Blockchain-Based Solutions to Improve Financing for the Ultra-Poor: Technological Potential and Practical Challenges

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Outline

- Importance of blockchain-based fintechs and cryptocurrencies for the unbanked
- General barriers to implement technology projects
- Blockchain-based fintechs and cryptocurrencies targeted at the poor: Examples
- Advantages and potential applications of blockchain-based fintechs and cryptocurrencies for the poor
- Challenges and limitations of blockchain-based fintechs and cryptocurrencies for the poor
- Concluding comments

Blockchain-based fintechs and cryptocurrencies for the unbanked

- World Bank's Global Findex database: 1.7b adults unbanked
- Main reason: Lack of formal identity documents
- World Bank's ID4D database:
  - 1b lack any identification to prove who they are.
  - Additional 3.4b: some identifications unusable in the digital world
- financial institutions lack data, information and capabilities to access creditworthiness
- Blockchain-based fintechs and cryptocurrencies: access to/affordability of financial services

Barriers in the implementation of new technologies

- Unfavorable institutional arrangements: contract enforcement procedures, property rights and standards
  - Interaction with information flows, transaction costs/risks, market access-related constraints
- Douglas North: transaction costs: (1) costs of measuring and (2) costs of enforcement
- Information flow: relatively restricted channels/ learn about new technologies from very few sources
- High costs to access information: access to markets
  - Thin markets
- Lack of sufficient skills and opportunities
- Underdeveloped supporting technologies/infrastructures.

Blockchain-based fintechs and cryptocurrencies targeted at the poor

Platform	Brief description	Geographic area of deployment
Humaniq's user profiles and HMQ Tokens	Profiles based on biometric data. HMQ tokens: buy and sell goods and services with the third-party services utilizing the token and get access to small business loans.	Sept. 2018: operated in about 50 countries including 21 in Africa
Kiva's digital identification system	People get secure and complete ownership of personal information: all credit-related events are captured in a ledger connected to an individual's ID	Aug. 2019: Sierra Leone launched a blockchain-based NDIP: wants all banks and MFIs to use it by 2019 end. Worked with UNCDF and UNDP.
BanQu's "economic passport"	Blockchain to establish economic identities and proofs of record for people in extreme poverty zones. Also working to verify the authenticity of academic certificates and credentials	2018: >15k farmers, displaced people and refugees in eight countries. April 2019: The platform was used in 12 countries.
Moeda's microfinance platform	BAAS cooperative fin. Network: micro-loans to start or expand businesses. They can use Moeda's app to pay for the things they need for businesses.	The project was initially launched in rural Brazil. Also incorporated in Uruguay.
WFP's Ethereum-based cryptocurrency for refugees	Uses cryptocurrencies to pay refugees. The receivers use them to spend them in participating stores. Parity Ethereum is used, which is private and employs four nodes to validate transactions.	Cash transfers of $1.8 billion s made in 2018

Advantages of blockchain-based IDs

Dimension	Non-blockchain world	Blockchain's advantage
Availability/ ability to get	Under-funded identification agencies to implement ID programs (e.g., DRC, Tanzania and Zambia). Zambia's Department of National Registration, Passport and Citizenship (DNRPC): severe lack of funds to run civil registration operations.	No need to rely on government agencies. Startups such as Humaniq's apps allow users with smartphone to create their own IDs.
Cost	Average cost of enrollment and registration for a national ID system per person: US$ 3-6, additional 15-25% per year for maintenance, software, and data updating. Card production and distribution: US$1-5 per person Nigeria: conservative estimates US$ 5 per person for the identity lifecycle	2018: the average cost of transaction in Ethereum network was $0.03. To register a customer's identity, companies such as BanQu may need to execute few blockchain transactions.
Security and authenticity	Susceptibility to forgery and fraud: ID cards in many countries (e.g., the Madagascar, Sierra Leone, and Zambia) are paper-based: forged. Zambia: National Registration Cards (NRCs) can be forged by substituting photos and altering texts. Sierra Leone: fraudulent birth certificate can be obtained easily.	Blockchain allows for a higher degree of security and authenticity

Other advantaged of blockchain-based fintechs and cryptocurrencies

- Higher privacy protection and safer from misuse and abuse of data

- Lower cost solutions compared with other alternatives

- Directly connecting lenders and borrowers/aid-givers and aid-receivers

- Availability of more relevant information to lenders

Challenge #1: Complexity of technology making it difficult to grasp

- Poor quality institutions: lack of necessary skills to utilize and benefit from blockchain.

- Half of the populations cannot speak an official language of their country

- Challenges related to poor information flow: more daunting for blockchain applications
  - High degree of complexity.
  - Blockchain-based fintech and cryptocurrencies are more complex and more difficult to understand.

- Africa: people handwrite PIN numbers on debit cards

Challenge #2: **Limited resources and capability of startups**

- Difficulty in competing for the market against more established companies.
    - Facebook's Libra
    - Facebook's WhatsApp Pay: 1 million users in India.
    - Fintech firms such as Coinbase and PayPal may include Libra in their wallets.
    - Plan to run Calibra inside WhatsApp and Messenger.
    - WhatsApp is available in up to 60 languages on Android
        - In India: 13 languages.
- Humaniq app is offered in English, French and Swahili
    - Training and development to bridge skill gaps
    - Too few ambassadors to facilitate the adoption of Humaniq apps.

Challenge #3: Unfavorable market and institutions

- Lack contract enforcement procedures, property rights and standards
  - Humaniq claim: new users earn money immediately by performing tasks for outsourcing firms
- Thin markets
- Companies concerns to outsource
  - Weak property rights protection
  - Privacy
  - Data integrity
  - Cybersecurity

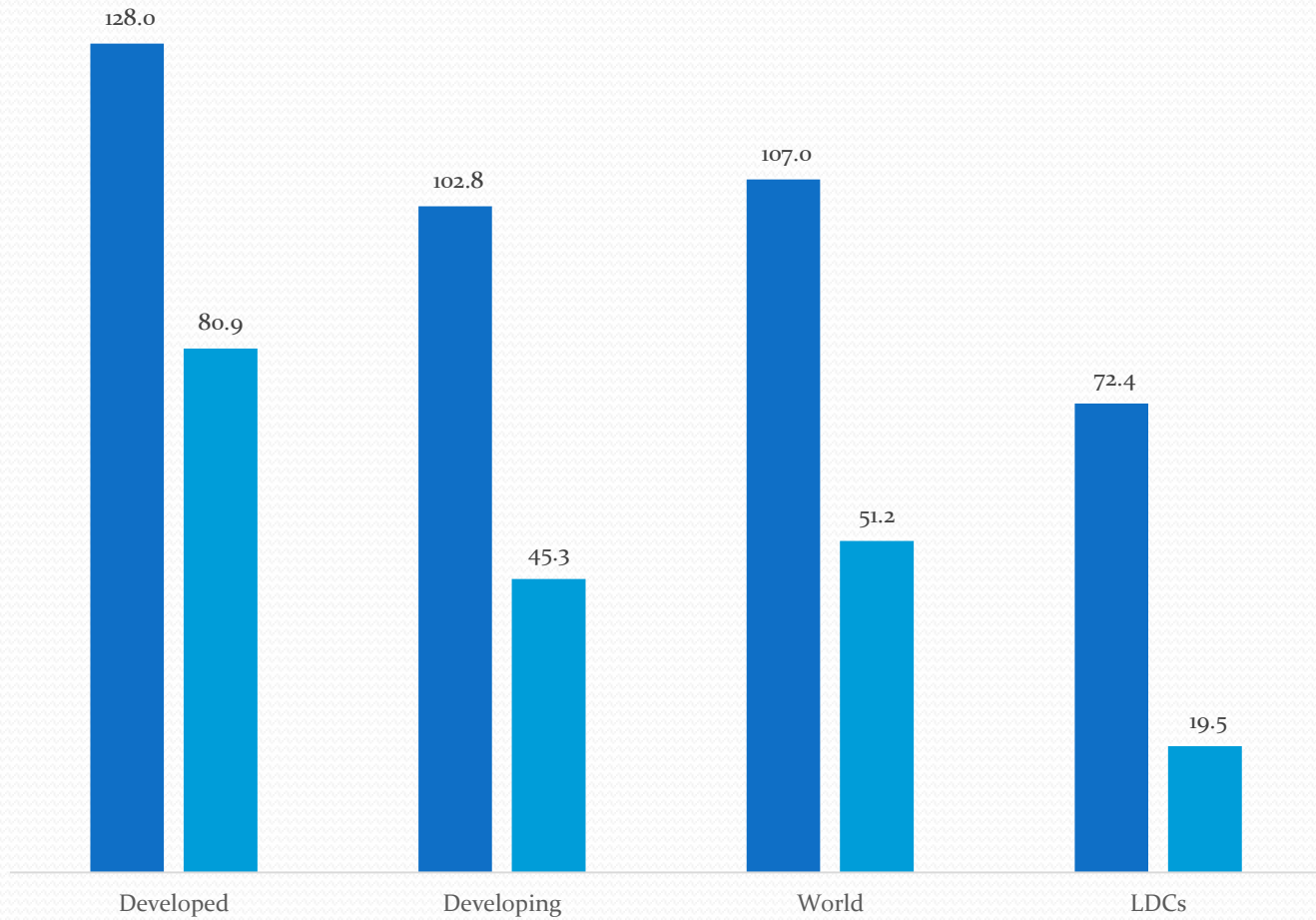# Challenge #4: Stockholder centric bias in the actions of start-ups

- Actions of blockchain startups: investor-centric vs. consumer-centric.
- Humaniq
  - HMQ listed on big exchanges
- BanQu
  - Help track supply chain activities for Anheuser-Busch, one of the investors.
- Moeda
  - Launched the mobile game Moeda Go
  - Investors can monitor the value of MDA token in real time
  - Moeda's loans too big to be considered to be micro-loans.
  - As of January 2018: invested in 18 projects: Loans ranged from $50k to $300k.
    - Kiva's average loan outside the U.S. is $400
    - VisionFund's average loan size worldwide was $495.
      - The average loan sizes for Asia and Africa were $313 and $323.
- Porter and Kramer (2002): increased pressures to meet stockholder expectations, philanthropy has been declining.

Challenge #5: Poor people's limited power and financial/social capital

- Social capital "features of social organization, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated actions". (Putnam, 1993).

- Powerful social and political actors (e.g., policy-makers and NGOs): no attention to indicators related to whether the projects are achieving their stated goals.

- Moeda: "investors know all the details of how their money is spent in each Seed Project, directly from Moeda's website".

  - The link provided listed two projects with a few details

Challenge #6: **Poor connectivity**

Only 15% of Sierra Leone's population has Internet access.

■ Mobile-cellular telephone subscriptions (%)   ■ Individuals using the Internet(%)

	Developed	Developing	World	LDCs
Mobile-cellular telephone subscriptions (%)	128.0	102.8	107.0	72.4
Individuals using the Internet(%)	80.9	45.3	51.2	19.5

Challenge #7: Lack of supporting technologies and infrastructures

- Low quality physical capital: infrastructures, plant, equipment and information technology.
  - Difficult to build well-developed ecosystem around fintech products and cryptocurrencies.
    - Barriers for maximum utilization
- Moeda White Paper: combine Ethereum with ML, AI and IoT.
  - Not achieved.
- Building and maintaining an IoT system: large investment in software infrastructure and local skill development.
  - Maybe set up with outside helps
    - Small farmers cannot perform technical tasks such as troubleshooting and maintenance.

Concluding comments

- Fintechs and cryptocurrencies for the poor: most intriguing blockchain applications.
  - Transparency and accountability
  - Disintermediation
  - Low cost
  - Economic history can address problems associated with poor record keeping technologies and authentication
- Startups focusing on fintechs and cryptocurrencies: not achieving stated goals
  - Claims based on unrealistic assumption
  - Less to do with the technologies than with the lack of users' skills and availability of opportunities

Concluding comments

- Big companies' needs: key determinant when blockchain solutions are developed to connect with the poor.
  - Skills, resources and financial capacity to benefit.
- Benefits conditional
  - Poor people having skills to utilize the technologies
  - Existence of opportunities
- The lack of well-developed ecosystem

Thank you!

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