PAYGO TECHNOLOGY AND BUSINESS MODELS

Gerald Mwega/ Waweru Gichimu
June, 2018
Accra, Ghana
## Day 1 Program

<table>
<thead>
<tr>
<th>Time</th>
<th>ACTIVITY</th>
<th>Method/Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.00 - 9.00</td>
<td>Registration of Participants</td>
<td>• Attendance Register</td>
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<tr>
<td></td>
<td>Welcome Opening Remarks- ECREEE Representative</td>
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<tr>
<td></td>
<td>Introduction/Levelling of expectations of the participants</td>
<td>• Facilitation</td>
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<td>Climate Setting – Individual Activity – Joining the dots</td>
<td>• Activity/Ice Breaker</td>
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<tr>
<td>9.00- 10:30</td>
<td>Entrepreneur Profiling – Understanding the Enterprise</td>
<td>• Participant Led Presentations</td>
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<tr>
<td>10.30- 11:00</td>
<td>Tea and Coffee Break</td>
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<tr>
<td>11:00- 1.00</td>
<td>Understanding PAYGO, The basics Various Applications for PAYGO</td>
<td>• Facilitator presentation</td>
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<tr>
<td></td>
<td>Market Entry/Current Trends and Competitive Landscape</td>
<td>• Case Studies/Scenarios</td>
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<td>1:00- 2:00</td>
<td>Lunch Break</td>
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<td>2.00- 3.00</td>
<td>PayGo Technologies</td>
<td>• Group discussion</td>
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<td>• Facilitator Presentation</td>
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<td>3:00-3.30</td>
<td>Health Break</td>
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<td>3.30-4.30</td>
<td>Challenges and Benefits of Paygo</td>
<td>• Group Discussion</td>
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<td>• Facilitator presentation</td>
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<tr>
<td>4.30 - 5.00</td>
<td>Group Take Away Assignment – Take away assignment</td>
<td>• Customer Profiling Group Exercise</td>
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MEET THE FACILITATORS

Gerald Mwega/ Waweru Gichimu
June, 2018
Accra, Ghana
Gerald Mwega
Logistician – geraldmwega@gmail.com

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**Biography & Education Credentials**

Gerald is a solutions focused individual with over 20 years of supply chain and logistics experience within Middle East and Africa. He has a wealth of experience in managing 3PL, sourcing, inbound logistics inventory and warehouse operations, retail operations, first and last mile distribution, field logistics operations cutting across several industries.

He has been involved in successful implementation of warehouse & logistics projects in more than 30 countries in Africa and the Middle East in telecommunications, technology, e-commerce and renewable energy among other industries.

He is a Director of Lafayette Resources a business solutions/talent solutions company and serves on the boards of Express Parcel (a local courier company) and Kamahuha Kenya Limited, a (Kenyan beverage distribution company) where he is responsible for supply chain advisory. He is also a member of the management team of the Alzheimer's and Dementia Organization of Kenya a local NGO creating awareness about dementia. Gerald has also been involved in Supply Chain consulting work providing independent ad-hoc consulting services to business professionals and private equity firms around the globe.

**Education**

- Jomo Kenyatta University of Science and Technology, Kenya Executive MBA, 2010
- University of Nairobi, Kenya Bachelor of Arts (BA), Economics & Government, 1998

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**Expertise**

<table>
<thead>
<tr>
<th>Industry</th>
<th>Representative Clients</th>
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<tbody>
<tr>
<td>Logistics</td>
<td>• DHL Express, DHL Global Forwarding, DHL Supply Chain, Express Parcel Limited,</td>
</tr>
<tr>
<td>ICT</td>
<td>• IBM, HP, Oracle, Aletel</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>• Safaricom, Vodacom, MTN, Airtel, Ericsson, MSN, Huawei, Orange, Intercel, ZTE</td>
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<tr>
<td>Pay go</td>
<td>• M-KOPA, Azuri Technologies</td>
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<tr>
<td>Development Partners</td>
<td>• US Embassy, WFP</td>
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<tr>
<td>Consulting</td>
<td>• GLG Research, Alpha Sights</td>
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<tr>
<td>FMCG</td>
<td>• Samsung, LG, MultiChoice</td>
</tr>
<tr>
<td>Retail</td>
<td>• Kamahuha</td>
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</tbody>
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Waweru Gichimu
Business Consultant / Rural Retail Expert – gichimupwaweru@gmail.com

<table>
<thead>
<tr>
<th>Years of Experience</th>
<th>25+</th>
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<tbody>
<tr>
<td>Languages</td>
<td>English, Swahili</td>
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**Biography & Education Credentials**

Waweru Gichimu is a seasoned professional with over many years of solid leadership experience in Sales, Marketing in microfinance and renewable energy. He has wide exposure in BoP interventions in over 15 developed/developing markets. He has extensive experience in product development, rural retail strategy and execution including design of business models and routes to market. He is currently the founder and managing consultant of Mak5 business hub a business support firm that works mainly with financial institutions, NGOs, SACCOS, Small and medium term enterprises supporting them with sales and market entry strategy, capacity building among others. His current work involves providing leadership in all aspects of research, product development, training and marketing, developing market entry strategies for enterprises. Waweru worked at M-KOPA where he revamped the entire sales structure by introducing a new business model that was behind the company's exponential growth. He introduced the DSR model that brought in over 800 direct sales reps improving sales from 4000 per month to over 12000 systems per month in a short span of 5 months. Separately he has strong interests in agribusiness and hospitality where runs a holiday resort.

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**Consultancy/Training Expertise**

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<tr>
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<tr>
<td>Logistics</td>
<td>• Globeflight Limited, iProcure</td>
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<tr>
<td>Microfinance</td>
<td>• Musoni, Juhudi Kilimo, Technoserve, Kenya Women Finance Trust, SMEP,CTS (sharia compliant)</td>
</tr>
<tr>
<td>Not for profit</td>
<td>• Unicef, World Vision, ILO</td>
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<tr>
<td>Renewable Energy</td>
<td>• M-KOPA, Kenital Solar, Sun transfer, Orb, Sun culture, Angazia Maisha, Biolite, Ecozoom, Envirofit, Burn Manufacturing</td>
</tr>
<tr>
<td>Development Partners</td>
<td>• USAID, GTZ, MESPT, SNV, Habitat for Humanity</td>
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Without lifting your pen, use 4 straight lines to join ALL the 9 dots
East Africa has become a global hub for PAYG, although expansion into West Africa, Asia, and Latin America is gathering steam, with deployments in 35+ countries tracked in 2017.

Presence of PAYGO players by country (not exhaustive)
Number of players (2017)
- 1-2 suppliers
- 3-5 suppliers
- 5+ suppliers

Other Africa deployments/pilots
Zimbabwe
DRC
Sierra Leone
South Sudan
Benin
Cameroon
Malawi
Ethiopia
Namibia
Madagascar
Mali
Burkina Faso

Other Asia & Lat Am deployments
Haiti
Guatemala
Honduras
Mexico
Peru
Indonesia
Bangladesh
Lao PDR
Nepal
Day 1
PAYGO

Understanding PAYGO
Combining sales and Consumer Loans
PAYGO Basics

- Requires population with regular income
- Requires moderate to high density population
- Capital Intensive to cover upfront costs
- Requires reasonably priced products-price sensitive target market
- Affordable and appropriate payment channels
- DIY or technician installation
- Payment Flexibility
- Requires population with regular income
PAYGO

Business Models
RETAIL/OVER THE COUNTER

Over the counter sales is the oldest approach to selling solar PV. However, in the past, few business were dedicated to marketing only solar PV products. Solar PV was typically sold as an additional product with revenues from sale of solar products and services only representing <10% of the total business turnover. In recent times a large number of dedicated solar retailers have emerged and their survival and success is dependent on the development and implementation of effective marketing, supply and distribution models.

PAY-AS-YOU-GO (PAYG) CONSUMER FINANCING

This is effectively a consumer financing model for solar PV systems that takes advantage of mobile money transfer systems and remote monitoring and control of solar systems (that enable the solar business to remotely disconnect a system in the event of default). Ownership of the system is transferred once the customer finalizes their repayments. The model offers customers flexibility of making repayments (i.e. can opt for daily, weekly or monthly) and enables the business to easily and effectively manage a large portfolio of dispersed borrowers. As the repayment duration typically ranges from 6 months - 3 years, this typically creates a significant cash flow burden for businesses which have the role of product and service supplier as well as financier.

CONSUMER FINANCING (VIA PARTNER FINANCIAL INSTITUTION)

A consumer financing model based on a partnership between solar PV supplier and Financial Institution (e.g. MFI, Savings & Credit Cooperative, Companies/Agricultural Estates/ Rural Based Industries with large rural staff); the PV supplier provides products and associated services while the Financial Institution provides the consumer financing and collects repayments.
MINI/MICRO-GRID

Mini-grids are expected to have a key role in expanding energy access to rural and peri-urban areas and in recent years there has been a lot of investment from development partners and the private sector in to develop business models and an enabling environment to make mini/micro grids a commercially viable venture. Their main advantage over stand-alone solar systems is they enable connected customers to increase their power and energy consumption without having to invest in additional capacity. They are technically most effective when a large number of customers can be connected within a short radius of typically 1 km.

FEE-FOR-SERVICE

Customers pay a monthly fee for electricity services, similar to a utility model, but using standalone systems (as opposed to mini/micro-grid systems). Ownership of the system is not transferred to the customer and the business/project is entirely responsible for maintenance/replacement of the system. The model is well suited to providing reliable and affordable electricity to dispersed communities, where large distances between customers make mini/micro-grids unviable. However, a significant upfront cost has to be borne by the business and the payback period is relatively long.
Market Entry – Emerging models

Integrated service providers

Hardware specialists
- m-KOPA
- mobisol
- LUMOS
- Off Grid Electric
- fenix intl
- kingo
- simpanetworks
- solar now
- BBGEX

Software/data platform
- angaza
- BioLite
- fosera
- Paygee
- RENWIT

PAYG distribution specialists
- PEG
- Bright Life
- greenlight
c- COLU
- EQUITY
- musoni

After Sales Support
- Village

Emerging models

Hardware mfg and software platform
- azuri
- d.light
- BBGEX

Consumer financing specialists
- KFW
- Equity
- Equity Bank

PAYG software development & deployment
- Hardware product design & manufacturing
- Distribution
- Consumer finance
- After sales support
Backbone of every PAYGO model stands the system that manages loans and ensures customer is incentivized to pay even after the sales person has left. This can be manual or through GSM which is most common. The per unit cost plus data transmission costs are absorbed into full system cost. Some models require set ups for manual credit checking and regular credit control.

Technologies include:

**GSM enabled** – Sim card in device. Payment via money money

- Allows 24hr real time remote monitoring
- Remote payments by relatives
- Relatively costly and tends to require mobile money infrastructure
- Requires network coverage signal
- Used on SHS
- Examples are: M-KOPA, Bbox, Mobisol. Solar Panda, Solar Now, Omni Sun transfer
PAYGO Activation Technology

Bluetooth or cable connection

Features of Bluetooth/Cable Connection

✓ Payment made in cash/mobile money and confirmed on phone which unlocks the device via Bluetooth/cable

✓ Cheaper than GSM and allows various payment methods

✓ Allows application by third parties eg Kiosk owners

✓ Allows for remote performance measurements

✓ Requires a network of on ground agents to operate

✓ Mainly used in solar lanterns

Examples: Angaza
System Code

Unlock code generated via SMS after payment through recharge cards or mobile money. Code entered manually in device or through infrared remote control to unlock.

Features of system code

 ✓ Its less costly
 ✓ Does not require transport of any physical devices to unlock
 ✓ Can be used anywhere even where there is no network coverage
 ✓ Prevents remote system monitoring without physical visit
 ✓ Mainly used on SHS
 ✓ Examples: Fenix, Azuri technologies, Brighterlight, SunTransfer
PAYGO Activation Technology

Remote battery charging
Charging unit separate from lighting
Features
✓ Solar device battery detachable from unit which remains with vendor and device returned for charging
✓ Used for very small lanterns where digital technologies are costly
✓ Low cost and creates local employment
✓ No mobile phone required
✓ Requires local payment
✓ Inconvenient for customers
Mostly applied on solar lanterns
Examples: Karibu Solar, Jazasolar
PAYGO Activation Technology

Manual Loan with regular payments via a microfinance

Features
✓ Used on small or large home systems
✓ No technology costs
✓ Leverage on existing finance solutions
✓ Low security
✓ Limited potential client pool
✓ High transaction costs for microfinance company

Examples: Orb, Biolite, Sun transfer, Ecozoom
PAYG business model challenges and risks

Four businesses in one
Most PAYGO players make/assemble their own product, distribute it, create a technology platform, and run an effective lending bank. It is challenging to achieve excellence across all four.

Increasing competition
Pico leaders have entered the PAYGO market with strong product heritage and distribution relationships. Specialist hardware and software providers have lowered entry barriers for other new entrants.

Deteriorating asset quality
Rapid customer acquisition has, at times, led to expansion into segments that have increased bad-debt ratios.

Limited economic engine
Companies are competing for a limited share of wallet. Financing has helped address affordability concerns, but has yet to put money back into consumer wallets.

Increasing policy scrutiny and risks
Industry no longer below the radar for policymakers, so facing increasing scrutiny with potential for greater regulations (financial regulations/KYC, licensing requirements, VAT/tariffs), also increasing risks and concerns on data privacy.
Challenges of PAYGO

- Long Lead Times – it requires long lead time due to the infrastructure being built. Takes more time building before scaling the business
- Hacking of systems- Fraud or opportunistic hacking
- Paygo is a financing model managed by non finance personnel
- Late payment follow up challenges
- Grid Expansion subsidized in some markets
- Inefficient bureaucracies in the country of deployment
- Cost of building operational capacity is high eg platform prohibitive
- BoP incomes, literacy level low
- Sparsely populated and remote targets markets
- Last mile challenges- Capacity to efficiently distribute across country while maintaining tens of thousands of systems
- Geography – Business environment has to be friendly
- Lack of established telecoms and mobile money infrastructure
- Debt financing to fund paygo business expansion a challenge. Financiers rely a lot on historical data so no track record will slow down uptake in new markets
Future Outlook of PAYGO

• We expect that PAYGO will continue to attract new entrants and investments in the years to come
• Manufacturing space will be overcrowded soon – focus on downstream therefore;
• More focus on last mile distribution, sales, financing and building customer relationships while outsourcing manufacturing to experts
• Less barriers to entry. Market more accessible as solar kits and back end software becomes available off the shelf.
• Platform developers can scale rapidly across different regions. Eg Angaza
• Customers are now aware of the paygo business models reducing cost of customer acquisition
• Countries without existing offerings now seeing benefits in other markets and are warming up to PAYGO companies
• Cross synergies and partnerships that overlap with other players in other industries eg(beverage, health, education, entertainment, financial services like banking)attracting mega bucks to support industry eg Cocacola and solar kiosk for refrigeration. Off grid is a door opener.
Opportunities Landscape for Paygo

- **Opportunities for risk based financing - rebate system**

- **Expanding the product line-up, consumer appliance opportunities** – rapid migration to expand product set to bigger systems and in-demand appliances beyond televisions (refrigeration, water heating, irrigation systems, connectivity devices, cooking, etc) move into new types of financial services

- **Productive use appliances** – increasing interest in productive use appliances, growing interest and some momentum from productive use funders and off-takers, particularly around the agriculture use case, but also small scale industrial Uses. This includes other financial services to good payers eg water tanks, education loans and other consumer loans tied to the parent device loan.

- **Data analytics and monetization opportunity** – large and untapped value in PAYG data, in immediate term likely much more valuable for internal operations optimization and upsell/cross-sell

- **Results based financing** – upside scenarios from government partnerships and donor mechanisms designed to extend PAYG reach into new geographies and poorer/harder to access consumer segments

- **Under-electrified opportunity** – 50/50 off-grid vs. under electrified globally, with under electrified segment growing quickly, already tapped by a number of PAYG players but opportunity for more exists

- **Mini-grid + off-grid PAYG bundling** – opportunities for synergies in customer acquisition, payments, after sales support, appliance eco-system access
End of Day 1