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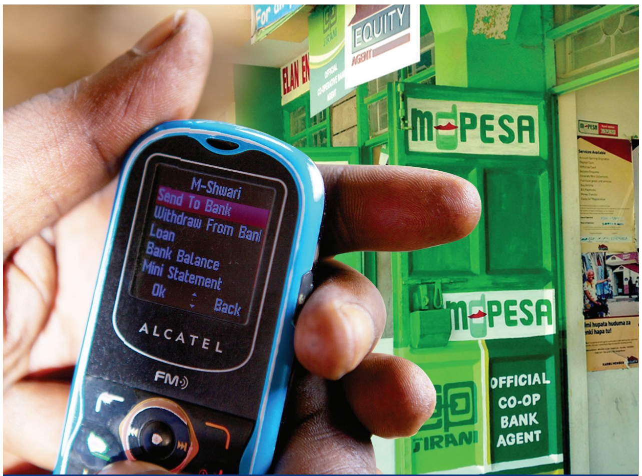
BUSINESS PRIMITIVES: ENABLING PAYMENT LIFECYCLES THROUGH SOFTWARE

***Business Primitives*:** Adapted from computer science, the authors intend 'Business Primitives' to mean the cutting of more complex business operations into a set of components that can be re-used in different contexts.

SUMMARY

Mobile money has thrived on making it possible for individuals and businesses to make real-time electronic payments. The customer proposition has been especially strong in the context of remote (non-face-to-face) payments, where traditional cash-based payment alternatives are notoriously costly, slow and unsafe. Kenya continues to be a run-away leader globally in this space. However, there are two clear limitations in the emerging mobile money ecosystem. First, the majority of digital accounts may have very little value stored in them, and a common practice is to withdraw any e-money received immediately and in full.[1] Second, there is surprisingly little systematic use of electronic payments by formal businesses, especially for making out-payments, a space in which cash and especially checks prevail. The predominant business use of mobile money is in fact by informal traders, though no product development is aimed at them.

These two gaps work together to limit the electronification (and hence formalization) of merchant payments. Customers with depleted electronic accounts are not naturally inclined to pay electronically at local shops, and shops not accustomed to paying their suppliers with electronic money are not so likely to actively promote it with their own customers. While that is the case, mobile money will not become part of customers' and businesses´ everyday life. There is a belief that the present limitations of mobile money stem from the narrow conception of the service that is being offered to customers: to help them make payments. Mobile money has the potential to grow into a broader notion of helping people manage payments, by offering manageability tools around the payments that are made or received and the money balances that are kept. Managing payments essentially means adding a time dimension



Mpesa transaction: Mobile money has thrived on making it possible for individuals and businesses to make real-time electronic payments.

to the present real-time mobile payment service for individuals, groups of individuals, businesses and stores.

All these cases are about supporting entire payment lifecycles[2]. Managing this effectively requires bundling of payments with software. This ought to be supported by two key enablers: (i) the foreseeable spread of programmable phones, based on a few standard operating systems, with which these tools can be made more accessible and intuitive for end-users; and (ii) application programming interfaces (APIs) on mobile money systems, which permit a flexible integration of mobile payment flows with enterprises' own accounting, resource and workflow management systems. This paper outlines some of the ways electronic payment providers or 3rd parties can start enabling payment lifecycles through software.

METHODOLOGY

Kopo Kopo hired Digital Divide Data to conduct two rounds of qualitative interviews in Nairobi, Kenya. Businesses were only selected on the basis of

[1] Mas, I & Amolo Ngweno (2012) "Why Doesn't every Kenyan business have a mobile money account?" FSD Insights Issue 4, available via http://www.fsdkenya.org/insights/12-04-20_FSD_Insights_Mobile_Money_issue_04.pdf

Zollmann, Julie (2012) "Time for Cash to Cash out?", FSD Insights Issue 5, available via http://www.fsdkenya.org/insights/12-07-04_FSD_Insights_Cashlite_issue_05.pdf

[2] By "payment lifecycle" the authors mean all the various things that need to happen from the moment the payment need is first conceived to the moment when the obligation is extinguished. For a businesses, it includes letting employees raise a payment request, appropriately notating it and linking it to an invoice; having the payment authorized by approved officers according to enterprise policies; and backing up the payment data for reconciliations.

having five or more employees, and not on the basis of any other criteria (e.g. revenue, age of business, etc.). Both Kopo Kopo customers and non-customers were selected at random. Kopo Kopo reviewed results with its advisor, Ignacio Mas, to identify a set of 'business primitives,' or a low-level operations from which higher-level, more complex operations can be constructed. The goal of the research was to identify which, if any, payment manageability service elements (or functionalities) could be incorporated into a mobile money offering for small and medium businesses.

Round One Interviews – Interview 50 businesses with 5-25 employees to identify 10-20 'business primitives' that merit further research in Round Two.

Round Two Interviews – In-depth interviews with 20 businesses to better understand the 10-20 'business primitives' identified in Round One.

Employees	Round 1	Round 2
5-10	26	2
11-20	14	6
21-30	5	3
Above 30	5	14
Number of Businesses	**50**	**25**

This research was generously supported by the Financial Sector Deepening (FSD) Trust in Kenya.

BUSINESS PRIMITIVES

We define 'business primitives' as low-level operations from which higher-level, more complex operations can be constructed. More simply, we set out to understand: What do most businesses do every day that could be simplified and reinforced through software? We focused on potential functionalities related to payments and the management of payments. Here are the most common business primitives we discovered:

1. SIMPLIFYING AUTHORIZATION

Virtually every business with more than one employee has some process for handling checks and balances. These processes become especially important during the authorization of payments as they mitigate – or *attempt* to mitigate – loss through internal leakage, collusion, or outright theft. The following authorization categories broadly capture the types of authorization we observed:

- ***Either/or***

  Either person A or person B can authorize a payment, and their authorization alone is sufficient.

- ***Both/and***

  Both person A *and* person B must authorize a payment before it can be completed.

- ***Maker/checker***

  Person A initiates a payment pending the approval of person B, and person B counter-checks and approves the payment assuming everything is in order.

- ***X of Y***

  X of Y individuals must authorize a payment before it can be completed. For example, at least 2 of 3 directors must sign off before a cheque can be issued.

- ***Conditional***

  Person A approves a payment on the condition that X criteria be met. For example, we observed one company in which the Director would approve a payment over the phone, and then retroactively sign the paperwork at the end of the day/week. In this case, the condition was that the paperwork would be signed after the fact.

- ***Blank cheque***

  Person A, a signatory, entrusts person B, a non-signatory, with one or multiple pre-signed blank cheques. This category is less common, but occurs when management anticipates that the standard authorization process cannot be observed. For example, a sole signatory may need to travel for two weeks, so he/she might pre-sign cheques for the accountant in order to keep the business running in his/her absence.

- ***Unanimity***

  All signatories must authorize a payment before it can be completed. For example, if there are 8 signatories, all 8 must authorize a payment. This type is less common as it can be cumbersome and lead to payment delays. For similar reasons, it is more likely to see this type of authorization in a business with *fewer* signatories.

- ***A, then B (then C…)***

  Person A signs or follows some procedure, and then person B authorizes the payment. This is similar to the *maker/checker* arrangement above, but can include more than two roles. For example, an accountant may sign off on the validity of a purchase order, then present a cheque for pre-authorization to the Financial Controller, who then confirms the cheque and present it to a Director for final approval. This type of authorization is more common in established businesses with more robust checks and balances.

- ***If not A, then B***

  If person A is not available to sign, then person B can sign. This authorization type is similar to *either/or* above, except that it gives preferential authority to person A. For example, the Director must sign a cheque. If the Director is not present, or is unable to sign the cheque, *only then* can the Accountant sign in his/her absence. Person B, in this case, has conditional authority.

- ***No A until X***

  In this case, Person A does not have to authorize a payment until its value meets or exceeds X amount. The best example of this practice is petty cash, where a junior employee can disburse some nominal amount of cash without additional authorization.

Generally speaking, most businesses would be able to process payments faster if the director(s) could authorize payments remotely. If a director could click a unique URL or send a structured SMS response to a short code to authorize a payment, for instance, then the business would not experience payment delays when the director is traveling.

Recommendations

The authorization categories above are based on a set of conditional relationships between entities (users) and events (actions). To accommodate these many relationship types, technology providers should enable a "Super User" with Administrative privileges to create and edit users, assign user responsibilities and access levels, and configure possible events based on any number of if/then statements.

2. TRIAGING CASH FLOW

In medicine, "triaging" refers to the assignment of degrees of urgency to an injury or illness in order to prioritize the treatment of multiple patients and achieve the least negative outcome. For example, an elderly patient with chest pain will be assigned priority over a young patient with a superficial laceration because the elderly person's ailment might be life-threatening.

Business owners apply a similar mindset to the management of cash flow. For example, whenever accounts receivable fall behind and cash on hand is short, businesses view accounts payable the same way an Emergency Room technician might view multiple casualties: They prioritize the payment of bills in a way that achieves the least negative outcome. Here are some of the most common "triaging" methods we observed:

- ***Avoiding additional penalties/fees***

  Some payments incur late fees or penalties when paid late. If a business owner doesn't renew their business permit or pay taxes on time, for instance, their business could be shut down, audited, or fined – the business owner could even face jail time. As a result, business owners tend to assign these payments priority over all other payments.

- ***Essentials first, non-essentials second (if at all)***

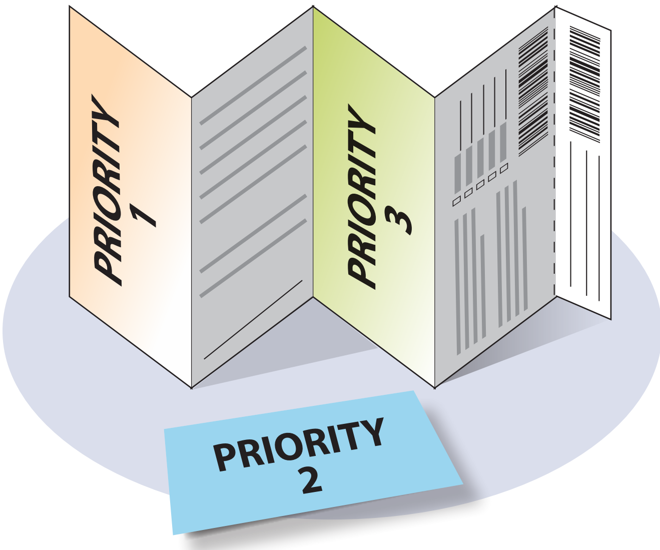
  When cash flow is tight, business owners prioritize essential expenses over non-essential expenses. For instance, a restaurant can't continue to run without food, so a restaurant owner would pay a food supplier before paying a tablecloth supplier. If the owner were to do the opposite, she might lose her primary source of revenue, which could lead to temporary closure or bankruptcy.

  In this scenario, business owners are more concerned with keeping afloat than maintaining non-essential relationships.

- ***Negotiating a payment plan***

  When a business is unable to pay its suppliers, the owner or manager may contact the supplier directly to appeal for a revised payment plan. This could include delaying the payment by X period, spreading the payment in Y installments across Z periods, etc.

  The goal of negotiating a payment plan is to maintain inventory (and a supplier relationship) while waiting for cash flow to improve. Smaller businesses or larger suppliers are less likely to re-negotiate payment plans due to an imbalance in power (e.g. a large supplier may find it more cost-effective to simply cut its relationship with a small business instead of re-negotiating terms).



Business owners apply "triage" to manage cash flows. For example, whenever accounts receivable fall behind and cash on hand is short, businesses view bills that need paying the same way an emergency room technician might view multiple casualties.

- ***Dipping in to personal reserves***

  Many respondents noted that company directors often lend their own funds to fill cash flow shortfalls. This may be one advantage to having multiple directors as borrowing from internal sources is less costly and more efficient than borrowing from external sources.

  Although we observed this behaviour with relative frequency, we were not able to determine how directors recover their funds relative to other liabilities. For example, is director debt junior or senior to other types of debt? Is it repaid in a lump sum (i.e. a 'bullet repayment'), or in installments? We believe further research is necessary to better understand this behaviour.

- ***The lender of last resort***

  When businesses have a longstanding relationship with a bank, they may have access to emergency overdraft (OD) facilities. Although many of the businesses we interviewed mentioned using OD facilities when cash flow was tight, they all appeared to view the bank as the lender of last resort.

  We believe the stigma against OD facilities is primarily driven by price. More specifically, an OD facility is perhaps the most expensive option for triaging cash flow relative to the options listed here.

- ***Issuing post-dated cheques***

  A majority of the businesses we interviewed have either issued or received a post-dated cheque in the recent past. These cheques were post-dated by as little as a few days to as long as several months.

  Interestingly, post-dating a cheque is like issuing yourself interest-free credit. In fact, some businesses even earn interest on their current accounts, which means they accrue interest for the period between issuing and cashing the cheque.

  While issuing post-dated cheques can help a business get through poor cash flow, receiving post-dated cheques can exacerbate the same. This could even lead to a cascading effect in which the cheque recipient is now more likely to issue a post-dated cheque to their supplier(s).

  The prevalence of post-dated cheques suggests that a financial product tailored to this kind of behaviour (e.g. invoice discounting) could be widely adopted.

- ***Paying to preserve relationships***

  Some owners/managers will prioritize payments based on relationships, though this practice is less common than the above. For instance, a manager may choose to pay a supplier she has done business with for ten years over one she has worked with for two years.

  When push comes to shove, most businesses prioritize payments based on urgency, business continuity and avoidance of fees/penalties. That said, the relationship component should not be overlooked.

Recommendations

In the situations above, business owners want the freedom to choose if, how, and when bills are paid as the ability to triage cash flow could mean the difference between continuity and closure. To accommodate this freedom, technology providers should give users the option to enable/disable automatic payments, communicate payment delays, rank-order liabilities by any number of filters (e.g. amount owed, due date, penalty/no penalty, negotiable/non-negotiable, etc.), and/or edit payment terms.

3. THRESHOLDS AND ALERTS

- ***Balancing petty cash***

  Businesses tend to maintain a minimum and a maximum balance in their petty cash reserves. When the balance falls below the minimum, the business withdraws additional funds. When it exceeds the maximum, the business deposits funds.

  Balancing petty cash is one way to ensure a business has sufficient funds to cover daily expenses, but not too much to over-expose the business to internal leakage or theft.

- ***Balancing cash on site***

  Like petty cash, many businesses try to keep enough cash on site to handle daily expenses, but not too much to over-expose themselves to leakage or theft. Businesses tend to maintain a bank account with the nearest bank for a similar reason: Once cash on site reaches a certain threshold, a 'runner' takes the cash to the bank.

  We also observed that some business owners/managers, especially for 24-hour businesses, would take cash home as opposed to leaving it on-site after banks had closed. In these cases, owners/managers were willing to expose themselves to additional person risk in order to mitigate leakage/theft.

Recommendations

Technology providers should enable business users to configure maximum/minimum thresholds and notification triggers based on any number of events. These thresholds and triggers would follow a simple if/then logic. For instance, IF cash on hand exceeds X, THEN send an SMS notification to Y.

4. NOTIFICATIONS AND REMINDERS

- ***Hear no, see no…***

  Of every business we spoke to, practically no business appeared to pay invoices before the supplier reminded them to do so. Delaying payments may be one way to deal with 'lumpy' cash flow, but it could also indicate that businesses don't have a way to manage outstanding invoices relative to due dates.

Conversely, businesses may assume that their suppliers don't use an invoice management system, which could mean there's a chance the supplier might forget to demand on-time payment, or forget about a payment altogether. Either way, the business might assess the cost of silence to be lower than the potential benefit of delaying or defaulting on a payment. If this were to be the case, then the absence of invoice management systems could contribute to the erosion of trust between buyers and sellers.

- ***Impersonal reminders***

  Businesses look to reminders to mitigate or react to late payments. These reminders can be in-person, over the phone, or via email or SMS. Interestingly, we discovered that many business owners/managers prefer to send reminders via email/SMS because digital reminders obfuscate the personal relationship between the buyer and the seller and create a paper trail of communications (which can be used in litigation).

  Reminders sent via 3rd party services can be even more effective than reminders sent from personal/business accounts because they create the impression of a neutral arbiter, or 'monitor'. Put another way, someone may be less prone to renege on an agreement if they think their actions are public.

- ***Pathways to escalation***

  Businesses struggling to collect on outstanding debt have a few tools in their arsenal in terms of recourse. For one, they can initiate civil or criminal proceedings against the debtor, or refer them to a credit reference bureau for default. But these options are costly and extreme – and they're not necessarily powerful in and of themselves.

  Instead, the mere threat of escalation seems to be effective in getting a debtor to honor their debt. For example, many accountants or financial controllers will begin copying the owner/manager of both businesses to a correspondence when the counter-party is behind on a payment. The implication is: My boss and your boss are both involved now, so this needs to get done.

  From a product perspective, this behaviour can be facilitated by enabling a user to copy one or multiple parties to an automated correspondence or payment reminder, or by enabling the user to choose who gets copied based on the severity of the reminder.

- ***Escalation triggers***

  All late payments are not created equal. For instance, a payment that is late by X-to-Y days is not as severe as a payment that is late by Y-to-Z days, and neither is as severe as a payment that is late by more than Z days.

  Accountants know this, but most don't have an automated way to segment these periods and trigger period-specific reminders. An automated reminder for a payment that is late by more than Z days, for instance, should be far sterner than a payment that is only late by X-to-Y days.

- ***Psychological levers***

  Although most businesses triage payments based on urgency, business continuity or avoidance of penalties/fees, we can't under-estimate the power of personal relationships and psychology. When owners/managers get involved in debt collection and have a direct relationship with the debtor, for instance, the debtor has an additional reason to honor their debt – peer pressure.

  Automated services can trigger similar pressure by appealing to common psychological principles. Instead of saying "You owe us Ksh 50,000," for example, a reminder could say "You *promised* to pay us Ksh 50,000," which appeals to the consistency principle in order to induce compliance. Put another way, automated services should seek to mimic the personal relationships and levers that business owners use every day in response to a breach of contract.

- ***A personal touch***

  For similar reasons to the above, any payment reminder or instruction should be accompanied by a free-form text field (e.g. "Memo" or "Notes"). Businesses can use this field to remind the debtor what they purchased, why they purchased it, what they promised to do, or why keeping their promise is so important. Enabling a business to annotate a reminder transforms that reminder from a transaction to a communication.

Recommendations

Delays in accounts receivable can jeopardize a business's survival. To help expedite and assure collections, technology providers should enable business users to configure "Net X" terms (e.g. payable in 30, 60, 90 days, etc.), define escalation thresholds and resultant triggers (e.g. Send SMS reminder to Y if delay is > Z), and rank-order receivables by any number of filters (e.g. amount owed, due date, payer, etc.).

5. HANDLING AND RECONCILING PETTY CASH

- ***Misunderstanding petty cash***

  The majority of participants referred to petty cash as "float in the business" or "cash on hand." According to Investopedia, petty cash is "A small fund of cash kept on hand for purchases or reimbursements too small to be worth submitting to the more rigorous purchase and reimbursement procedures of a company or institution." That said, do businesses really understand the nature petty cash?

  Instead of treating petty cash with process and discipline, many businesses seem to view it as a rounding error – a part of the business where loose accountability and marginal loss is tolerable.

- ***Assigning and tracking expenses***

  Petty cash can either be issued before a purchase as an "I owe you" or after a purchase as a reimbursement. In either case, most businesses associate a petty cash disbursement with a voucher or requisition form, which is signed and dated by the recipient.

  In some cases, the accountant and/or the recipient can forget to sign the appropriate forms, leading to a balance discrepancy. From a product perspective, this could be mitigated by flagging unassigned disbursements or sorting disbursements with no supporting documentation by days outstanding.

- ***Defining acceptable loss***

  It's almost impossible to collect supporting documentation for every petty cash expense (e.g. minibus taxis rarely ever issue receipts), so businesses have to accept some degree of loss.

  The question is: How much loss is too much? If a business sets its loss threshold too high, then employees might take advantage of the safeguards to siphon off funds. If the threshold is too low, then the business might penalize employees for otherwise legitimate discrepancies.

Recommendations

This is a classic area where software can help. By mapping petty cash disbursements to individuals, categories, timestamps and supporting documents, businesses can quickly understand who takes petty cash for what, how often, and how often they provide sufficient documentation. Using this information, an owner/manager could then quickly determine who, if anyone, is abusing petty cash policies.

6. ORDERING PAYMENT PREFERENCES

- ***Appeasing suppliers***

  Suppliers appear to dictate payment type, especially larger suppliers. East Africa Breweries Limited (EABL) and Uniliver Kenya Limited, for instance, both require many of their retailers to pay via electronic means (e.g. Lipa na M-PESA). As a result, retailers don't have any choice but to either change their behaviour or change suppliers.

  Suppliers appear to be primarily interested in guaranteeing payment, minimizing 'days payable outstanding' and maximizing sales. Accordingly, there is an opportunity to serve supply chains by offering end-to-end payment solutions that begin with consumers and end with suppliers. Further, suppliers are keen to see retailers purchase more inventory, so there is an opportunity to layer on financial services to serve this sector, which suppliers would likely promote.

- ***Modernizing, begrudgingly***

  In this and previous research, we've discovered that "payments alone are insufficient" to stimulate merchant adoption. Instead, merchants appear to favour cash over any electronic payment type, but grudgingly accept that a significant number of their customers have electronic payment types. As a result, these merchants sign up to accept electronic payments, though they continue to prefer cash for its apparent lack of fees.

  This is a significant finding and merits further research. At its core, it begs the question: What services can we build *over and above payments* to motivate merchant acceptance? They see electronic payment acceptance as a cost, so how can we supplement it with an equal or greater benefit?

Recommendations

Just as the microfinance industry has admitted that not every individual is entrepreneurial, so too must the financial inclusion industry admit that not every business owner necessarily wants to change beahviours and/or business processes. In both categories above, the underlying motivations for change are, not digitization, but 1) business continuity (i.e. I can't sell anything if my supplier cuts me off), and 2) increasing income (i.e. I want to accept money in whatever form it holds).

So, technology providers should consider these two questions when designing products:

1. How can our technology de-risk the day-to-day operations of a business?
2. How can our technology help a business increase its income?

"Digitization" is not a value-proposition.

7. ACCOUNTABILITY AND TRANSPARENCY

- ***Piloting blind…***

  Business owners frequently struggle to understand how much their business actually makes. This is due to the prevalence of internal leakage, poor account-keeping and the intermingling of personal and professional funds – to name a few.

  Business owners, therefore, value visibility and may be open to investing in services that give them additional visibility. It should be noted, however, that their incentives are not necessarily aligned with their employees or family members, so there may be a real dissonance between the "buyer" and the "user" of any service. An employee, for example, may sabotage front-end accounting or inventory management services in order to facilitate internal leakage.

- ***Security through obscurity***

  Theft is a real possibility for many of the businesses we interviewed – indeed, many have been robbed in the past. As a result of this possibility or experience, many business owners are wary of telling anyone how much cash is on the premises at any given time, including employees.

  Any service that aims to keep an active balance of funds-on-hand should keep this in mind. Specifically, a business owner may want real-time visibility in to the till balance, but they may not want an employee (or auditor, frankly) to have visibility to the same.

Recommendations

Technology providers appear to be faced with a dilemma here. On the one hand, business owners want to be able to know true cash on hand at any time; on the other, business owners don't necessarily want employees (or anyone else) to know *true* cash on hand. Given that the owner is the "buyer" and the cashier is the "user" in most cases, how do we reconcile this dilemma? Put another way, how do we reconcile competing incentives when one party, the "user," has disproportionate influence?

One possibility is to give Business Owners access to an expected *average* based on both historic and peer performance. For example, a technology provider might notify a Business Owner that "Your cash balance should be approximately X," or "Your cash balance should be somewhere between X and Y." In the latter example, a range could be used to trigger a Business Owner's suspicion whenever the true cash on hand is lower than X.

Conclusion

Most of the functionalities above could be simplified and reinforced through software. Indeed, software that streamlines these behaviours could very well be *the reason businesses shift to electronic payments.*

As an industry, we often fixate on the form factor or experience of a payment. Instead, we would suggest that we should be focusing on the experiences before and after a payment is made. A payment, after all, is just a communication and exchange of value between two parties, and neither that communication nor that exchange of value intrinsically helps a business grow and prosper.

So let's change the narrative to focus on what *is intrinsically valuable* in a payment: A relationship, an interface, a structured dataset. When unbundled, payments could be the very pathway to digitizing businesses worldwide.

Business Primitives – Enabling payment lifecycles through software

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This report was commissioned by FSD Kenya. The findings, interpretations and conclusions are those of the authors and do not necessarily represent those of FSD Kenya, its Trustees and partner development agencies.

The Kenya Financial Sector Deepening (FSD) programme was established in early 2005 to support the development of financial markets in Kenya as a means to stimulate wealth creation and reduce poverty. Working in partnership with the financial services industry, the programme's goal is to expand access to financial services among lower income households and smaller enterprises. It operates as an independent trust under the supervision of professional trustees, KPMG Kenya, with policy guidance from a Programme Investment Committee (PIC). In addition to the Government of Kenya, Current funders include the UK's Department for International Development (DFID), the Swedish International Development Agency (SIDA), and the Bill and Melinda Gates Foundation.

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