

HELLOSOLAR MARCH 2020

LEARNING REPORT

1. INTRODUCTION

HelloSolar (HS) is a solar energy solutions distributor in Ethiopia, operating on a Pay-as-you-go model, using HelloCash mobile money service provider as the payment solution. HS was born in 2018 through the initiative of the founders of BTS Technology Solutions PLC (BTS), with support from Shell Foundation, DFID and USAID.

HS was founded on the belief that accelerating access to smart and renewable energy solutions is a major leap forward in developing an inclusive and sustainable world. **HS' vision is to facilitate clean and smart solar energy access for the rural populations of Ethiopia by tackling two main restrictions to the penetration of solar energy in rural Ethiopia: high upfront costs and limited last mile distribution.** The value proposition of HelloSolar rests on 3 pillars: the provision of quality and modern technology, a strong aftersales and technical support network, and an affordable and flexible repayment plan.

POWER YOUR DAYS, BRIGHTEN YOUR NIGHTS!

Get your system now, pay it off later.



HelloSolar



TWO YEARS WARRANTY

Our systems are carefully selected and tested for their outstanding quality. To demonstrate that, they come with a two year warranty.



CONTINUOUS CUSTOMER SERVICE

Technical support agents and a call centre available at all times and in different languages to answer all your questions.



PAY AS YOU GO

You can pay in small instalments over a long period of time. After the full payment, the system belongs entirely to you.



EASY PAYMENT VIA HELLOCASH

You can pay easily and safely for your system, from your cellphone, through your account or an agent.



Background

The motivation behind piloting HS was to first test the feasibility of a solar products distribution company using a Pay-as-you-Go (PayGo) business model, in the Ethiopian context specifically. The concept of PayGo solar had been explored relatively in depth in other countries. **In the first half of 2019, the global sales of solar lighting products, on a PayGo model, reached 1 million units, accounting for 24% of solar lighting products sales worldwide. (GOGLA, 2019)**. However, the Ethiopian market is characterized by a few factors that have limited the success of such a model thus far.

Telecommunications landscape

In Ethiopia, the telecommunication landscape is different from most African markets. Up to today, the only Mobile Network Operator (MNO) is a state-owned monopoly. Furthermore, the law requires that mobile money follows a bank-led model, which implies that traditional financial institutions, such as banks and MFIs, are to hold the money in any mobile banking transaction. In other words, a Mobile Network Operator (MNO) cannot provide financial services as such as it can only be done by financial institutions. Consequently, all mobile money wallets must be linked to an account with a traditional financial institution. This requirement brings in systems integration issues and a heavier load of operations as more parties and platforms need to be integrated together. These issues together with the early adaption stage of the technology and market constraints such as mobile network coverage have restricted the successful implementation of mobile money services in Ethiopia for a while. The adoption of mobile money services in rural Ethiopia is still at a very low level with a mobile penetration rate of 35% in 2017, compared to the African average of 73%. Only 0.3% of adults reported owning a mobile money account in that same year (World Bank, 2018).

Regulatory Landscape

Ethiopia has experienced a chronic shortage of foreign currencies. Businesses necessitating product imports face issues because of the shortage and the surrounding financial regulations. For instance, a letter of credit is an obligation for imports; however, it can take months to a year for the foreign currency to be allocated to the importer, with no guarantee that the requested amount will be provided. This shortage in foreign currency also makes it tedious for return on investment to be reallocated to foreign investors. This issue together with conservative regulations around foreign investment has made Ethiopia a complex business environment. These factors have contributed to Ethiopia's reputation as a high-risk business environment (the country is ranked number 159 on the World Bank's Doing Business Index). This reputation has discouraged many conventional investors from exploring the country which means that special investment schemes need to be established to help navigate complex but extremely promising market.

Climate change has driven clean energy access to become a priority in government, donor and impact investment contexts. Meanwhile Ethiopia's new governmental structure and reforms brought in by the new Prime Minister bode well to improve the feasibility of the off-grid sector. As PAYGO has been a primary model for accelerating off-grid coverage, the looming question has been how to scale PAYGO in Ethiopia with such limited mobile money coverage.

BTS operates a mobile payment platform HelloCash that allows financial institutions to provide mobile money services to their customers- this linkage was hypothesized as a potential accelerant to HS solar product sales. HelloCash, the mobile money product of BTS, is virtually the first mobile money services provider in Ethiopia and thus was well-positioned to address the access to energy/mobile payment synergy. With funding from USAID, Shell Foundation and DFID, BTS launched HelloSolar as a 2018 pilot to test the feasibility of the PayGo SHS distribution through a mobile money service



provider by partnering with local financial institutions.

Even though BTS and HS are two strictly separated entities, the strong connection between the two companies allowed HS to capitalize on its relationship with BTS and its partners in Ethiopia. The pilot was launched first in the Somali and Amhara regions, leveraging the financial infrastructure and relationships of the BTS HelloCash mobile payment platform. 25% of the customer base of HelloCash is in the Somali region with more than 250,000 customers, which led to the choice of the Somali region as the first sales point of HS in Ethiopia.

2. BUSINESS CASE FOR ESTABLISHING A NEW PAYG SOLAR BUSINESS LINE WITHIN A MOBILE MONEY PROVIDER

In principle, the creation of a PayGo solar energy company within an established mobile money provider could mitigate many issues faced by most PayGo solar companies entering Ethiopia and improve strategic positioning. This strategic partnership with HelloSolar would allow the creation of more HelloCash customers and agents, strengthening their presence in Ethiopia. From the beginning, HS intended on creating sales points in areas where HelloCash does not have a strong presence (e.g. northern Ethiopia). Some of the expected benefits included:

- ***Facilitation of payments:***

Collections have proven to be critical to solvency but also complex and cost-intensive in the PayGo sector. Creating the PayGo company within the mobile money provider allows for quick integration of the payment solution with the customer management platform.

- ***Brand visibility:***

BTS has positioned itself as one of the oldest and strongest mobile money solution providers in Ethiopia, partnering with the main Somali MFI in Ethiopia and 5 major banks. The company has also successfully partnered with other independent companies, providing them with a payment solution for different types of products and services (e.g. HelloMarket, HelloDoctor). By co-branding with HelloCash, HS intended to leverage the reputation of BTS as a reliable and efficient service provider to prospective customers.

- ***Operational efficiency:***

Based on BTS' longstanding operation in Ethiopia, the creation of HS allowed the start-up to leverage significant historical experience of distribution in rural Ethiopia. BTS, together with the partner financial institutions operate through a nationwide network of 7000+ agents, nationwide. The established relationship of BTS and the Ethiopian National Bank and other governmental institutions was expected to leapfrog the setting up of the business structure.

When planning for scale-up, HS predicted that more than half the budget would be spent on retaining and expending the team, both on the field and in the headquarters. Another 30% of the budget was allocated to the procurement of SHSs. Together team expansion and products procurement accounted for 85% of the predicted costs. 5% of the budget was apportioned to incentives and margins destined to the field agents and staff, in order to keep a motivated and efficient sales and aftersales team on the ground. 3% of the budget was expected to cover travels expenses, mainly within Ethiopia, to make sure HS representatives in the rural areas and the managing team in the HQ, cultivate a close relationship, by simply having the management physically present on the field, as often as possible. Marketing and aftersales services were expected to cover only 4% of the total budget. Commercial marketing operations were limited as the stock was rationed and HS observed a high demand even with a very limited market spend.



3. FROM THEORY TO PRACTICE

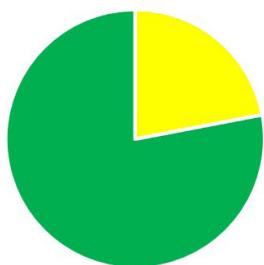
HS Implementation

As of January 2020, HS has gone from a total of 500 customers to more than 5000 within 2019. HS now operates from 37 sales points across Ethiopia, in 5 regions: namely Somali, Amhara, Gambella, Oromia and Southern Nations, Nationalities and People's Region (SNNPR). 2 more regions are also on the way to enter the HS portfolio as well as new products focusing on SMEs and farming needs. The testing of solar pumps have been completed and first sales are currently being handled. A key point to the success of HelloSolar was the creation of a managing body with deep knowledge on distribution in rural Ethiopia, import regulations, financing and customer care.

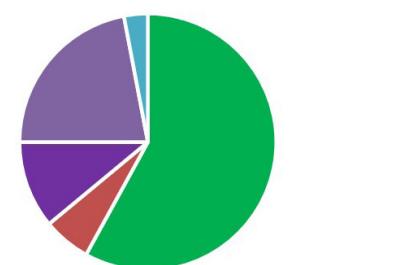
Many challenges stemming from the regulatory environment and the capital-intensive nature of the business itself were faced within the year. However, those challenges were overcome or mitigated successfully in order to scale the business. Through the different cooperation channels created, HS was able to distribute its products with limited defaulting risks given the affiliation of the clients to the organizations cooperating with HS. A constant check-up with the clients and field agents and staff allowed for quick adaptation of the model and expectations.

Who are HelloSolar customers?

Main customer gender

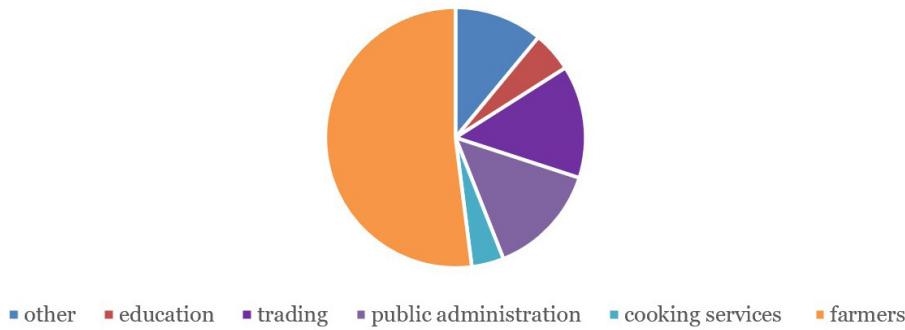


HS customer Region



The average HS customer is a middle-age crop farmer in the Amhara region. (only 15% of the farmers are animal farmers). From the above graph, the majority of HS customers are ostensibly male. However, the primarily beneficiaries of the HS services (people living at the location where the SHS is used) were actually skewed towards majority female, with a ratio of 3.5 female:2.5 male, considering an average household size of 6 people. The fact that the main customer is typically male has to do with household finances and purchasing decisions in the family/business, which is mainly handled by men. In terms of gender equity

HS customer Occupation



in the workforce, HelloSolar currently employs a higher ratio of male field agents but the call centre based in the HQ only employs female staff.

Through an independent study from 60Decibels, **HS has earned a Net Promoter Score (NPS) of 59 (score described as very good). The NPS shows the likeness that a customer would recommend the company to a community member.** The same study found that 72% of HS customers never owned a solar product prior to HS, and 92% of the surveyed customers reported not being able to find an alternative service like HS, offering warranty and financing. This shows the level of novelty

that HelloSolar is bringing to the table in terms of clean energy solutions in the areas of operation. Another independent report from Future-Fit showed the far-reaching impact of HS in terms of the Sustainable Development Goals, namely No Poverty, Industry, Innovation, and Infrastructure and Affordable and Clean Energy.

HS is finalizing the setup of an assembly plant in Addis Ababa. The assembly plant is predicted to start operations in March 2020. The assembly plant aims at facilitating distribution from a regulatory and operational perspective. The assembly plant will also accelerate procurement and further personalize the proposed products and services to the Ethiopian context.

4. KEY CHALLENGES AND LEARNING

Market Learnings

Some of the most critical challenges are linked to broader market factors, including macro-economy, regulations and political risks,

- ***ForEx Risks: Aim to Pre-Empt Foreign Exchange Risks Through Company Structure***

The notorious Ex issue in Ethiopia has left many wondering about the viability of a PayGo business in Ethiopia. The ForEx issue complicates funding and company setups but the great potential of Ethiopia together with the social urgency for renewable electrification makes the risk worth it. Through a local and knowledgeable management team, HS was able to establish a quick line of communication with the National Bank and position themselves as key players in the sector. HS has been able to navigate the ForEx challenge so far by playing on the established links with the financial institutions and setting up a company structure with the ForEx issue as a main risk mitigation point. The knowledge of BTS on the question of the ForEx and the regulations surrounding it allowed HS to gain rapid and practical knowledge on the question as the company was being created. A holding company offshore, legally owning the local company, and sold in foreign currencies, was one mitigation point for the ForEx issue. Another mitigation point that HelloSolar is currently exploring is international remittance whereby the HS services can be purchased by the diaspora, or for charity, using ForEx. A successful test of the international remittance platform has already been performed.

- ***Regulatory Environment: Engage the local ecosystem to navigate policy and regulations changes:***

With the NEP, the government of Ethiopia has made energy access a top priority and many shifts are happening within the administration to facilitate the plan. Frequent modifications in policies create a level of confusion between the public and private actors in the sector. New federal policies naturally take time to deploy across regions, and more so in Ethiopia given the differences between the regional governments across the country. On the product procurement side, changes in customs regulations create delays in stock rollout. For instance, the required quality certification documents required by customs on solar products changed over the year, delaying paperwork for customs clearance. To stay on top of any possible changes, HS has created meaningful lines of communication with the local national energy bureau in each of the regions where they operate. Active participation in the newly founded Solar Association allows also for knowledge sharing between the players in solar distribution across Ethiopia.

- ***Customs and market delays: Build in agile inventory and distribution management to weather market uncertainties***

Unexpected fundraising challenges, changes in customs regulations, and the novelty of PayGo devices create customs clearance issues which cause delays and create difficulties in planning stock rollout. HS was able to mitigate this issue by limiting the daily sales number to make sure that stock



is available until the next shipment and avoid a 'dry season' where sales points are out of stock for too long, which creates agents demotivation and a reputation for unreliability on the customer side. Besides, products displacement from the HQ in Addis to the different points of sales can be altered by cultural or political events (e.g. road blocks due to cultural events or ethnical clashes), which can last days to a couple of weeks. HS was able to curb such hurdles by diversifying routes and transportation means in order to reach the points of sales in the given timeframe. Alternative transportation would mean for example that the products are flown to the sales points instead of using the road because of insecurity. These adaptation tactics can generate unexpected costs.



HelloSolar customers

Several of HS' most critical challenges were related to internal hiccups, many of which are common to early-stage social enterprises.

Enterprise Learnings

- **Funding gaps: Leverage partnerships for patient capital and fund raising**

The heavy capital costs associated with a typical PayGo business and the complexity of the Ethiopian market makes fundraising essential but tedious, given a perceived risk in terms of investments. This perceived risk lengthens fundraising processes, such as due diligence. Those processes can be time consuming and the need for major investments makes them repetitive. Luckily, there has been further recognition of the potential of frontier markets such as Ethiopia with organizations such as Shell Foundation. HS was able to leverage enough funds to reach the yearly sales targets by capitalizing on Shell Foundation support in terms of finance and expertise in fundraising. Some of the fundraising processes were also outsourced, leaving the management to focus on operations at the local level. Planning and possibly outsourcing fundraising require a budget that has to be considered early in the scaling-up process.

- **IT Systems: Select and align back-end technologies that harmonize with growth plans**

A PayGo solar energy business is a complex entity within which all pieces must be smoothly integrated (e.g. distribution, payment solution, customer management). The digital platforms making up the backend of such businesses must be independently and efficiently running smoothly and the integration between the platforms must be executed in a reliable way. Here, a couple of challenges have been addressed by HelloSolar. On one hand, during downtimes of the HelloCash platform, payment recollection was frozen with very little perspective for action on the HS side. These events can sometimes be independent of the payment solution provider itself (e.g. nationwide network shutdown).

If recurring, these events can disrupt a portfolio. In the year 2019, HS has seen a few such events; however, the close relationship between the payment solution provider and HS allowed for flexibility in the setting up of the integration and a quick and adapted response to the issue from BTS. On the other hand, the choice of product types also comes with the choice of a type of customer management platform. Different manufacturers have different customer management platforms integrated with their physical product. The choice of the right platform to operate the business is essential to successful operations. The available and reliable PayGo solar platforms on the market is quite limited and the pricing and flexibility of the different platforms vary greatly.

- ***Distributions: Use a hub-and-spoke model to drive cost savings and efficiencies***

HS budget was adjusted as the expansion phase of the project progressed. HS was able to work with 70% of the allocated budget for distribution through careful selection of transportation services, as well as the setup of regional HS hubs which allowed for more flexibility in the distribution processes. 25% of the allocated budget for team expansion was saved. After reworking the company structure, the company was able to achieve the set objectives with a smaller team. Some hiring functions were delayed or cancelled; some of the additional workload was taken in within the current team. The funds saved on human resources were reinvested in products procurement. By negotiating lower prices on bigger volumes, HS was able to increase stock volumes. More stock implied more sales, which increased the margin and incentives costs by 37%.

- ***After-sales: Instead of front-loading sales costs, allocate budget strategically for post-sale and collections***

New incentives and margins plans for HS sales and recollection agents were worked out at the end of the year after gathering feedback from the field agents. **The reason behind the reworking of the plan was the realization that higher incentives for collections were needed, compared to sales incentives, in order to retain a healthy portfolio.** Another area which required dramatically higher funds were aftersales. The costs per unit for warranty services were higher than anticipated and the deployment of the aftersales processes at the sales points was harder and more time consuming than expected. Lastly, front office costs for aftersales were also higher; for instance, the costs of calls and SMSs from the Call Centre to the customers were higher than expected.



HelloSolar road show

Finally, a core area for overcoming adversity and applying learning to improve the business model was customer alignment, particularly in terms of marketing and product design.

Product and customer Learnings

- ***Customer outreach: Prioritize consumer education over marketing***

The complexity of a solar product sale, on an instalment payment plan, requires from customer understanding of all aspect of their contract with HelloSolar (e.g. warranty, payment plan, product maintenance). In the Ethiopian context, HS has noticed little need for heavy advertising strategy to bring in sales number, given high energy demand in rural markets. Moreover, **56% of the HelloSolar customer base reported being convinced to use the HS services through word of mouth in the community. This number shows that providing a quality experience during and after sales also impacts sales numbers, as most of the new customers have been brought in through recommendation of older customers.** Marketing was mainly focusing on consumer education, i.e. best practices for product maintenance as well as terms of repayment and aftersales protocol. For instance, the concept of Pay-as-you-Go can quickly be lost in translation. Without proper information, customers tend to view HS as a usage-based service rather than a credit sale with a punctual repayment plan, whether the system itself is used or not. To avoid such misunderstandings, a sales language is communicated to the sales team on the field with strict guidelines on customer training during registration.

- ***Customer default risks: Institutionalize customer due diligence***

One critical aspect of a PayGo business is the default rate across the business portfolio. Other companies have repeatedly shown that **a rush to sales can be proven problematic further down the line given it makes the business vulnerable to high default rates.** By partnering with local community actors, as an entry point for a prospective customer base, HS was able to mitigate the risk for default, given the partners were able to support repayments. For instance, in the Somali region, HelloSolar was able to partner with the local MFI, first to provide vetted potential customers by advertising the HS services to customers with a good credit history in the MFI, and second by supporting collection efforts with their own agents. One partner was even able to de-risk the products by providing HS with the capital to cover the landing costs of the systems upfront and pushing repayments and communication with the customers. The follow up on default accounts on the field can be costly and ineffective. **HS quickly realized that there was a need to incentivize repayments on both the customers and the agent's sides. On the agent's side, HS repeatedly reviewed the commissions of the agents to incentivize recollection. This has led the company to propose a higher rate on commission for instalment payments compared to the 1st down payment at the time of sales.** HS has also hired collections staff which exclusively handle repayments under the portfolio manager. The sales agents and staff also support recollection efforts for their own registered customers. Besides, new models are being tried out whereby MFIs vet customers applying for a financial loan based on their repayment history with a PayGo solar product. For example, Baobab+ in Senegal has been scoring customers with good repayment history on their solar product and contacting them to propose a loan based on their score. These new models show that if successful enough, PayGo services can even help provide credit history for their customer to access further services.

- ***Reaching last-mile customers: Allocate additional resources for last-mile collections:***

The concept of last mile distribution is used often in the sector of PayGo solar. However, the reality still stands that distribution of PayGo technology in the most remote areas remains limited, especially in the Ethiopian context. In order to truly reach the so-called bottom of the pyramid, one must keep in mind the possible scarcity of communication technology and network. In a business where a contract is formed with the customer, lasting months to years, localisation and communication lines



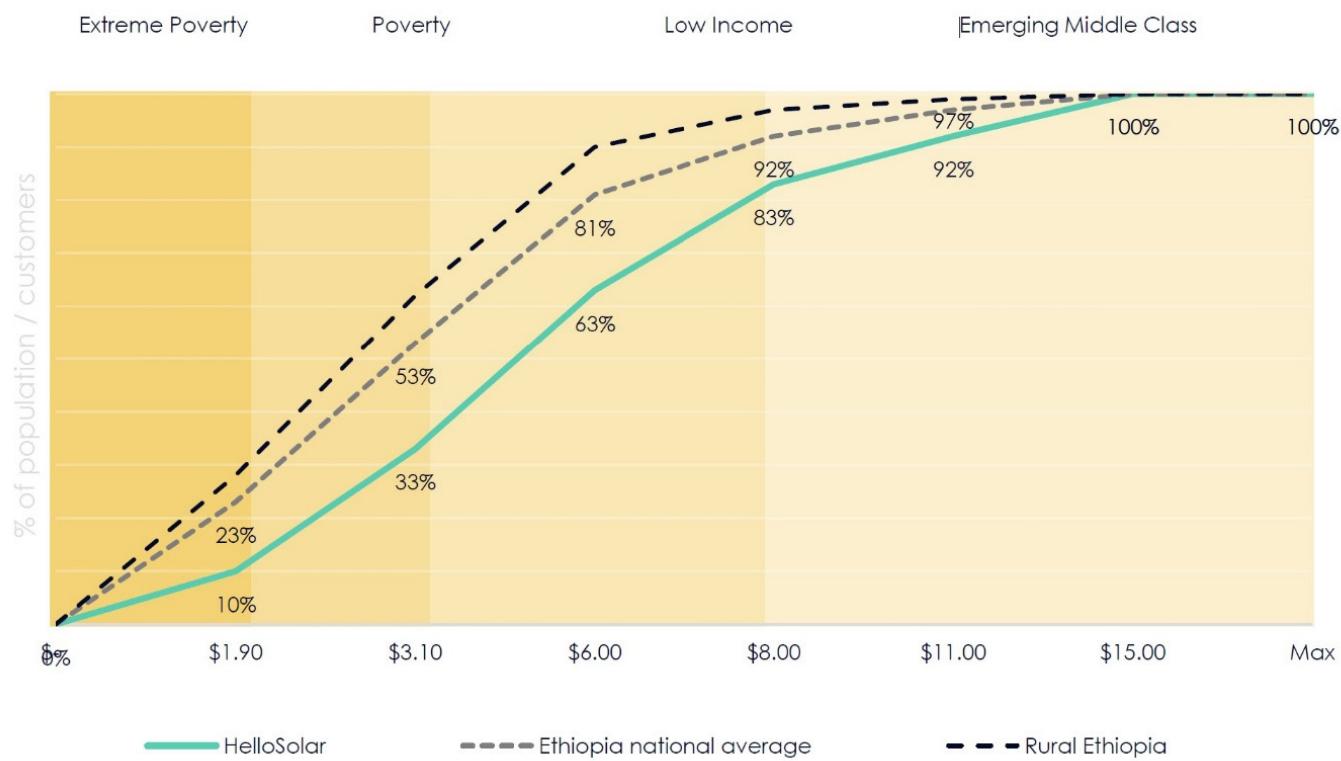
are essential to both the customer and the company. HelloSolar has noticed limitations not only with distribution but last mile collections, meaning the payment collection process in the most remote areas appears to be as tricky as distribution. In the remote arrow areas of North West Amhara, almost no mobile money penetration and little banking services in the most rural areas, HS customers rely on their HS sales agents to make their monthly payments on their behalf. However, great distances to reach bank branches add to collection costs and time for the agent to reach BTS partner financial institutions to retrieve or deposit cash. It is important to keep in mind that in the Amhara region, HS sales are performed by agents which most of the time are shop owners. Their time is shared with their other occupations so there might be notable delays if the HelloSolar recollection processes are too tedious. In comparison to the Somali region with the lowest population density, the widespread usage of mobile money services mitigates the issues linked to low population density, whereas in the Amhara region, a low penetration of money is mitigated by higher population density. To curb that issue, HS has hired staff solely for collection purpose, able to travel to customers and handle collection to speed up the process and decrease the workload for the sales agents.

In terms of distances, some agents took liberties to make sales far away from their own location, making costs of distribution and recollection notably higher. The restriction of agents in their own community can be hard to implement as they are sales driven and GSM localization is currently not available in the devices. In areas where HelloSolar works with third-party partners (NGO, aid organization), the shared responsibilities for sales or collection can be clearly stated but not well implemented, HS has experienced issues with partners that did not fulfil their commitment, which had negative consequences on HS operations. A systematic review of the HS partners and a centralized communication line helped mitigate this issue.

- **Product/market fit: Leverage cultural context to localise products at the regional or community level**
Within the off-grid population in Ethiopia, income and living styles differ widely, from the farming populations in rural highlands to more nomadic communities. This impacts the willingness and ability to pay of prospect customers. A vast proportion of the population on the grid suffers from an unreliable grid or restricted hours on the grid. This portion of the population on the grid has also shown interest in the products HS has to offer. HelloSolar currently offers 3 product packages varying from two lamps (+ torch) system to 4 lamps + TV system. Creating a line of communication with the local energy bureaus, working with a locally sourced staff and conducting customer impact studies frequently has helped HS better understand the context and the perception of the targeted communities. For instance, one sales hub in the Amhara region targets the highland farmers which are spread on vast land and have a somewhat higher income level in the farming context. Around this hub, communities were more interested in the mid-size package (3 lamps + radio + torch). This also had to do with the setup of their homes with more living areas (3 rooms on average). In more nomadic Somali communities, with less income, the homes were often not more than 1 to 2 room and this made the smaller size package attractive. On the packages containing the television, all communities showed a strong interest more or less equally. However, when looking at income level, very few were able to afford it, in the off-grid areas specifically. In light of this interest, a strict requirements list was passed for prospect customers to acquire a TV package, with an external liable person or organization required to co-sign the contract.

A strong mitigation point to the difficulty in finding customers with a credit history, was the adaptation of the down payment (1st payment during customer registration) in the area, depending on repayment trends. At sales points where debt repayment in the communities is reported to be high because of community processes, the down payment was set to 20% of the full price. In communities with less income and more nomadic customs, the down payment was set higher to discourage

Income distribution of HelloSolar relative to Ethiopia average



Source: 60Decibels 2019

buyers that would end up defaulting. Depending on the trends observed, following the start of sales, the down payment was adjusted.

The per capita income of Ethiopia is \$790 (2018) which is about USD 2 a day. The above graph shows that 83% of the HS customers are in the low income to extreme poverty categories. However, it also shows that the typical HS customer is still slightly wealthier. That is due to the types of products HS proposes. For instance, HS has opted out of selling lanterns to avoid tight competition with low-priced black-market products but that also means that prospective customers in poverty have limited access to the services. 33% of the HS customers are reported to live under the poverty line.

These income categories are associated with different solar light capacity depending on the price. Looking at income and energy habits and costs of an average HS customer, HelloSolar was able to come up with price points depending on income, assuming a monthly payment for 1 year.

Income level	Monthly Repayment (USD)	Product type
Poverty (less than USD 3 a day)	3 - 5	Solar Lantern (1 light+ charging)
Low Income (between USD 3 and 8/day)	7 -10	SHS with 2 lights
Middle Class (Higher than 8 USD)	12 +	SHS with 3 lights and appliance (radio/ torch)

- **Partnerships: Diversify sales channels with outside-the-box partnerships**

After the pilot, it became obvious that there was a need to diversify sales channels in order to reach the set goals. The challenge here was not so to find customers. Ethiopia holds a population of 105 million people, of which more than 75% are scattered across rural areas, the market potential for an affordable standalone solar energy solution is incredible. The challenge was more to find new sales channels with customers with a credit history, in order to minimize the defaulting rate which becomes risky over 2%. To mitigate this challenge, HS has developed a multi-level distribution strategy incorporating different sales channels. HelloCash stays the main payment solution but under no obligation of exclusivity. HS has created partnerships with various types of institutions and organizations operating on the field who provide a customer base and repayment liability, to an extent varying depending on the project. For instance, in Jimma and surroundings (Oromia), HS now cooperates with a well known international cooperation agency which supports the coffee farmers' cooperative. The cooperative guarantees (up to a certain extent) the members' repayment with the support of the agency. This is the model under which HS entered the Oromia region. This partnership is expected to greatly limit the risk of defaulting of the first clients of HS in the region. It will also facilitate quick sales given a level of trust between the prospective customers and the partner institutions advocating for the new products and services HS is bringing in.

5. CONCLUSION

The business model of a PayGo company stemming from a Mobile Money provider has proven successful in the past, in other countries. However, key considerations need to be kept in mind to navigate the Ethiopian context. HS has been able to successfully leverage BTS HelloCash in order to install well-aligned back-end systems, leverage relationships, establish preferential legal structures and quickly gain traction in the market.

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