



Pesabase

Whitepaper

**Low Cost Remittance, Payments
and Banking for Africa**

Description of the project

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1. Executive Summary

Despite global innovation with banking and financial technologies, Africa still has lagged in terms of adoption and usage. A simple fact is that nearly 80% of the 1.25 billion Africans are considered unbanked. This percentage also holds true for the 50 million small businesses that have little to no access to financial services. The large number of unbanked Africans and underserved small businesses highlights the challenges and opportunities that Africa presents.

Because of the limited services offered in the financial sector, current incumbents continue to provide services that are not only outmoded but unfairly priced. Known examples are international remittance with the average cost at 10% and cross-border transactions between African countries at nearly 20%. Although over \$40 billion of international remittances are sent back to Africa, remittance fees are the highest in the world. If remittance fees were similar in pricing to that of Asia, a region with similar woes to Africa, billions of dollars would be left in the pockets of everyday Africans. The economic benefits would be immense.

With the advent of Blockchain and the many applications that are being built on top of it, many problems are being solved especially the current cost crisis in Africa. With this said Pesabase is one such company that will drive the next wave of innovation in Africa. Pesabase in partnership with OmiseGO will look to leverage the OmiseGO Blockchain to offer the following services:

- **Remittance** - The Pesabase Remittance mobile solution aims to link users with friends and family locally, between countries and across continents at the absolute lowest service fee. Online transactions will be accompanied with local agents providing cash-in and cash-out facilities. Pesabase Remittance will enable next minute cash-out when funds are remitted. Fiat and cryptocurrencies will be providing to customer to transact in and out off.
- **Payments** - Pesabase Payments looks to extend the remittance user network to businesses, organizations, and governments. Payments for goods and services, settlement of bills and payment of salaries and wages can be achieved through the Pesabase Payments platform.
- **Banking** – The Pesabase Banking solution will allow qualified customers to access micro-loans at request. Micro-loans will be offered to both retail and small business customers. Receipt of funds as well loan and interest repayments can be all done through the Pesabase eWallet.
- **Bithela Exchange** – Bithela will provide multi-currency based trading platform targeting Africans but open to the world.



With the total crypto-currency market capitalization having seen a 12-fold increase, a reflection of the pace at which Blockchain technologies are advancing, we believe the time is ripe for a different approach to solving Africa's remittance, payments and banking problems. The current state of affairs be it technological, demographical, or economic make Africa a perfect opportunity for the Pesabase platform to effect positive change through Blockchain based financial solutions.



2. Problem Statement

Africa is the second fastest growing region both economically and demographically in the world with a population in excess of 1.29 billion and a GDP of over \$3.3 trillion. One of the most significant contributors to Africa's economy and arguably its most important is its' banking and financial services industry.

Despite the banking industry's consistent performance, the continent is well documented as being under developed and under-banked. Even with this socio-economic development and growth, Africa has not been accompanied by financial inclusion. The unbanked population, those with little to no access to finance and financial services, represent almost three-quarters of the population. The other quarter although having access to financial services are charged much higher fees compared to their developed country counterparts.

Lack of financial inclusion is also evident in the African business community. There are an estimated 50 million small businesses in Africa. These account for 58% of employment and contribute 33% of the continent's GDP. However, even as a large contributor to the wider economy, over 80% of small and medium enterprises are typically constrained with access to finance and other forms of funding. It is estimated that the credit gap is in excess of \$100 billion. With a lack of funding small businesses are inhibited from pursuing growth opportunities which can lead to stagnant growth or worse, a decline in growth.

The financial sector in Africa is highly dominated by the banking industry. These incumbents, because they are entrenched, have limited competition and continue to provide outmoded products and services at elevated prices. There is no incentive to be more efficient, to improve their offering or be priced competitively. With the majority of the population poor and unable to fund basic financial services such as opening a bank account, it is clear why the majority of the population is unbanked. In Africa, financial institutions are business as usual, that is to serve only the small profitable segment of the population and refrain from serving what they consider risky.

One subset of the financial sector that has had large technological advancements but the majority of financial institutions continue to provide a subpar service, both in quality and price, is remittance. Africa relies heavily on remittances with 1 in 7 Africans receiving some form of remittance. \$40 Billion was sent to the region in 2016 and is projected to increase in 2017 by 2.5%. However, the true size of remittances, including unrecorded flows through formal and



Notwithstanding the huge amounts of remittances, the continent remains the highest-cost region to send money. An average international transaction cost is 9.81% with costs surprisingly increasing when sending money between African countries. Inter African Remitters incur over 22% in total sending fees, or \$44 for every \$200 transferred. This is unreasonably high considering the average size of a transaction is less than \$200. Among all 'formal' methods of funding remittances, banks are seen to be the most expensive means at an average cost of 8%; whereas funding remittances by debit/credit cards, cash, and mobile money are cheaper at 6.23%, 6.99%, and 3.73% respectively. Despite the targets and indicators for migration under the Sustainable Development Goals (SDGs) recently adopted by the UN, which includes reductions in the costs of remittance transfers to less than 3%, costs continue to remain elevated. Another problem that Africans currently face is inflation. It is a huge problem as it erodes people's ability to save and improve their lives. According to experts in monetary theory and the history of finance, the lifespan of most currencies in the world has been on average between 27 to 40 years. In Africa this is even shorter. Examples of currency failure include the Zimbabwe dollar and the Ghana Cedi. Many currencies are facing a similar situation with 12 of the top 20 countries in the world with the highest inflation rates are in Africa.

Although the average inflation across the continent of Africa is 10%, one country will soon follow the Ghana Cedi and Zimbabwe dollar. South Sudan recently recorded not just a high inflation rate but a hyperinflation rate of a staggering 730%. These unsustainable rates of hyperinflation are very alarming and imply that within a year a saver will lose the majority of his or her wealth.










Such states of affairs result in one outcome, a flight of capital to more stable financial environments. Conservative estimates are that the continent has lost \$1.2 trillion to \$1.4 trillion over the last 40 years. This equates to Africa's current GDP and more than the total amount of aid sent to the continent. Current trends show there is no slowdown in capital flight.



3. Market analysis

Population in Africa

Africa's population is currently estimated to be around 1.29 billion and growing at 2.5% per year. This growth will account for approximately half of total global population growth between now and 2050. Africa's geography can be segmented into four blocks; North, South, East, West. More specifically, the East African block alone has over 416 million people, making it the single largest population block in Africa. This block accounts for over 1/3 of Africa's population. However, East Africa has the poorest nations in not only Africa but the world.

 Block	 Population	 Unbanked population	 Receivers of remittance
 Eastern Africa	416 676 295	304 173 695	59 525 185
 Western Africa	372 551 411	271 962 530	53 221 630
 Northern Africa	232 186 119	169 495 867	33 169 446
 Central Africa	161 236 615	117 702 729	23 033 802
 Southern Africa	63 854 425	46 613 730	9 122 061

The median age in Africa is 19.5 years. This age differs greatly with the global average of 29.6 years. It is forecasted that over the next 50 years it will jump to 37 years of age. Age-wise, the size of the youth population globally has peaked in all regions but Africa. This demographic is experiencing massive growth. Africa accounts for 19% of the global youth population, a number that's anticipated to hit 42% by 2030. Africa's population is mostly young, and to some extent, this is a potential bright spot. It is this demographic that is highly attracted to towards the mobile and internet phenomenon. And it is this phenomenon that has the potential to drive positive change.

Mobile Phone Access

Africa might be behind the curve when it comes to bank account penetration, but the region has seen consistent take up mobile phone usage. According to the Pew Research Center, cell



phone ownership in Africa has surged exponentially. For example, in 2002 10% of the population owned phones in Kenya, Tanzania, Uganda, and Ghana. Today mobile phones are owned by 82%, 73%, 65%, and 83% of the population respectively. Total global mobile phone growth rate is approximately 107% since 2007.⁷ In the same time Africa has recorded a mobile usage growth rate of 344%. By 2020, the mobile penetration is projected to have reached 79% with more than half of these expected to be Smartphones.

The increase in mobile phone ownership continues to dramatically contribute to economic and social development across the world. The Pew Research Center, further goes on to report that only 30% make or receive payments via mobile devices, a gap/opportunity for fintech companies – both in Africa and globally – to build out dynamic mobile payments solutions in the region.

Internet Access/Connectivity

Africa recorded the highest broadband internet connectivity growth rate in the world standing at 58% in 2016, with 100 million, new mobile broadband connections added in the same year. Moreover, subscribers in the region are increasingly migrating to mobile broadband services, driven by network rollouts, as well as mobile operator device and flexible data plans. It is reported that Mobile broadband connections will almost triple over the coming 3 years, overtaking 2G in 2019 and reaching 60% of total connections by 2020. Not only, is internet access rapidly broadening, internet costs have been lowered dramatically as well, prompting more and more people to shift to internet-phones/devices and internet based services.



4. Pesabase Platform

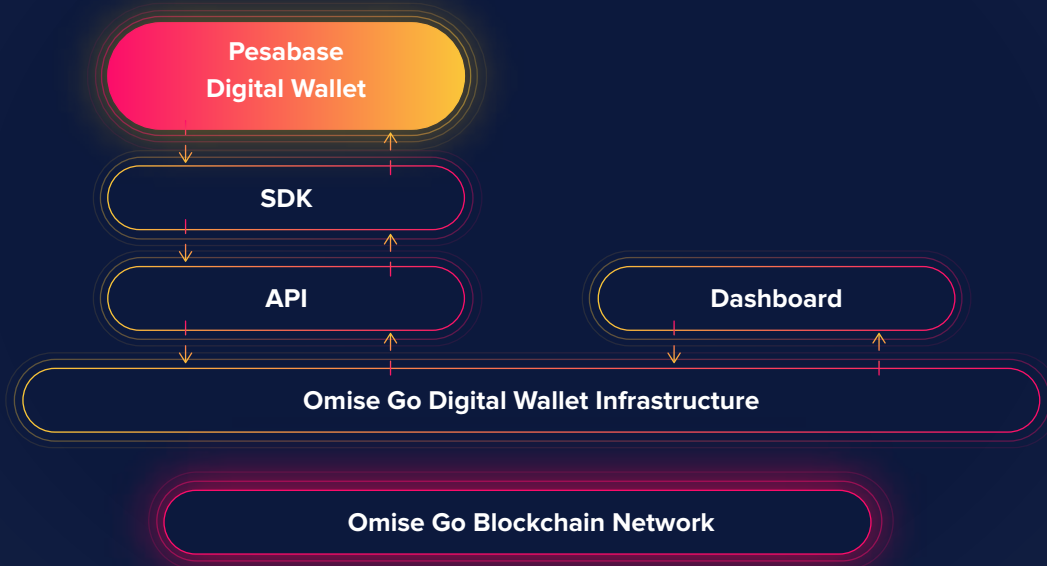
With such a low percentage of financial inclusion, we feel that the mobile phone is the ultimate solution. More specifically mobile wallets - applications on a mobile phone that provides users the ability to bank and effectively transact with other financial services.

Although current mobile solutions are addressing some of the problems that prohibit financial inclusion, mainstream banking and mobile wallets in Africa are unfortunately still closed-end single currency ecosystems. These systems have limited to no ability for users to swap between local, regional and international currencies. This problem would have remained intractable, were it not for the development and advancement of blockchain technologies. It seems clear to us that it is the advancement of blockchain-based technologies that make the mobile phone the ultimate solution. Blockchain based transactions are cheap, speedy and far advantageous than what is currently available.

With all this said how do we help? Pesabase intends to change status quo permanently by building on an open, transparent blockchain that anyone using the platform can benefit from. Our wallet will allow for management of all user tokens as needed. We want our users to be their own bank, in the sense that users with their mobiles can now save, borrow, protect and transfer monies be it locally or globally. Furthermore, we are looking for complete financial inclusion by providing services that are affordable and completely trusted by all.

The Pesabase platform is based on an e-Wallet that utilizes the OmiseGO Blockchain for all asset tracking and any Blockchain validation needed by its users to enforce trust. The default configuration as the OmiseGO whitepaper states, allows for Pesabase to construct fee-free transactions within its system and network of users. This will be done via a number of trusted OmiseGO hosted server nodes under Pesabase brand and dependent on the requirements of the network. The base wallet will be modified and retooled with functionalities unique to users in Africa as well as the ability to pay out to existing telecommunication and banking based wallets. Such wallets will include Mpesa and MTN Mobile among others.

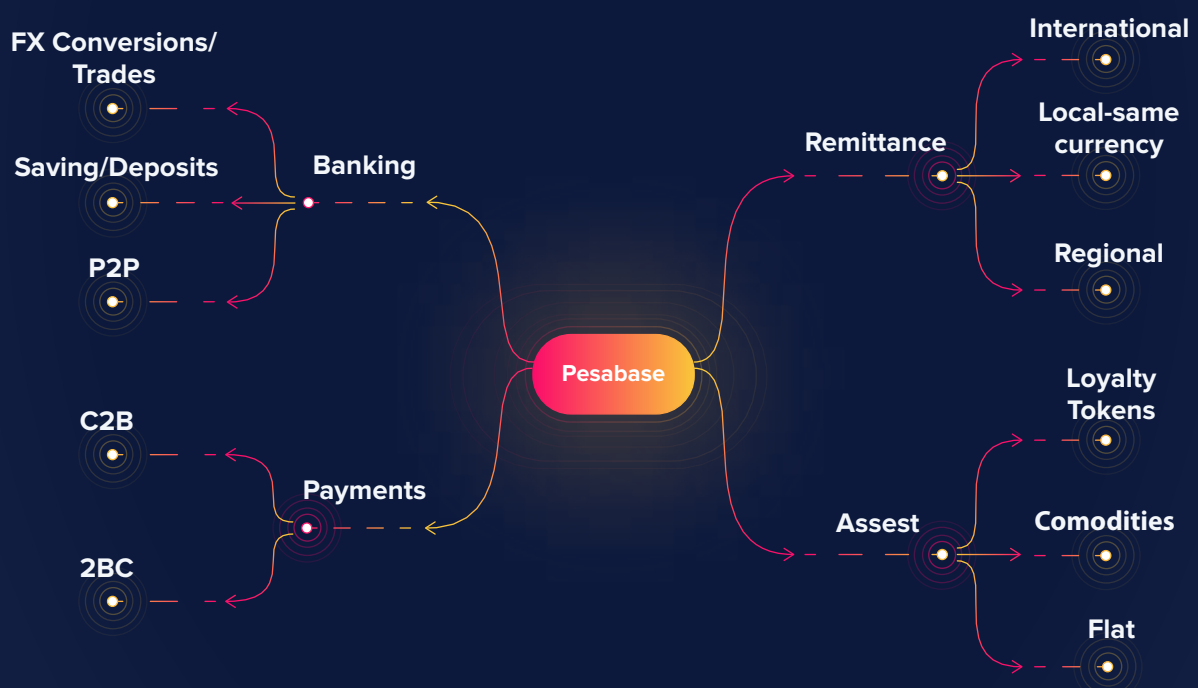
The below diagram shows more information about how it interlinks with the OmiseGO Blockchain and thus Ethereum and Bitcoin as well as other blockchains as per the OmiseGo whitepaper:



Pesabase will have 4 business arms that all have synergistic benefits with each other:

- Pesabase Remittance
- Pesabase Payments
- Pesabase Banking
- Bithela Exchange.

The following diagram is an overview of Pesabase and all offerings.









Pesabase Remittance:

Pesabase Remittance will allow users to send money between countries and across continents almost instantaneously. To fund a remittance transaction, 4 options will be provided:

- Online interbank deposit - Customers will be able to deposit funds directly from their online bank account to their Pesabase eWallet. With their first deposit, transaction times to complete will be between 1 – 3 days. After the initial deposit, interbank deposit speeds will be close to instantaneous.
- Credit card deposit – Customers will be able to deposit funds directly to their Pesabase eWallet. Deposit speeds will be close to instantaneous.
- Fiat cash deposit - Customers can deposit cash funds with their local agent who will directly transfer it to the recipients eWallet.
- Cryptocurrency deposit - Customers can deposit Bitcoin, Ethereum, OmiseGo and the majority of alternate crypto coins to their Pesabase Wallet. Deposit speeds will be instantaneous.

 Amount (\$)	 Cash-in or Cash-out, Agent fee (%)	 Fee (\$)	 Average competitor fee (\$)
100	1.00%	1	9.81
200	1.00%	2	19.62
300	1.00%	3	29.43
400	1.00%	4	39.24



Even with large strides in fintech innovation many users still cannot access next minute money transfers. When they can the service is quite expensive considering interbank transfers in the developed world are free. The advantage of Pesabase Remittance is that it enables next minute cash-out when funds are remitted at the absolute lowest cost. Users are also provided both a cash-in cash-out agent and mobile-only transfer option.

Pesabase Remittance costs will be 1% when depositing or withdrawing from any Pesabase agent. For example, Anyang goes to his nearest agent in Australia. He deposits \$100 to be sent to his cousin Jok in Uganda. The agent in Australia charges 1% for the deposit. When Jok



collects it from his nearest Pesabase agent he will be charged 1% of the original remittance. In total Jok will receive \$98 with both cash-in and cash-out agents receiving 1%. The total costs for customers will be only 2%.

Anyang has another option. Due to time constraints, Anyang must send funds immediately to his Aunt Ajah. He has already funded his Pesabase eWallet and from his mobile, he can either transfer \$100 to a Pesabase agent or Aunt Ajah's eWallet, with the transaction being free. The transfer is almost instantaneous and Aunt Ajah can immediately withdraw from the cash-out agent. This agent will charge a 1% service fee. The total remittance cost with for Anyang is \$1. This is the major difference with Pesabase Remittance and other providers, Pesabase will look to always provide the lowest transaction fees possible with the highest quality service.

 Deposit method	 Deposit time
Online interbank	1st time 1-3 days, within minutes after
Credit card	1-2 Minutes
Fiat cash	1-2 Minutes
Crypto currency	1-2 Minutes

Another challenge is the non-interoperability of current eWallets. There currently is a plethora of mobile wallets that operate within their ecosystems. This becomes a problem when two users who want to transact cannot. Someone from a developed country would naturally not see this as a problem and a quick fix solution would be to download the appropriate eWallet and continue with the transaction. Many people in Africa however do not have that luxury due to costly internet bundles.

Pesabase Remittance is powered by the OmiseGo Blockchain and will have the ability to transfer between a Pesabase eWallet and the majority of closed-looped wallets such as those provided by Mpesa, MTN Mobile, as well as others. This provides an absolute unifying solution in Africa.

The chart below details the remittance flow within the Pesabase platform and using different actors.

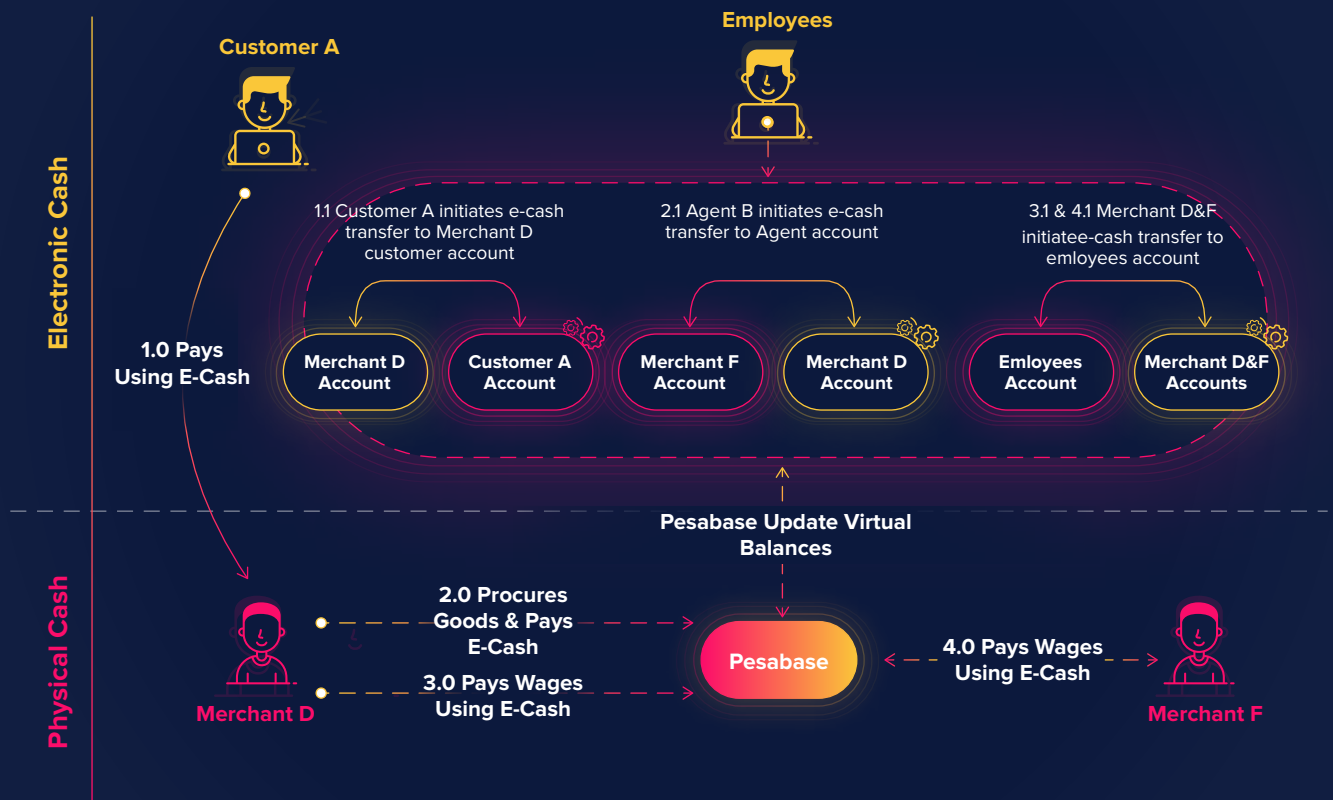


Pesabase Payments:

Pesabase Remittance provides a gateway and flow of money through a system. This creates a situation where it becomes more and more convenient for merchants to start accepting payments using the Pesabase eWallet. In fact, it is highly suitable for small businesses to accept a mobile-centric affordable payments system. Loss of monies is reduced, payments tracking and accounting functions are all advantages the Pesabase Payments offers.

For example, Deng is a street vendor in South Sudan and sells his wares throughout Juba the capital of South Sudan. Before he had a Pesabase eWallet he would receive South Sudanese pounds in payment for the wares he sold. Deng sells his wares every day and has a rough idea on how much he sells but not accurate. He sells just to get by.

With a Pesabase eWallet Deng can now accept any currency he desires. He does not need to deal with the local currency and the problem it brings. He also can accept prepayments and Peer credit. With an increase in payment methods Deng needs to be able to track it effectively. Pesabase Payments platform enables Deng to be able to correctly track all payment methods. Furthermore, sales can be quantified and data provided especially with historical ranges. Deng is now more in control of his business and can plan better to grow it.



Pesabase Banking

Pesabase Banking will look to provide the under and unbanked population access to capital that can be used to improve the lives of themselves and those close around them. It is estimated that almost three-quarters of the African population survive on less than \$2 per day, while almost half of the population survive on less than \$1.25 per day. Most Africans will continue to live in poverty without knowing much better, however, history has shown that having access to micro-financing people can change this.





It is estimated that microfinance has been utilized by over 130 million people globally over the last 15 years. Many have felt the benefit it has brought to their lives with such benefits as:

- Creating jobs and entrepreneurialism spirit
- Creating the possibility of future investments
- Creating the opportunity for children to have an education
- Encouraging to save
- Empowering people especially women
- Saving lives

Research has indicated that with careful implementation micro finance can flourish in Africa.



Research has indicated that with careful implementation micro-finance can flourish in Africa. Leading microfinanciers in Ethiopia have shown to have higher returns on a risk-reward basis than the world average. The Amhara Credit and Saving Institution (ACSI) through its rural and agricultural focus has achieved a return on asset of 7.9%, a portfolio at risk at 30 days of 1.5% and a write-off ratio of .1% from its client's. These percentages are well above the world median.

 Micro Finance Institution	 Return on Asset (%)	 Portfolio at risk 30 days (%)	 Write-off ratio (%)
ACSI	7.9	1.5	0.1
Eshet	7.3	0.6	0.0
OCSSCO	5.9	1.2	0.2
DECSI	4.3	2.9	0.4

There are many similar cases around the world where appropriate focus, planning, and oversight has led to success for both the borrower and lender. This is encouraging for organizations who look to provide financial loans in Africa. A look at the 50 million African small businesses and 900 million indigents show a consistent unmet need for which Pesabase Banking will build an ecosystem around. Below is a true case study that shows an insight into the success of a micro-loan recipient and the potential benefit to their life.

Case Study - Agnes Chitsotso through FINCA

Agnes Chitsotso is among the few longest serving clients of FINCA, who joined the microfinance deposit-taking institution when it was just introduced in Malawi. Agnes acquired her first loan of US\$1 currently equivalent to MK715 in 1994, and she is borrowing money from FINCA up-to-date.

"I praise FINCA for its wonderful contribution in my life. I have seen FINCA staff come and go. I was part of FINCA during its worse times of economy, and I am part of its success story," said Agnes.



Agnes has educated all her six children with earnings from FINCA loans, all of whom have their own families. She nurtures four grandchildren who she took from her children to maintain her house, which had been deserted.

Agnes, who got married in 1974, started the business of selling vegetables, carrot, Irish potato and tomato as early as 1980, the businesses that she maintains up-to-date.

Besides successfully educating her children with earnings from her business, Agnes has constructed two decent and modern houses, and she pays tuition fees for her four grandchildren, including providing food for the family since her husband retired from work a long time ago, and he is just staying at home.

Although aging, Agnes has a vision to start cross-border trade, dealing in clothes and other items.

Bithela Exchange

Bithela will provide multi-currency based trading platform country by country as regulations around them become clearer. With access through one's mobile, a user through our agent network can deposit funds and immediately purchase a basket of digital currencies.

Initial currencies that will be provided include the Kenyan Shilling, USD, EUR and AUD. These currencies will all have BTC and ETC pairs as a start while we continue to work on expanding the listed pairs. Our expectations are that the next set of pairs would consist of OmiseGO (OMG), Ripple (XRP), and Stellar (LUMENS). These are strategic listings that may have some benefits down the line as the company grows e.g. Stellar with remittance.

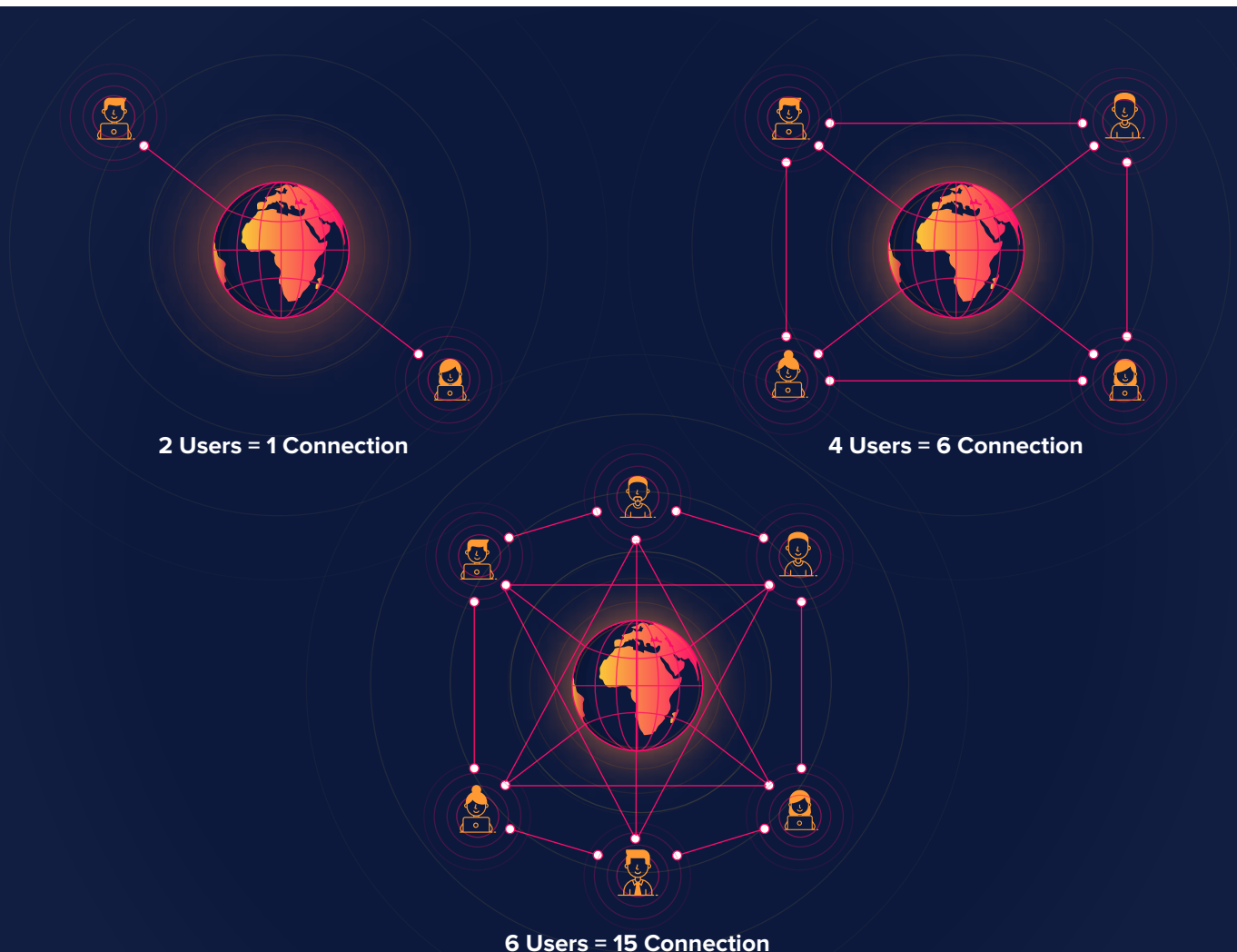
6. Marketing strategy

Remittance

Pesabase strategy is to create a network of loyal users in Africa that over time reinforces itself with user growth. Our 'Land and Expand' strategy will entail hitting the ground running within our operating markets. In short, we will act as fast as possible to build our user network through business partnerships and tailored expansion strategies. We see that there is significant pent-up demand for Pesabase products and services thus a lot of inherent value to be realized.

The value of Pesabase network can be better shown through Metcalfe's Law in that as the number of remittance and payments users increases, the network increases, and if senders can transfer to a growing the number of receivers the value of the network grows at a tremendous rate. d.e

Metcalfe's Law shows that a network value (V) = $n(n - 1) / 2$, where n is the number of users.





Above shows the visual representation of a growing Pesabase network. Metcalf's Law has been appropriately applied to Facebook and Tencent's network with values accepted by academic and financial communities. Tencent has a growing active user base of over 1 billion while Facebook has a growing active user base of over 2 billion. For illustrative purposes Africa has a population of over 1.25 Billion people. The number of mobile users' amount to over 557 million and growing very fast (reference gsma). Furthermore, the usability and the acceptance of Pesabase Payments by the 50 million small businesses in Africa, increases the addressable market. Applying Metcalf's Law Pesabase's network has the potential value of that of both Facebook and Tencent. Below is a sample of African countries Pesabase will look to penetrate, all with very large addressable markets.

 Country	 Population	 Internet and mobile Users	 Population Penetration %	 Facebook subscribers
Ethiopia	104 344 901	11 538 000	0.111	4 500 000
Kenya	48 466 928	39 664 377	0.818	5 500 000
Sudan	42 166 323	10 886 813	0.258	n/a
Uganda	41 652 938	13 023 114	0.313	2 200 000
South Sudan	13 096 190	2 179 963	0.166	180 000
Somalia	11 391 962	660 000	0.058	660 000

Pesabase Remittance and Payments will be the first services offered and will be executed upon with our 'Land and Expand' strategy. A more detailed step by step approach is detailed below:

Step 1: Build the on-ground agent network. Cashing out is an option that must always be provided to customers. These agents will be chosen on a multiple of factors including trust, accessibility, customer traffic flow as well as others.



Step 2: Build relationships with large established businesses that will scale the user network extremely fast. Examples of these include financial, telecommunication and retail institutions.

Step 3: Implement online and offline marketing strategies concurrently.

Online:

Utilize social media sites such as Facebook. Facebook is the dominant social media application within the African community and will be used extensively through viral posts. If people know about a service that is as close to free as possible, a service that is easy and fluid to use we see no reason why it won't be talked about. Furthermore, influential posters will be identified and brought on board to help the virality along.

Offline:

Community Liaisons will forge strong relationships with the community, business and other influential leaders. They will communicate and educate leaders on the benefits of not only Pesabase but the massive benefits of cryptocurrency.

Community Educators will establish cryptocurrency technology meetings and startups within targeted markets. They will communicate and educate the wider community on the benefits of not only Pesabase but the massive benefits of cryptocurrency. Pesabase founder and CEO was part of a small group that set up the first Melbourne cryptocurrency community in Australia. He has experience in building communities and will personally drive this growth when he relocates to Africa.

Both liaisons and educators will be involved with building education and scholarship programs. Relationships will be built with educational institutions such as high schools and universities. They will communicate and educate the massive opportunities and benefits of cryptocurrency.

Because Pesabase is an extensive business with global customers, our strategies are designed to be easily customized to any geographic market. All stakeholders will be inspired to communicate both professionally and personally, the advantages that Pesabase offers.

Step 3: Once a market has been penetrated successfully, Pesabase will look to duplicate the 'Land and Expand' strategy to other identified markets.



Payments




The payments business is an extension of the remittance network. It is natural for a user network to encompass not only the retail customer base but also the business customer. Our 'Land and Expand' strategy also includes growing Pesabase Payments. The rate of user expansion increases dramatically if businesses not only accept payments but also remunerate employees through this system. Our Community Liaisons will develop and maintain positive relationships with companies in target markets. It must be noted that all Pesabase agents will have to use our payments network when remunerating employees.



7. Development Roadmap

Pesabase and crypto-currencies are a unique approach to resolving Africa's problem in the financial sphere. We in effect have to assist with the educational requirements; meetups, presentations and other ad-hoc needs in the countries that we intend to launch our solutions. As such we envision our first product will be an exchange in conjunction with our remittance offering i.e. Pesaabse Remittance.

Here is an outline of our development roadmap

 Time Estimate	 Code Name	 Code Name (Hard Cap Sales done)
	Zazu	<ul style="list-style-type: none">Working MVP Java Remittance AppIntegrations into Mpesa & MTN Mobile WalletsRemittance - Australia to East Africa
	Shenzi	<ul style="list-style-type: none">Look into White Label Exchange offeringsDesign front end and integrate backendLaunch the offering, for KSH/Crypto Pairs
	Pumbaa	<ul style="list-style-type: none">Test the OmiseGo white-label wallet SDK PrototypeTest it with our Pesabase user baseProvide Feedback to OmiseGo team
	Nala	<ul style="list-style-type: none">Participate in the white-label wallet SDK LaunchImprove Pesabase and look at expanding offerings
	Rafiki	<ul style="list-style-type: none">Launch a OmiseGo branded Pesabase offering in AfricaImplement Africa specific improvements on the wallet
	Mufasa	<ul style="list-style-type: none">Launch a branded Pesabase offering in Africa
	Simba	<ul style="list-style-type: none">Upgrade Pesabase to use OmiseGo hosted Server nodes.Create local currency fiat backed tokensEnable decentralized feature capabilities.
	Simba's Babbies	<ul style="list-style-type: none">Building API end points for business partners.



9. Token Sale



To be announced