma's smartphone offering – for example, many customers purchase an Andromax smartphone with a Smartfren SIM. Target group: Low-income people, -80%+ of whom are women.
13	Copia Country: Kenya Primary Actors: E-commerce platform	In 2013, Copia was established as an e-commerce platform using an agency model to provide affordable goods to rural populations. In 2014 the network had 80 Copia agents who were small shopkeepers in villages surrounding Nairobi. Copia has since grown to 800 agents. Customers can purchase smartphones through the Copia catalogue. Customers can choose to pay in one lump sum or in small instalments – devices cost upwards of \$35 (interest free). All products are delivered within 48 hours for peri-urban locations and one week for rural locations, once customers have fully paid for the product.	Commercial benefit: Copia's ability to scale up their agent network from 80 (2014) to 800 (2017) has resulted in substantial commercial growth and a customer base of 50,000 across central Kenya. Further, the agency model allows for timeless access to underserved populations in rural and peri-urban contexts. Target Group: Working Poor (Rural / Peri-urban)

71. Top Dog is an Education Technology company that specialises in optimising the learning and teaching process through technology interventions. Their application can be installed on smartphones, and provides access to animated lectures, mock exams with solutions, live chat sessions with teachers, online tests with instant results, subject summaries and tutorials for students aged 9 – 18 years old.

72. Vodacom. "What is a Top Dog voucher". 2016

73. <http://www.afrione.com/>

74. Wang, S., Najberg, A. "Alibaba, China Telecom Roll Out Mobile Phones for Rural Shoppers". 2015

75. Forbes. "10 Reasons Why Alibaba Blows Away Amazon And E Bay". 2014

76. Infinix Authority. "Infinix Note 3- full specifications and price". 2016

77. Infinix Authority. "Infinix Hot 4 X557 Full Specifications and Price". 2016

78. Olupot, N E. "Kilimall Uganda 2016 in Review: Launch, Black Friday, Infinix Partnership, and more". 2016

79. Quartz Africa. "Google is bringing cheap smartphones to Africa, but it has a problem: China got there first". 2015

80. Financial Times. "Smart Africa: Nigerian groups target '100 per cent mobile first market'". 2016

81. BIZ Tech Africa. "Tigo Jumia Partner on online shopping". 2015

82. Khalidz, Dr. "Case Study On Tech Innovations: The Rise Of Africa's Leading Mobile Brand, TECNO Mobile". 2016

83. Reviewcous. "Why Techno Phones rock the Nigerian market more than other brands". 2016

84. Mulupi, D. "Chinese mobile phone company Tecno explains why it only does business in Africa". 2013

85. Ruma was a start-up business funded by Grameen Foundation and Omidyar Network. Information is from <http://www.ruma.co.id/> and an interview with Ruma staff.

Archetype II: Asset Financing

	COMPANY AND INITIATIVE	DESCRIPTION	INDICATORS OF IMPACT
ASSET FINANCING VIA AN MNO			
14	<p>Equitel</p> <p>Country: Kenya</p> <p>Primary Actors: MVNO (set up by an MNO and Bank)</p>	<p>In 2016, Equity Bank launched an MVNO⁸⁶ to provide clients with loans to purchase Samsung and Alcatel handsets through Equitel over a 12-month period. The MVNO is officially hosted on Airtel Kenya's infrastructure network. Phones on offer are priced between -\$39 and -\$950.⁸⁷ Average loans issued range from -\$40 to -\$67 over a 4-month period. There is a portion of the emerging middle-income group using the loans to access entry level smartphones, however middle to upper income groups are using the loan to purchase high-end devices.</p>	<p>Commercial benefit: Equitel benefits from customer acquisition and reduced churn as they are able to leverage Equity Bank customers, which stands at about -10 million people. In May 2016, the group published that the Equitel customers had already surpassed the 1,8 million mark.⁸⁸</p> <p>Target Group: Middle-income</p>
15	<p>FNB Connect</p> <p>Country: South Africa</p> <p>Primary Actors: MVNO (set up by an MNO and Bank)</p>	<p>In June 2015, FNB Connect was the first MVNO in South Africa, targeting the sale of high end branded smartphones through asset financing for FNB customers. Customers could purchase/finance a handset separately from the contract. The bank partnered with Cell C, a South African MNO, and provided customers with sim cards with free data bundle offerings.⁸⁹ Whilst the initial focus was on high end smartphones, FNB Connect has started offering lower cost FNB branded smartphones (ConeXis Z1 & A1 manufactured by ZTE) costing between \$100 and \$275 over 24 months with voice and data bundles, and a power-bank included.⁹⁰ The A1 cost -\$4,50 per month in 2015 with 15 minutes of bundled airtime and 50MB data, while the X1 cost -\$11,50 per month with 25 minutes and 100MB of data.⁹¹ Devices now come with an FNB Branded Sim Card, which operates on the Cell C network infrastructure. FNB has also expanded to offer handsets with FNB branded data, voice and SMS bundles on a pre- or post-paid FNB sim card plan.</p>	<p>Commercial benefit: Ten months after its launch FNB connect had 200,000 subscribers.⁹² The financial benefit for the bank was reduced operational costs (particularly of processing transactions in branches) as most services were migrated onto their digital financial services platforms. This strategy yielded a 20% decrease in branch deposits, reducing the cost to banks of processing transactions (59% of transactions were diverted to the banking app).⁹³</p> <p>Target Group: Middle and Upper-income</p>

86 A Mobile Virtual Network Operators is a wireless communications services provider that does not own the network infrastructure over which it provides services to its customers.

87 Kenya Tech News. "Equity Bank has launched Loans for Smartphones, but It would have been better if they partnered with Jumia Kenya". 2016

88 Kenya Tech News. "Equity Bank has launched Loans for Smartphones, but It would have been better if they partnered with Jumia Kenya". 2016

89 Seef, A. "All you need to know about FNB's mobile network". 2015

90 Simons, H. "FNB ConeXis is South Africa's latest smartphone range". 2016

91 Seef, A. "All you need to know about FNB's mobile network". 2015

92 Carew, J. "The Modern MNO". 2015

93 First Rand Bank. "First Rand Bank Annual Report". 2015

16	<p>Warid</p> <p>Country: Pakistan</p> <p>Primary Actors: MNO & Bank</p>	<p>In 2014, Warid collaborated with Bank Alfalah to offer post-paid customers and Bank Alfalah Credit Card holders a simple instalment plan with 0% interest to purchase smartphones. Warid customers could buy any LTE enabled smartphone and pay in monthly instalments. This service is highly convenient for those who initially could not afford and LTE enabled smartphone. The programme came with an additional offering of 'soft-capped' LTE mobile internet for up to one year with every purchase. A 6-month plan included 8 GB / month free internet for 6 months, and a 12-month plan included 8 GB / month free internet for 12 months.⁹⁴ The programme has since extended beyond credit card holders to bank clients who use the paperless banking service (Easypaisa), enabling those without a traditional credit history to also benefit from the instalment plan.⁹⁵</p>	<p>Commercial benefit: Warid can retain its customers by offering them interest free loans to upgrade their devices through Bank Alfalah, whilst expanding its customer base for new clients at lower income segments of the bank.</p> <p>Target Group: Working Poor and Middle-income</p>
ASSET FINANCING VIA AN MFI			
17	<p>'Smart Snehidhi' Programme</p> <p>Country: India</p> <p>Primary Actor: MNO & NGO</p>	<p>The 'Smart Snehidhi' Programme is a pilot programme with Vodafone India, the Vodafone Foundation and Hand in Hand⁹⁶ to provide low cost smartphones to women in Tamil Nadu. The project started in January 2017, and costs users -\$10 per month for 6 months (interest <5%) for the handset bundled with a Vodafone SIM. The NGO has a digital literacy programme on accessing mobile internet for new users and partners with Vodafone to distribute the phones. Customers receive free internet for a year (200 MB per month) as well as free talk time each time they top up with -\$0,08. A data pack for -\$0,38 over and above the free data quota is available at a reduced rate to encourage higher data revenues.</p>	<p>Commercial benefit: In the first month of the pilot, Smart Snehidhi had reached 1,000 new customers and has a target to reach 5,000 by end of March 2017. The annual target is 50,000.</p> <p>Target Group: Rural Women</p>
18	<p>Sonata Finance</p> <p>Country: India</p> <p>Primary Actors: Device Manufacturer & MFI (bank)</p>	<p>Since 2011, Sonata Finance has offered loans for women to purchase smartphones in partnership with Samsung. Sonata provides loans to female microentrepreneurs to purchase smartphones. The loan amount is -\$117 financed over 9 - 12 months. The customer needs to have been a registered customer with Sonata for at least 6 months to qualify. This helps Sonata verify their repayment history and the ability of the customer to take another loan at an interest rate of 22% per annum. Repayment is -\$3,80 (twice a month) or -\$5,33 (per week).</p>	<p>Social benefit: there are approximately 11,000 female customers who have taken this loan facility since 2013.</p> <p>Target Group: Rural women</p>

94 Phone World. "Warid Offers LET mobile phone on instalment with 0 Mark-up". 2015

95 Phone World. "Easypaisa offers mobile phones on instalment". 2014

96 Hand in Hand is an NGO focused on developing Self Help Groups (SHG) for beneficiaries to start, run and grow their own income generating activities into sustainable enterprises that create jobs. Hand in Hand customers are women, which Vodafone has been targeting for the "Smart Snehidhi" program.

19	<p>Tameer Bank, Telenor & Government of Punjab⁹⁷</p> <p>Countries: Pakistan</p> <p>Primary Actors: MFI, MNO & Government</p>	<p>In 2016, Tameer Bank and the Government of Punjab partnered to launch a pilot for ~\$11.4 million in interest-free loans to 485,000 farmers for smartphones through Easypaisa – the country’s mobile banking channel. Tameer Bank raised ~\$3 million in asset financing for 35,000 farmers. The Punjab Government has contributed a total share of ~\$8million for 450,000 farmers.⁹⁸ In partnership with the Telenor Group, government will distribute smartphones to farmers.⁹⁹</p>	<p>Commercial benefit: Phase 1 of the pilot will be launching soon, targeting approximately 120,000 farmers.</p> <p>Target Group: Rural farmers</p>
ALTERNATIVE APPROACHES TO ASSET FINANCING AND/OR CREDIT ASSESSMENTS			
20	<p>Afzal Electronics</p> <p>Country: Pakistan</p> <p>Primary Actor: Retailer</p>	<p>Afzal Electronics in Pakistan has an instalment plan for low cost smartphones. There are different plans, ranging from 6 months to 1 year. Customers must give a postdated full payment cheque to the company. A stamp paper of ~\$3 must be signed by the customer. Verification teams will visit the customer’s address or office, and deliver the device within 24-48 hours.¹⁰⁰</p>	<p>Commercial benefit: Afzal can retail its customers through these instalment plans and has more time to sell additional retail electronics to their clients.</p> <p>Target Group: Working Poor and Middle-income</p>
21	<p>Fenix International</p> <p>Country: Uganda</p> <p>Primary Actors: MNO & Other</p>	<p>In 2015, Fenix International partnered with MTN Uganda, to provide ‘free’ smartphones to individuals who purchased the solar company’s power systems. The solar panels, cost ~\$153 to \$264 financed over 18 to 21 months, at ~\$6,70 per month with a ~\$14 deposit.¹⁰¹ MTN provided smartphones to these customers, to incentivise them to utilise their mobile money platform for their transactions (including those to Fenix).</p>	<p>Commercial benefit: Currently over 50,000 subscriber’s access solar power using Solar Power Systems accessed affordably through MTN Mobile Money payments in partnership with companies such as Fenix International.¹⁰² Fenix claims their energy products help increase ARPU as well as mobile money revenues.</p> <p>Target Group: Working Poor (Rural / Peri-urban)</p>
	<p>M-Kopa</p> <p>Countries: Tanzania, Uganda & Kenya</p> <p>Primary Actors: MNO & Other</p>	<p>Continuing with their partnership with Safaricom, the solar energy company M-Kopa began offering smartphone loans in 2016 for consumers who had completed their payment plans on their solar home systems. Customers continue the same ~\$0,50 repayment amount, with a ~\$30 deposit for the smartphone due upfront. Upon collection of the handset from an M-Kopa Shop, the customer meter account is immediately credited with the value of the product and this is shown on the control panel of their solar home system. Once they complete the payment plan, the product is theirs to own. Customers are covered by guarantees and have access to M-Kopa’s 24/7 customer call centre.¹⁰³</p>	<p>Commercial benefit: this project is still new. Through their solar home systems, the company has reached over 300,000 homes in East Africa.¹⁰⁴ This additional product coupled with M-Kopa’s established customer base can increase their loan book, whilst retaining their customer base.</p> <p>Target Group: Rural Working Poor</p>

97 Telenor Group and Tameer Bank have also partnered in Pakistan to provide financing for internet-enabled handsets

98 Techlist. “Tameer Bank and Punjab Govt Join Hands to Expedite Digital Farming”. 2016

99 Phone World. “Tameer Bank Partners with Punjab Govt to Give Interest Free Loans to Farmers”. 2016

100 Flainmatts. “Instalment Plan for Mobile Phones”. 2015

101 MTN Uganda. “MTN and Fenix partner to offer free Internet-enabled phones on purchase of ultra-affordable Ready Pay Solar Power”. 2015

22	<p>M-Shwari</p> <p>Country: Kenya</p> <p>Primary Actors: MNO & Other</p>	<p>In 2015, a partnership between Safaricom and M-Shwari¹⁰⁵ enabled access to 6-month smartphone loans for M-Shwari customers based on their savings deposit history. This loan is subject to a facility fee of 15.6% (but is free from any interest charges) and a 30% deposit to the value of the purchase price of the smartphone due upfront. The most expensive smartphone offered through this platform in 2014 cost ~\$480. Handsets were locked-in to the Safaricom network; and should debtors default Safaricom could disconnect their services, and/or charge default penalty fees.</p>	<p>Commercial benefit: Access to smartphones rose drastically and Safaricom managed to grow the number of smartphones in their network to 3,1 million in 2014 up from just over 400,000 in 2012.¹⁰⁶ In addition to increased smartphone access, Safaricom made ~\$90,3 million on mobile data up from ~\$60,6 billion in 2013.¹⁰⁷</p> <p>Target Group: Working Poor and Middle-income</p>
23	<p>Mobisol</p> <p>Countries: Rwanda (with plans to expand to Tanzania and Kenya)</p> <p>Primary Actors: MNO & Other</p>	<p>Mobisol has launched a pilot project in partnership with MTN to provide smartphones for customers in rural areas who have been approved for Mobisol solar home system loans. Customers can buy a Tecno W2 handset from Mobisol at a retail price of ~\$60 (a 25% discount from the market price) and pay it off over 12 month at a fixed monthly repayment amount.</p>	<p>Commercial benefit: Increasing their offering to include smartphones allows Mobisol to retain their customers and also leverage mobile money platforms to facilitate payments. MTN on the other hand benefits from increased customer acquisition, brand affinity and increased ARPU. Further, they can increase access to low-income populations who otherwise would not have had access to credit.</p> <p>Target Group: Rural / Working Poor</p>
24	<p>Paymax</p> <p>Country: China</p> <p>Primary Actor: Retailers & Other</p>	<p>Paymax is online application that uses non-traditional credit assessments (e.g. person’s mobile phone number and chat access codes to root out «credit card junkies», monitoring the keystrokes of potential customers while they are using the Paymax website) to provide smartphone loans for blue collar workers. The loan system is also available at 20,000 offline retailers across 157 Chinese cities, making them accessible to rural communities across China.¹⁰⁸ A typical loan for a Paymax customer is about \$300 for a mobile phone or tablet. The loan is paid of over 12-24 months (with 3% a month interest plus a 1% fee).¹⁰⁹ Paymax makes money from a service fee as well as the flat-rate interest on the loan.</p>	<p>Commercial benefit: Access to alternative data to build a credit history for 700,000 consumers. These 700,000 unique customers have borrowed \$15 million thus far.¹¹⁰</p> <p>Target Group: Working Poor and Middle-income (Peri-Urban/ Rural)</p>

102 MTN Uganda. “MTN and Fenix partner to offer free Internet-enabled phones on purchase of ultra-affordable Ready Pay Solar Power”. 2015

103 M-KOPA. “M-Kopa branches out with practical projects”. 2016

104 M-KOPA. “M-Kopa branches out with practical projects”. 2016

105 Read article on the difference between M-Shwari and M-Pesa “here”

106 Business Daily Africa. “M-Shwari offers 6-month loans to smartphone buyers”. 2015

107 Business Daily Africa. “M-Shwari offers 6-month loans to smartphone buyers”. 2015

108 Tech in Asia. “Chinese start up gets funding to help low-wage workers buy iPhones”. 2016

109 LA Times. “Chinese firm makes loans for smartphones”. 2015

110 Tech in Asia. “Chinese start up gets funding to help low-wage workers buy iPhones”. 2016

Archetype III: Third party payment





	COMPANY & INITIATIVE	DESCRIPTION	INDICATORS OF IMPACT
PRIVATE SECTOR LED INITIATIVES			
25	<p>SocialEco</p> <p>Countries: emerging markets</p> <p>Primary Actors: TBC</p>	<p>Social Eco's \$1 smartphone initiative utilises a pre-loaded advertising application on Social Eco smartphones to generate funding to subsidise the cost of a handset for low-income end users. This allows low-income consumers to purchase a smartphone for \$1. The group appears to have expanded to offer a \$10 phone as well. SocialEco has included an option for donors to get involved by either purchasing a smartphone for a low-income end user, and/or supporting a beneficiary by directly sponsoring the monthly broadband connectivity for between \$5 and \$10 per month.¹¹¹</p>	<p>Commercial benefit: This model has the potential to increase access to individuals who earn less than \$2 a day. MNO partners could benefit from additional data revenues, beyond the earned data to repay the \$49 subsidy.</p> <p>Target Group: Low-income</p>
NGO-LED INITIATIVES			
26	<p>CELIAF</p> <p>Country: Chad</p> <p>Primary Actor: Government</p>	<p>CELIAF¹¹² are partnering in an initiative to increase smartphone access amongst women. CELIAF will lead negotiation with the Ministère Des Femmes in Chad to remove taxes on mobile phones, specifically targeting the women on their network. Following the removal of VAT Tigo Chad will subsidise 20,000 smartphones over 3 years for Chadian women, with pre-set features (Tigo Paare, beauty app, health app etc).¹¹³</p>	<p>Increased access for women: the NGO has an established customer base of 16,000 female micro-entrepreneurs from 700 organisations that can benefit from this intervention.¹¹⁴</p> <p>Target Group: Rural/Urban Poor</p>
27	<p>Mozilla Foundation</p> <p>County: Global (15 markets)</p> <p>Primary Actor: NGO, Device Manufacturer</p>	<p>In 2014, Mozilla introduced a \$25 smartphone with a Firefox OS to incentivise feature phone users to migrate to smartphones. The phone first featured in: Hungary, Venezuela, Colombia, Brazil, and Greece and then later into 10 other emerging markets.¹¹⁵ The initiative was however suspended in 2015, as it did not gain enough traction.</p>	<p>Commercial benefit: The model had the potential to increase ARPU for MNOs and smartphone penetration across emerging markets since there was a minimal price differential between accessing a feature phone versus a smartphone at this price point.</p> <p>Target Group: Working Poor</p>

111. Social Eco, "Social Eco World", 2016

112. CELIAF is a network of over 450 non-governmental organisations dedicated to promoting women's rights in Chad

113. Stakeholder interviews

114. CELIAF. "Cellule de Liaison et d'Information des Associations Féminines". 2017

GOVERNMENT-LED INITIATIVES			
28	<p>Argentina</p>  <p>Country: Argentina</p> <p>Primary Actor: Government</p>	<p>In 2016, Argentina announced the launch of a national programme "Plan Mobile Internet Access" to provide asset financing for eight million individuals to move from 2G feature phones to 4G enabled smartphones¹¹⁶ costing -\$138. Individuals could purchase these smartphones on a 12-month instalment plan provided by the government.¹¹⁷</p>	<p>Economic growth through increased access for marginalised groups: moving citizens online makes a country more globally competitive by allowing them to take advantage of opportunities in a market that is increasingly interconnected and also facilitates the generation of local and global business opportunities.</p> <p>Target Group: Rural/Urban Poor</p>
29	<p>Colombia</p>  <p>Country: Colombia</p> <p>Primary Actors: Government</p>	<p>In 2016, the Colombian Government allocated around \$90 million over three years to the "Internet Móvil Social para la Gente" policy to increase mobile connectivity. A component of this policy focuses on an initiative to offer subsidies to low-income citizens for mobile data plans and smartphones while also granting free access during off-peak late-night hours and to services offered by certain government websites.¹¹⁸</p>	<p>Economic growth through increased access for marginalised groups: moving citizens online makes a country more globally competitive by allowing them to take advantage of opportunities in a market that is increasingly interconnected and also facilitates the generation of local and global business opportunities.</p> <p>Target group: Rural/ Urban Poor</p>
30	<p>Malaysia</p>  <p>Country: Malaysia</p> <p>Primary Actors: MNO & Government</p>	<p>In 2013, youth (aged 21-30) could apply for a -\$65 rebate to purchase selected 3G smartphones costing up to -\$165 under the Government Youth Communications Package.^{119,120} The scheme was on a first-come-first served basis and would be for the first 1.5 million eligible youths who may claim their smartphone while stocks lasted. Participating MNOs¹²¹ and mobile virtual network operators offered up to 10 or 12 handset models under the initiative via their dealership outlets.</p>	<p>Commercial Benefit: Out of the over 440,000 youths who had registered for the RM200 rebate, nearly 60,000 had bought new smartphones. The initiative was so successful that in February 2013, the Malaysian government extended the rebate period from one month to three months.¹²²</p> <p>Target Group: Rural/Urban Youth Poor</p>
31	<p>Pakistan Government</p>  <p>Country: Pakistan</p> <p>Primary Actors: Government</p>	<p>The Ministry of ICT is using their Universal Service Funds (USF) to provide smartphones to 30,000 low-income women. The smartphone is preloaded with -\$1,90 credit and is used to receive income support from the Government (m-money and e-gov). The government also provides digital literacy training to recipients of the programme.</p>	<p>Increased access for marginalised groups: moving citizens online enables the government to provide access to e-government services more efficiently.</p> <p>Target group: Working Poor Women</p>

115. Shankland, S. "With Firefox OS, Mozilla begins the \$25 smartphone push". 2014

116. The smartphones on offer included the LG Leon, Samsung J1 Ace, Huawei Y320, BGH Joy A20, LG K4, Samsung Ace VE, Microsoft Lumia 640, Noblex N453 and Hyundai Ultra Dream. BIGBANGNEWS. "Los 10 celulares 4G que se podrán comprar a \$ 2.200 y 12 cuotas". 2016

117. La Nacion. "Mauricio Macri Lanzó un plan para comprar celulares con 4G en 12 cuotas por 2.200 pesos". 2016

118. FINANCE COLOMBIA. "New Study Ranks Colombia First in Developing World in Providing Affordable Internet Access to Citizens". 2017

119. SKDMM. "Registration for 3G smartphone rebate start from next Tuesday -MCMC". 2012

120. The Next Web. "How the Malaysian government aims to increase smartphone usage among youngsters in 2013". 2013

121. There is very little publicly available information on which Malaysian mobile operators provided devices under the government's Youth Communications Package.

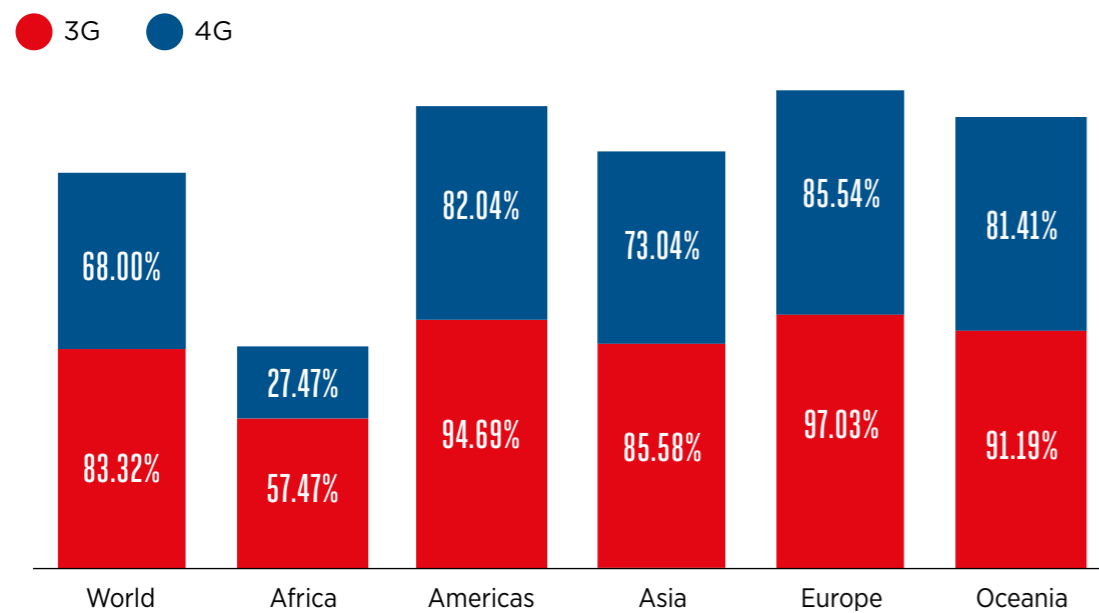
122. SKDMM. "RM200 Smartphone Rebate Period Extended To 3 Months". 2013

B. Additional insights – barriers that influence access to the internet and smartphones

Device cost is an important but not the sole barrier related to affordability. An individual's ability to afford internet access is determined by:

- **Finance** – Income, access to financial resources, and financial independence determine how much an individual can spend on connectivity
 - **Device and associated costs** – refers to the upfront cost to purchase a smartphone as well as the ongoing costs related to maintaining the device, e.g. having access to electricity to charge the device¹²³
 - **Cost of Data** – once an individual has access to an internet-enabled handset and basic mobile services, they need to be able to afford data to access the internet. This is a function of both the infrastructure used to transmit varying bandwidths and the pricing determined by providers.
 - **Value perception of the internet/smartphone** – whether an individual believes that either the internet/smartphone can add value to their personal and professional lives (i.e., both perceptions of the internet's value addition as well as perceptions of their own ability to fully utilise an internet-enabled phone after purchase).
- In addition to affordability, access to the internet, and smartphones, may not spread as quickly to developing country populations for several other reasons including:**
- **Availability:** Availability of internet services is dependent on individuals living and working within range of the physical infrastructure and access to a device that enables them to connect to the Internet. Mobile online coverage is the main means of internet connectivity for most people; with 3G providing coverage for 83% of people globally.¹²⁴

Figure 28 Percentage of the population who live within range of a mobile network (2017)¹²⁵



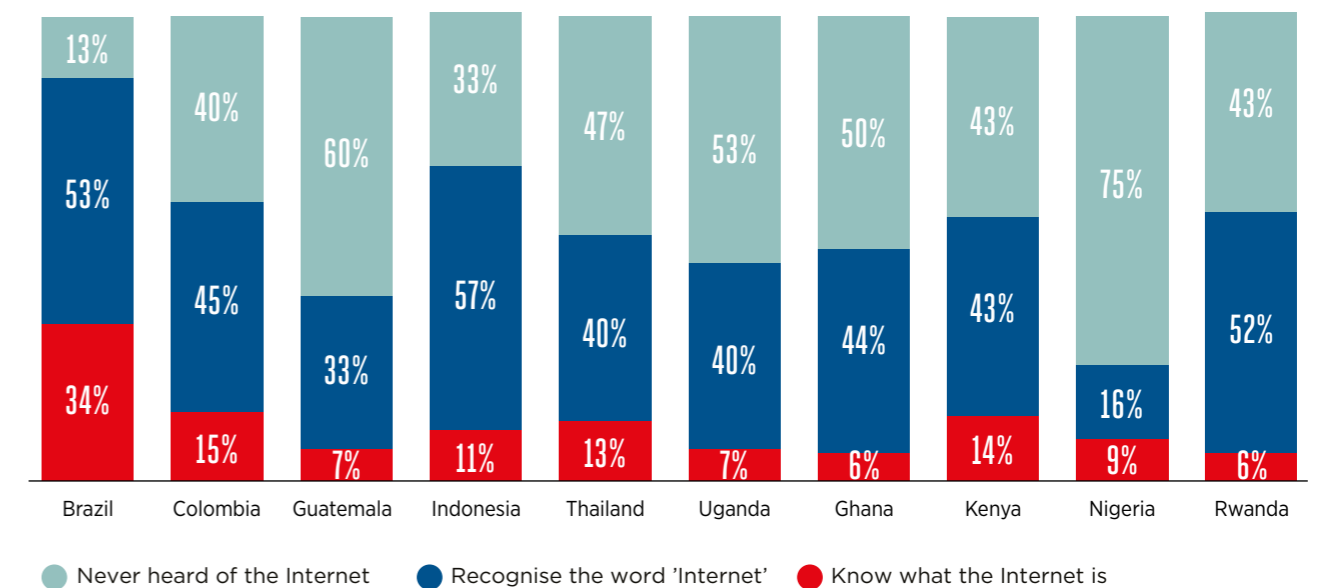
123. The cost of charging is especially high (i.e., 33% of phone usage costs) in areas that are off the electricity grid. For example, 358 million people in Sub-Saharan Africa are covered by mobile networks but not the electricity grid.

124. WEF. "Internet for All: A Framework for accelerating internet access and adoption". 2016

125. GSMA Intelligence. 2017

- **Relevance:** Internet content and services needs to be useful, relatable, and accessible to people for them to recognise its importance and value. A large part of this depends on content and services being available in the language people speak. The World Bank estimates that at least 80% of all online content is in one of ten languages: English, Chinese, Spanish, Japanese, Portuguese, German, Arabic, French, Russian, and Korean.¹²⁶ Approximately three billion people around the world speak one of those languages as their first language, but over 50% of online content is written in English, which only 21% of the world understands. Part of the challenge is that there is almost twice the language diversity in the developing world, which accounts for the majority of today's offline population.
- **Readiness:** Readiness to use the internet is a function of language and digital skills to find and interact with content; awareness and understanding of the internet and the benefits that come with being online and the cultural and social acceptance. GSMA's Digital Literacy report for example, argued that most mobile-only internet users and non-users they surveyed, did not have a full appreciation for the depth and breadth of online content, but rather viewed the internet through the lens of one or two applications that they happened to be most familiar with.¹²⁸ Lack of awareness is still a major reason for people not connecting to the internet, as shown in Figure 29 below.

Figure 29 Awareness and understanding of the internet among non-users (2015, Percentage)¹²⁹



- **Safety:** Fear of handset theft is also a concern among both men and women in many countries which can be a significant barrier to them owning or using a phone. This can be a more significant concern for more expensive phones, such as smart phones, where people can feel there is an increased vulnerability to theft.

126. World Bank. "Internet Access, Yes, But in my Mother Tongue Language!". 2014

127. Orcutt, M. "The Online Language Barrier". 2015

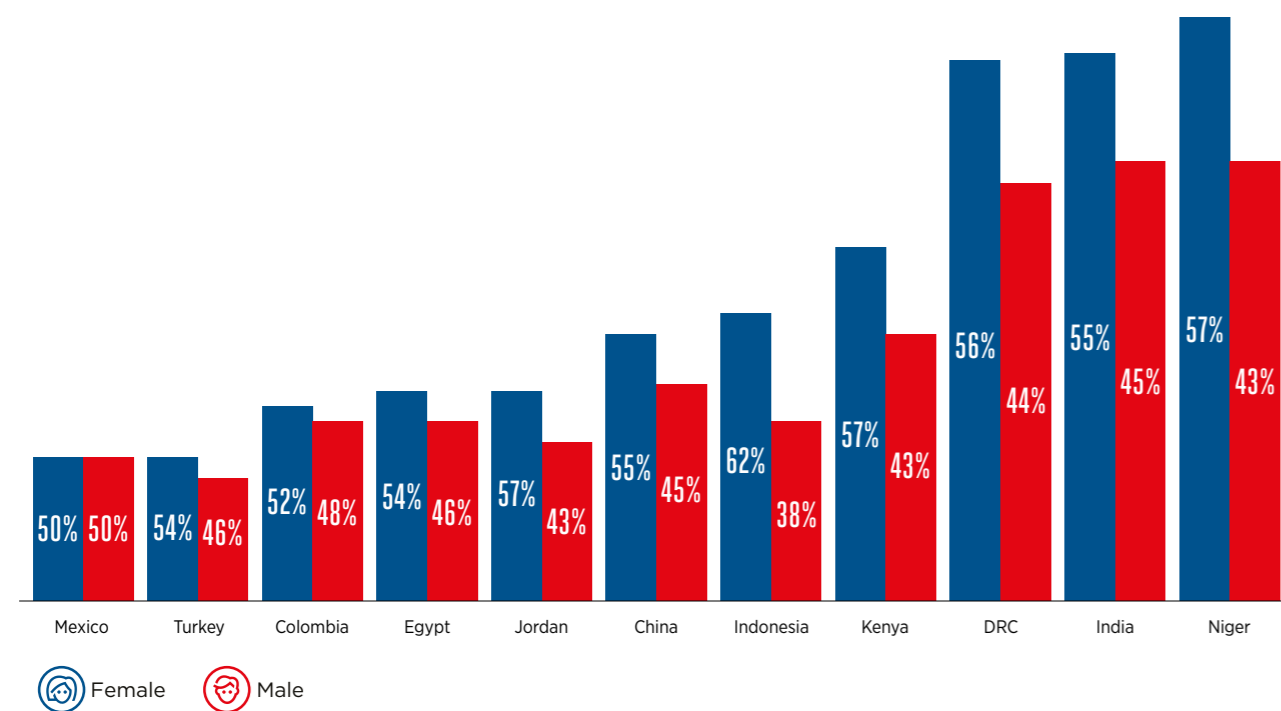
128. GSMA. "Accelerating Digital Literacy: Empowering women to use the mobile internet". 2015

129. Facebook. "State of Connectivity 2015". 2015

Further, girls and women remain disproportionately excluded. Social norms and disparities between men and women in terms of education and income influence women's access to and use of mobile technology, and often contribute to women experiencing barriers to mobile phone ownership and use more acutely than men. Almost two-thirds of illiterate adults in the world are female. In a 2014 Google survey of 5000 women in the Asia Pacific, 30% of women who had not used the internet said it was because they "don't know how to do the things they

would want to do online". Approximately, 35% said it was because they "doubt it would be of use to them", pointing to a lack of awareness of the internet and its associated benefits. GSMAs Digital Literacy report highlighted that technical literacy and confidence was a key barrier to mobile phone ownership and use for women and men, and a major concern for women, who are typically less educated, less confident with technology, and have more basic handsets.

Figure 30
A higher percentage of women report needing assistance to use mobile internet (2015, Percentage)¹³⁰



C. Research Methodology

This research was carried out in two phases. In the first phase, the team undertook desk research and conducted a selection of interviews with sector experts, MNO representatives, research entities, and NGOs with experience in driving access to smartphones. The overarching aim was to develop an understanding of the landscape, key actors, debates and barriers to consumer's affordable access to smartphones.

130. GSMA. "Bridging the Gender Gap: Mobile access and usage in low-and-middle-income countries". 2015. Shows the percentage of mobile phone owners who said they reported they needed help or would need help to "use the internet on a mobile phone". N ranges from 250 to 779 for females and 110 to 219 for males.

The objectives of this phase were to:

- Understand the general trends, and barriers related to expanding access to smartphones in emerging economies
- Identify and better understand business models / initiatives that have been implemented to increase access to smartphones

Thereafter four initiatives were selected for further investigation to build in-depth case studies using the following criteria:

- **Demonstration or potential for a sustainable business case:** The model should add value for users and result in commercial benefit, for example by driving customer acquisition, reducing churn and strengthening brand affinity or awareness.
- **Innovation:** The model should offer new and relevant insights, for example by driving creative partnerships, new ways to leverage data, or new distribution approaches.
- **Scalability and replication:** Where possible the model should demonstrate potential for scalability and replicability to other similar contexts and emerging markets.

In the second phase, the team undertook field work in Kenya, India and Rwanda to investigate the effectiveness of the initiatives in driving access to affordable smartphones and to assess the impact on consumers, and women in particular. The fieldwork included a mix of stakeholder interviews with the organisations and entities leading the initiatives as well as focus group discussions and in-depth interviews with end-users. For the end-user interviews, the team used human centred design (HCD) techniques to:

- Build an understanding of the impact the smartphone has had on an individual
- Compare their user experience on the smartphone vs. the previous device
- Gain an understanding of how the end-user interacts with the broader ecosystem through their smartphone
- Work with the end-user to interrogate the model and identify areas for improvement

Case studies and recommendations were developed based on the insights gained from fieldwork and stakeholder interviews.

Interviews conducted

Stakeholder / Expert interviews	Completed 18 stakeholder interviews with mobile sector stakeholders, MNOs, M4D experts, academia, NGOs, sharing economy experts, creative distributors
Copia Case	Completed 13 in-depth end user interviews (8 women and 5 men), one mini focus group discussion of 3 men and 9 stakeholder interviews
Smart Snehidi Case	Complete 10 in-depth end user interviews, two focus group discussions of 6 women each and 11 stakeholder interviews
Sonata case study	Completed 8 in-depth end user interviews ¹³¹ and 1 stakeholder interview
Mobisol Case	Completed 7 in-depth end user interviews (5 customers and 2 potential customers), one mini focus group discussion of 5 men (4 customers and 1 potential customer) and 10 stakeholder interviews

Limitations of the research

Primary research was only undertaken in three markets - India, Kenya and Rwanda, and conversations were limited to end-users involved in three specific programmes / initiatives. These findings and insights were extrapolated to build an understanding of low and middle-income consumers more broadly.

131. These end-user interviews were conducted by GSMA and did not use HCD techniques

D. Definitions

Feature phone	A feature phone is a mobile phone that can access the internet and store and play music but lacks the advanced functionality of a smartphone, including the ability to support most applications.
Higher-end branded smartphones	Higher-end branded smartphones are normally manufactured and backed by an established multi-national company, e.g. Apple, Samsung, LG, Huawei, Sony to name a few.
Smartphone	A typical smartphone has a high-resolution touch screen display, Wi-Fi connectivity, web browsing capabilities, and the ability to accept sophisticated applications. These devices run on mobile operating systems, such as Android, Symbian, iOS, BlackBerry OS and Windows Mobile.

E. List of acronyms

ARPU	Average Revenue Per User	MTN	Mobile Telephone Network
ARS	Argentine Peso	MVNO	Mobile Virtual Network Operator
BoP	Bottom of Pyramid	NFC	Near-field communication
BYOD	Bring your own device	NGO	Non-Governmental Organisation
CELIAF	Cellule de Liaison et d'Information des Associations Féminines	OLX	OnLineXchange
FNB	First National Bank	PKR	Pakistan Rupee
FSP	Financial Service Provider	PPP	Public Private Partnerships
GDP	Gross Domestic Product	RWF	Rwandan Franc
HCD	Human centered design	SACCO	Savings and Credit Co-operative Organisation
ICT	Information and Communications Technology	SME	Small and Medium Enterprises
INR	Indian Rupee	SKU	Stock Keeping Units
JIT	Just in Time	UN	United Nations
JLG	Joint Liability Group	USAF	Universal Service and Access Fund
KSH	Kenyan Shilling	USSD	Unstructured Supplementary Service Data
LATAM	Latin America	VAT	Value Added Tax
MENA	Middle East and North Africa	ZAR	South African Rand
MFI	Micro – Finance Institution	\$	United States Dollar
MNO	Mobile Network Operator		

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