MELBOURNE MICROFINANCE INITIATIVE

Global Microfinance Case Competition 2023

UFH:

Towards an Inclusive and Sustainable Financial Network

Team:

The Big Four

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Analysing the landscape

Problems

Solutions

Implementation and Impact

Appendix

SOCIOECONOMIC ANALYSIS

Assessing Indonesia's Macroeconomic Challenges To bridge gaps through proposed strategy

Poverty puts the heaviest pressure in...

Papua, West Papua and West Nusa Tenggara have poverty rates above 20%

The literacy rate is lowest in **Papua** with approximately **20%** of the population over **15** being illiterate

As of 2020

75% Financial inclusion achieved

yet

38% Indonesians are financially illiterate

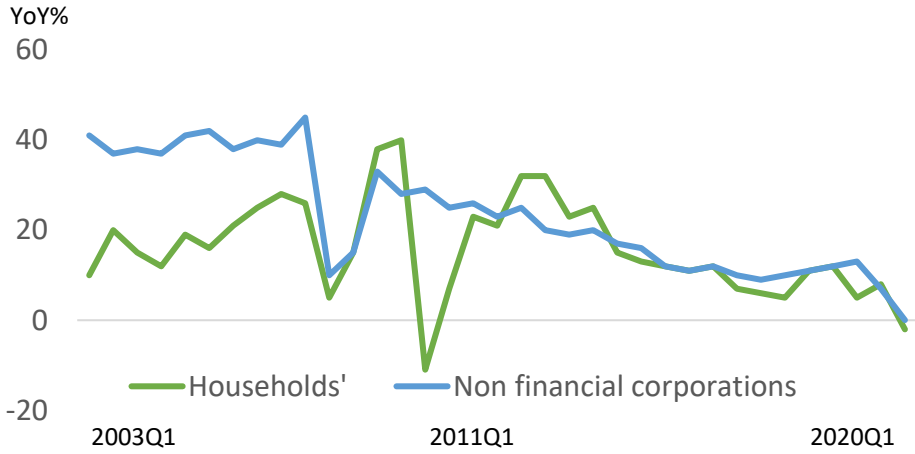
Macroeconomic Indicators

49% of the **Adult Population** hold an **account** in financial institutions

The COVID-19 recession further **reduced credit growth**, due to increase in risk associated with **borrowers' risk profile**

9.5% of the population lives below the National Poverty Line

The Way Ahead



Weakened Credit Growth to the Real Sectors

> ***Economic insecurity*** *coupled with after-effects of* ***Covid-19*** *has degenerated* ***financial inclusion*** *in Indonesia and the only way out is a decentralised* ***Sustainable Credit Inclusion Grid (CREDILINK)***

Sources: OCED library, ABF, OJK Surveys

EXPLORING THE MICROFINANCE LANDSCAPE IN INDONESIA

Analyzing Indonesia's financial profile and addressing key challenges through proposed strategy

> Indonesia is renowned for its large-scale **microfinance sector**, with a range of **commercial banks** and over **60,000 MFIs** reaching more than **50 million** people

174 trillion IDR
Funds distributed by Rural Banks

50 mn + MSMEs
Contribute more than **30% of GDP** growth

Understanding the Financial and Technological Environment

Mandate by Bank Indonesia
Banks to have at least **20%** of their loan portfolio in **micro loans**

Delay in Loan Repayments
Increase in NPLs from 3.35% to **3.95%**

The Mobile – First Nation (Penetration Numbers)

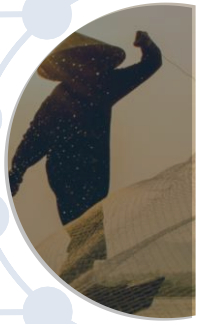
75%
Online purchases are mobile based

270 mn
Projected internet users by 2028

Sources: GBG Indonesia, McKinsey reports

Integral Challenges

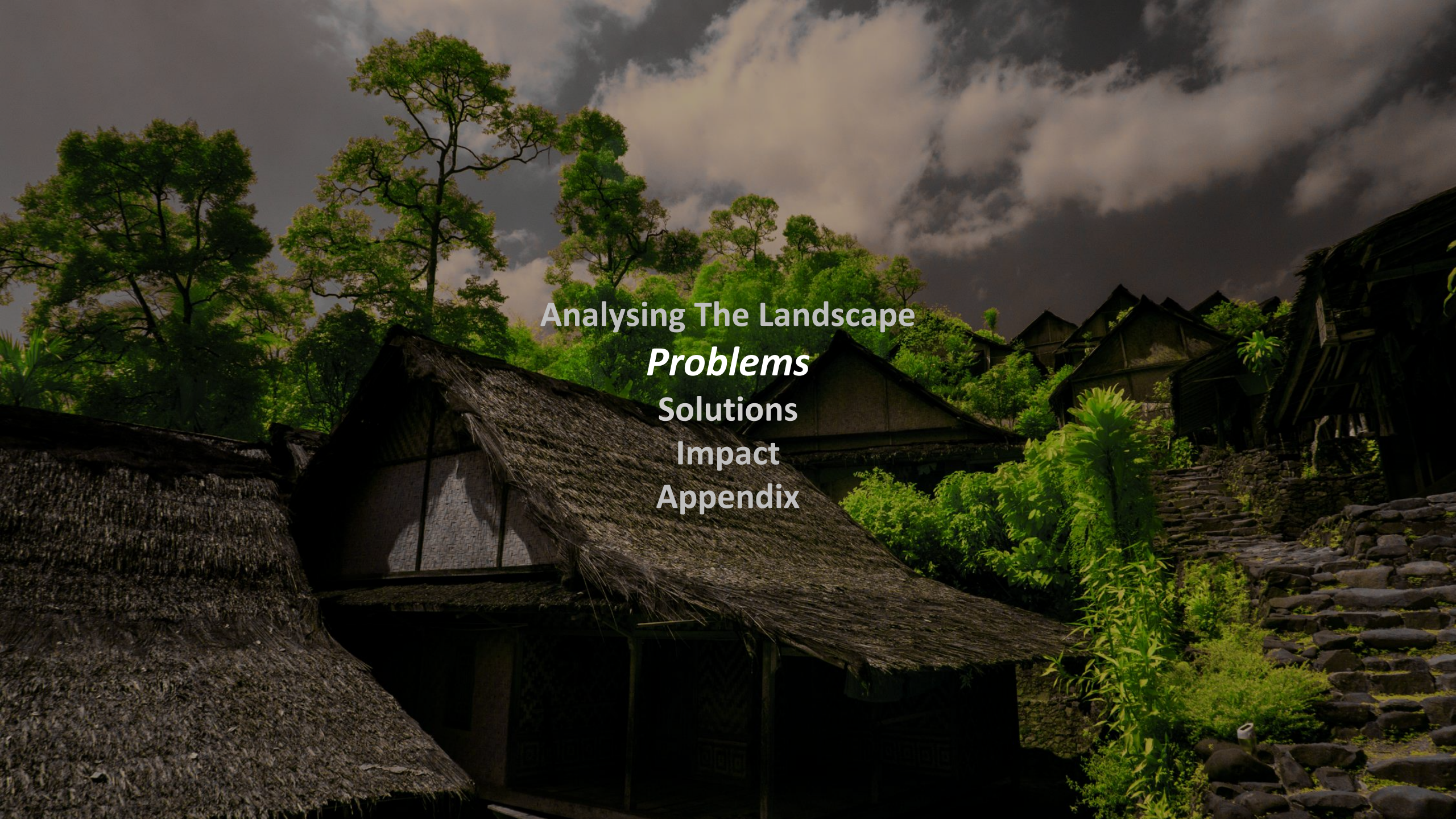
- **Adverse Repayment Abilities of Micro Borrowers**
- **Increased Cost of Borrowing**
- **Arduous Loan Application**
- **Unspecialised Product Offerings**



What can be done?

- Utilise **Technological** Advancements
- Prioritise **MSME** Requirements
- Tap Potential of Open **API Networks**
- Launch Targeted **Product Offerings**
- Introduce **Community** based Lending

Strategy Phoenix



Analysing The Landscape

Problems

Solutions

Impact

Appendix

LENDING IN JAVA AND SUMATRA

Arduous Loan Application and Operational Inefficiency backend procedures Chokepoints

Adika, a 28 year old farmer from Java with an annual income of **IDR 25.5 mn**

→ Onset of Cropping Season

→ Need for Fertilizers

→ Loan Application In Process for 10 days

→ Application rejected, Adika borrows from legacy lenders

UFH's Credit Lending Mechanism

Loan Application	CIB Verification	In Person Check	Final Assessment	Loan Approval or Rejection
• Reliance on Legacy Systems • Higher Labour Costs • Lesser Applications	• Incorrect credit score: Psychometric or self claimed hard Income • Personal credit score inaccessibility	• Inevitability to conduct background checks • Higher Labour Costs • Lesser Applications	• Psychometric credit score lacking key factors • Slow processing rate • Paper work	• Manual processing and leading to inaccuracy • High loan default rates
Solution: Integrating RPA, ML and image analysis	**Solution: UFH's New Credit Score Mechanism**	**Solution: Improved efficiency in the long term via e-KYC**	**Solution: Automation using AI and RPA**	**Solution: Diverse results enhance recovery rates**

Targeted Solution: Phoenix

Sources: Team Analysis

Analysing The Landscape

Problems

Solutions

Implementation and Impact

Appendix

INTRODUCING PHOENIX

Implementation and Impact Assessment through breakdown of Strategy Phoenix

Immediate solutions

Potential solutions or micro-battles	Parameters of Assessment					Overall Attractiveness
	Investment Required (CapEx: Small/Medium/Large)	**Degree of Impact**	**Complexity of Implementation**	**Duration of Implementation** (Rankings 1-5: longest - fastest)	**Impact Segment from Identified Choke Points**	
Automation and Elimination of Legacy System	Medium	~30% Lesser time taken for the loan acceptance process	Medium	3rd	Value Chain Inefficiency	
Lending Circles	Small	~800k+ People impacted by imparting Financial Inclusion	Low	4th	Improved Javan-Sumatran branch collaboration and facilitating rural banking	
Revamping Credit Scores	Small	~98.75% Accuracy in Repayment Prediction	Low	5th	Falling rates of loan recovery	
Product Diversification	Medium	Increase in Cash Flow by 214 mn IDR	Medium	2nd	Expansion into Papua and other neighbouring regions	
Credilink: Changing the landscape of Indonesian economy	Large	8% Rise in Applied Loans	High	1st (longest time)	Driving Fintech and changing landscape	

High | Moderate | Low

High	Medium	Low

Sources: Team Analysis

FACILITATING FINANCIAL INCLUSION AND EXPANSION OF UFH

Phased implementation of Lending Circles leading to financial inclusion of 800k+ people in the regions

Sumatra

UFH

LENDING CIRCLES

Java

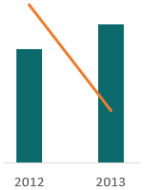
*>> Bridging the gap by **Banking the Unbanked** in Java and Sumatra through the launch of Lending Circles <<*

Financial Inclusion — **Community Lending** — **Impact Generated**

Refer to Appendix

IDENTIFY

- **Targeting the Underutilized Agriculture Sector**
  - **80%** farmers in Java don't own the land
  - Employs **50.69%** of the rural population in Sumatra, especially in **palm oil** production
- **The Rising Need for Agricultural Loans**



***Decline in Agricultural loans** as % of total loans while increase in IDR of the loans, signifying the gap in agricultural credit*

BUILD

- **Applying for the Loan**
  - Application Form and Survey
  - Financial Education Courses
- **Joining the Group**
  - Deciding Loan Amount and Order
  - Signing Loan Documents
- **Saving and Building Credit**
  - Loan offered at **0% interest rate**
  - Payments reported to UFH
  - **Credit Score** updated

IMPLEMENT

- **Adopting Dual Model**
  - Digital communication in tier 1 cities and towns
  - Leveraging existing **agent network** in Papua and NTT with poverty and illiteracy **>20%**
- **Launch and Expansion**
  - Pilot project in Java and Sumatra to facilitate coordination
  - Expansion to **Papua** and **East Nusa Tengarra** in Phase 2

800k +
People directly impacted through Lending Circles

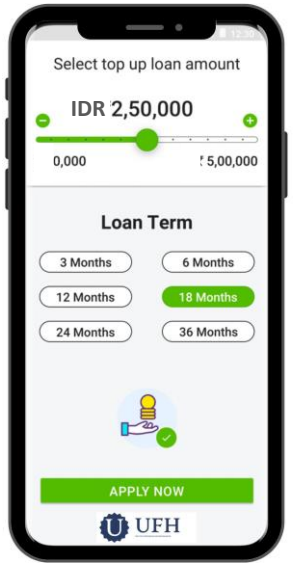
2.36%
Projected YoY Rise in Financial Inclusion

Sources: Mission Asset Fund. IMF, Team Analysis

UFH's CREDIT SCORING

Unveiling The Potential Of Automated Processing And An All-encompassing Credit Score

AI-volution: Optimising the Loan Procedure



	Digital Loan Application	Online form and documentation	Automated Document Verification through OCR	Loan Eligibility Assessment	Auxiliary Services (Training, Feedback)
Automation Process					
Estimated Savings in Time	5.5 hrs	4.5 hrs	3.2 hrs	4.9 hrs	2.7 hrs

Impact

Upto **3 days** Time Saved

IDR 512 mn Aggregate Cost Savings

Loan Eligibility Assessment: Deep Dive

Current Methodology

Psychometric

50% Honesty | **50% Reliability**

Measured via 23 statements on Likert Scale

Retrospective

Factor	Weightage
Payment History	35%
Credit Mix	10%
Amounts Owed	30%
Length of Credit History	15%
New Credit	10%

Our Solution: UFH Credit Score

Factor	Weightage
Psychometric	0.3
Retrospective	0.4
Peer Scoring (through Vision Credit Re-imagined)	0.3

Refer to Appendix

Credit Score to be calculated on the basis of weights with **accelerated repayment and progressive lending plan for low scorers**

Sources: GBG Indonesia, McKinsey reports

INTRODUCING CREDILINK : THE 3- PRONGED FINANCE (1/4)

Transforming the Micro Loan procedure through

Overview of Functioning of Credilink

Loan proposal of **IDR 3.5 mn**

Adika
28 year Old Farmer

Data Feeding	Account Aggregator	Loan Product Provider	Loan Disbursement
Financial data like tax returns, financials as well as KYC compliances through proposed structure	Account-Aggregator(AA) process all applications including credit history verification, combining financial and alternate data-sets, monitoring loans and repayment tools	This is where UFH comes in. Being a part of a network like Credilink solves problems of financial inclusion, operational inefficiency and enables expansion	The finalized loan structures and terms are managed by a Ayocnnect, the finance Open API Platform for loan disbursement
IDENTIFICATION LAYER	**DATA LAYER**	**PAYMENT LAYER**	

Loan Disbursal Assortments – Customer can choose amongst the varied loan amounts and interest rates

Loan Disbursement and Processing

Ayoconnect disburses loans **on behalf of UFH** with customer consent using data-layer architecture and intelligent solutions like **BI-Fast**

COST OUTLAY: IDR 806.25 mn

Sources: Finatier's website

Refer to Appendix

CREDILINK : THE IDENTIFICATION LAYER (2/4)

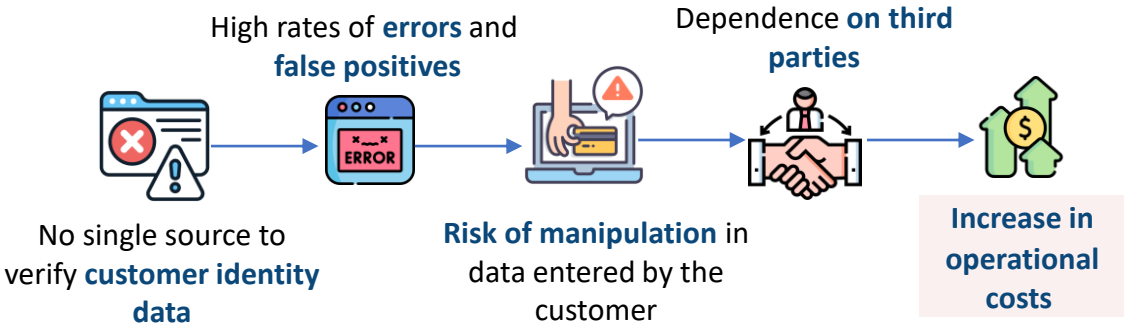
E-KYC: Addressing the Inefficiencies of the Current Credit Lending System by Addressing the Current Players

Structure of Current Credit Lending System

SOURCE	COST	PROCESS TIME
E-money players	IDR 16,000 – 115,000	1-2 Days(customer) 3-10 Days(Merchant)
P2P Lenders	IDR 26,000 – 76,000	1 day(customer) 1-3 Days(Merchants)
Banks	IDR 24,000 – 64,000	2 Months (G2P beneficiary)

Prolonged Loan Approval Duration Leading To Inefficiencies

Assessing the Industry's Value Chain



Mapping the Way Forward: Utilising e-KYCs

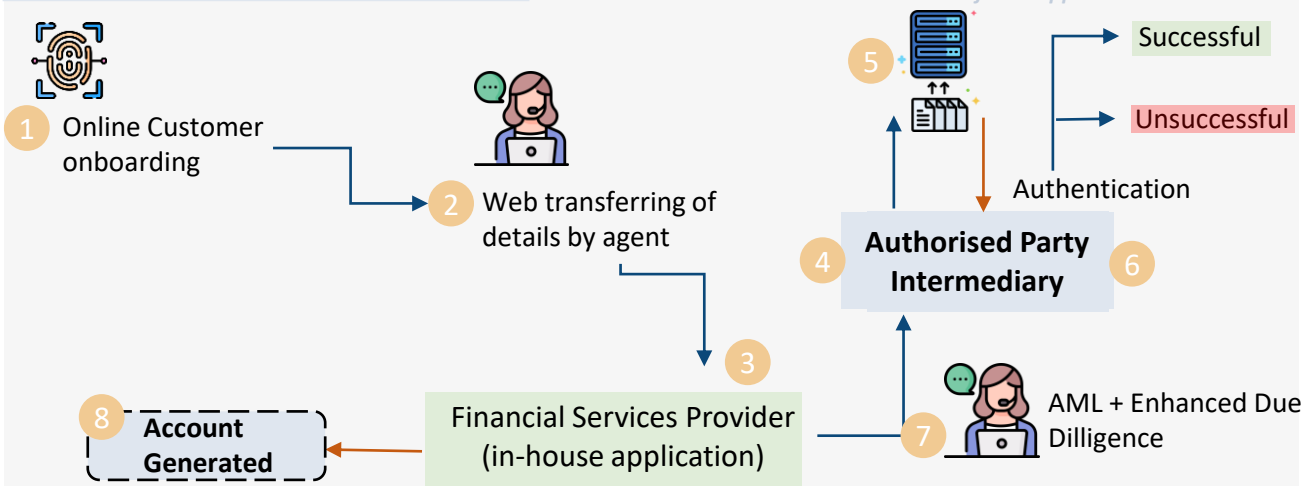
98% of the adult population with **Kartu Tanda Penduduk (e-KTP)** ID card

Feasibility of digital identity and **e-KYC solution** for **financial inclusion highlighted by GoI**

Booming **digital economy** and **fintech sector**

USD 3.9-4.2 billion
Savings in Indonesian FinTech using e-KYC

Real Time Biometric Authentication | **Customer Verification Activities and Automation**



Sources: MSC Policy

CREDILINK : THE PAYMENT LAYER (3/4)

Moving Away From Legacy Systems And Leveraging The BI – Fast Service For Loan Disbursement

How it all started…

2024
90% financial inclusion

2022
Phased Expansion and Adoption of BI-Fast

2021
Launch of BI-Fast

2020
Smartphone Penetration surpasses 75%

2019
Rollout of Financial Blueprint 2025

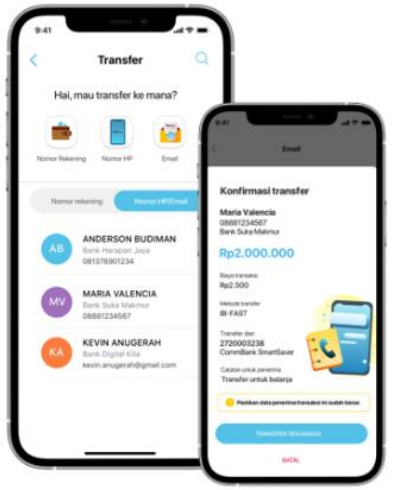
2017
Launch of QRIS and National Payment Gateway

Sources: GBG Indonesia, McKinsey reports

…to AyoConnect Disbursement Solution powered by BI-Fast

Why partner with AyoConnect ?

- Licensed by **Bank Indonesia**
- Flexibility to send funds to **70+ banks** in Indonesia that work together in **real time**
- **State Of The Art Dashboard** to keep track of payment history and credit scores
- Lower transfer cost than market rate, priced at **IDR 2400 ($0.16)**



Choice of Payment Service for Loan Disbursement

Payment Service	Real- Time Transfer	Enhanced Security	Low Charges	High Transfer Limit
Online Transfer	✓		✓	
RTGS		✓		✓
BI- Fast	✓	✓	✓	✓
SKNBI		✓	✓	
RTOL	✓	✓		✓

Loan Transfer Journey

Adika approaches UFH for loan needs

UFH

UFH connects with loan disbursement facility

ayoconnect

DBS · HSBC · Commonwealth Bank

Processing of loan via BI Fast

BI Fast

Loan Transferred and Adika's financial needs are met

CREDILINK: THE DATA LAYER(4/4)

Leveraging Bank Indonesia's BI- FAST Service To Facilitate Real Time Transfer Of Micro Loans

Virtuous Cycle for an MSME Entrepreneur

I. Consent Artefact

A technology standard to replace all-permissive terms and conditions forms

- **O** – Open for all
- **R** – Revocable(By Individuals)
- **G** – Granular (Sets the data access time)
- **A** – Auditable
- **N** – Notice (Provides information to all parties)
- **S** – Secure (By design)

II. Financial Information Standards

Account-Aggregators (AA) like **Finfini** and **Finantier** could process loan applications instead of multiple banks

DIGITAL FOOTPRINTS

STEP 1

CONSENTED DATA SHARING

STEP 2

REGULAR BUSINESS CREDIT

Helping entrepreneurs get capital, cash flow, credit, credibility, and lower interest rates

STEP 3

BUSINESS GROWTH

STEP 4

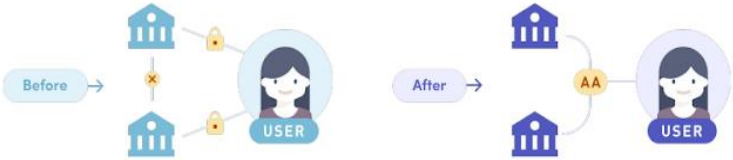
TAX RETURNS AND BANK STATEMENT

Provides a more complete financial picture of the borrower and simplifies lending decisions

USP of AA Model

Auli is an empowered MSME entrepreneur

Auli can now securely share their financial data with **financial institutions** in the **AA model**



Sources: Team Analysis

A DEEPER LOOK INTO THE PRODUCT OFFERINGS

Agriculture Financing enables tapping Unexplored Market Potential and facilitates Expansion

Current Offerings

1051

Individual Loans
Problems solved through Credit Reimagined with improved Financial Inclusion

671

SMEs
Aided through Agricultural Value Chain Loans and Credilink

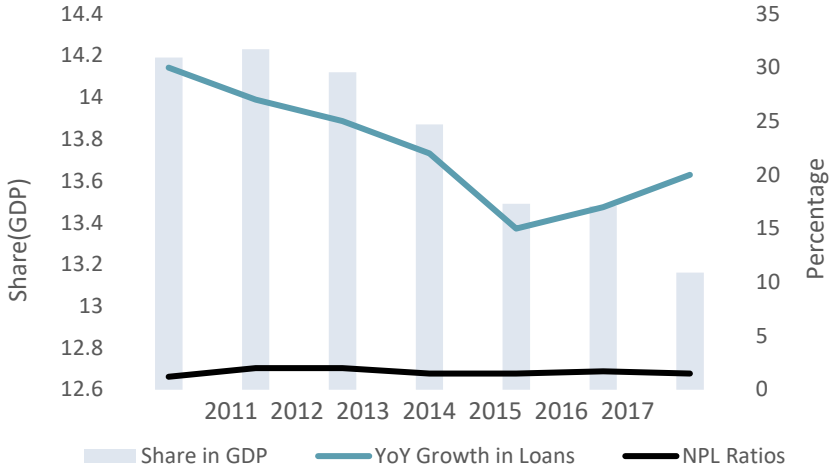
54

Established Loyal Clients
Tapped through Credilink

New Offering: Reasons to expand into Agriculture

Exploring the Demand-Supply Gap

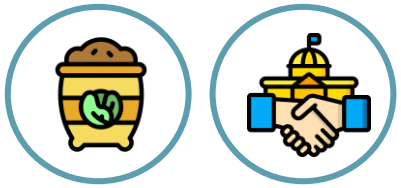
- Relative to GDP Contribution, Agriculture sector is underfunded
- MiBank and Women's Micro Bank are **the only financial institutions** to have introduced credit products aimed at **rural agricultural communities**



Graph showing the Demand-Supply Gap through underfunding via MFIs in Agriculture

Political Factors

1. **Failed Policy Initiatives:** Kredit Usaya Rukyat limited to just **26%** or IDR 36.4 trillion of all agricultural commodities



2. **Russia- Ukraine War:** Effect on prices of fertilisers**,** a necessary raw material for the agriculture sector

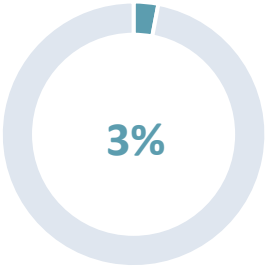
Our Product Offering	Introduction	Loan Application and Assessment	Collateral Identification	Loan Disbursement	Repayment
Agricultural Value Chain Loans **Loan Amount: IDR 7500(000)** **Interest Rate: 21.2% p.a.**	Introduction meeting with farmers and **identification** of his need for loan	This application will include **details** about the borrower's business plan, intended **use** of the funds. Analysis of the borrower's **creditworthiness** using **UFH's devised score**	UFH taps contracts executed by the farmer in the value chain; sets terms to render loans at **subsidized rates**	This can be done through **3-pronged Credilink strategy**	Order execution or completion of contract guarantees **repayment of loan**

Sources: OJK, OECD Database

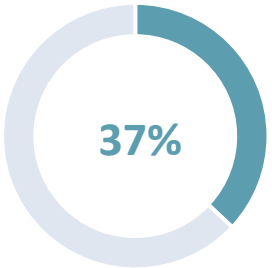
SCALING AND EXPANSION

Papua's Untapped Potential: Agricultural Diversification for Sustainable Household and Business Growth

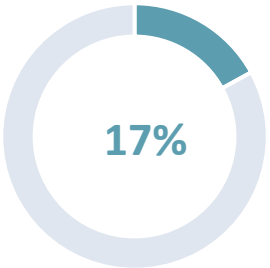
Analysing the lending landscape in Papua and East Nusa Tengarra



People with Credit Product



Financial Inclusion



Share of Agriculture in GDP

Long Term Goals

- Establishing Meaningful Collaborations
- Low and Middle Income groups escape the Debt Trap through UFH's Expansion

Phased Expansion Plan

Phase 1: Java and Sumatra

Perfecting the Model: Testing **the feasibility, scalability and impact** on operational efficiency through short term solutions of **Strategy Phoenix**

Time Frame: 3 yrs

Penetration Clientele: 5900+

Phase 2: Papua and East Nusa Tengarra

Huge Untapped Market: Over 900 farmer groups, less than **33% utilization capacity** and no Agricultural Extension Training centres

Time Frame: 3 yrs

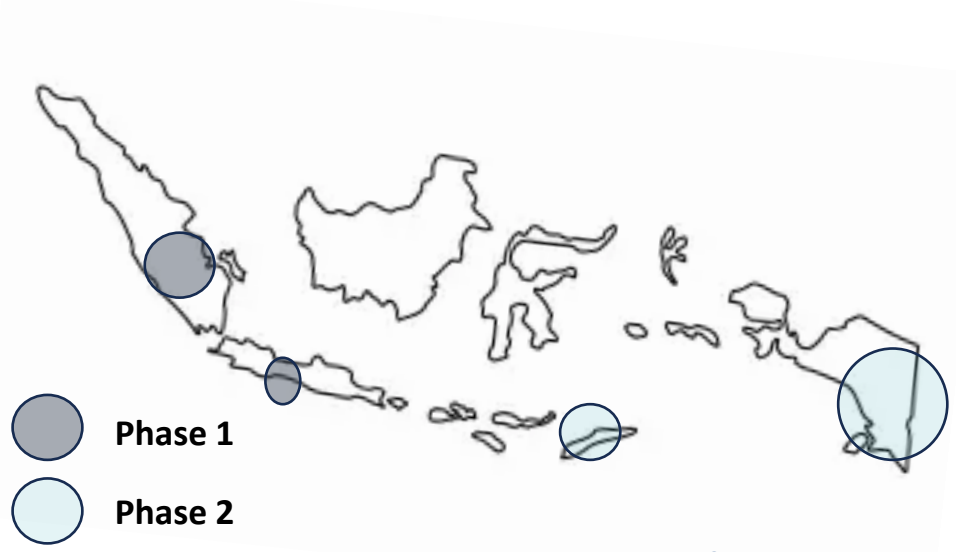
Penetration Clientele: 6100+

Phase 3: Nation Wide Expansion

Making use of lessons learnt from **Phase 2** and **Credilink** to drive a nationwide macroeconomic

Time Frame: 2 yrs

Penetration Clientele: Pan Indonesia



Refer to Appendix

Sources: OECD Database, Team Analysis

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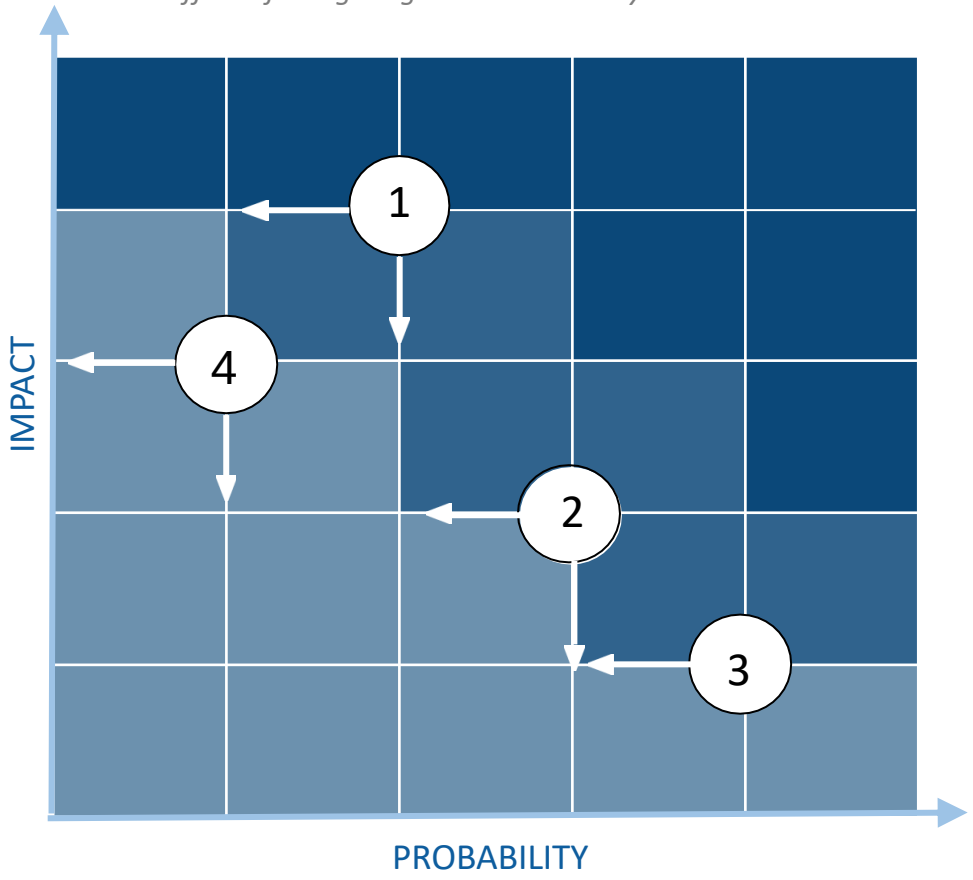
RISK ANALYSIS AND MITIGATION

Suitable Strategies to help UFH preemptively tackle risks due to external and operational factors

Risk Mapping

Note: Effect of Mitigating Actions shown by arrows



	Risk	Mitigation	KPIs
1	**Update Operational Systems to leverage Technological Advancements**	• Invest in cloud computing, big data analytics • Conduct regular training for employees on efficient usage of new technologies	**Reduction in Operational Costs**
2	**Modify or Add to Existing Product offerings to enhance Financial Inclusion**	• Conduct market research to understand the needs of low-income Indonesians • Partner with other financial institutions to offer new products	**Increase in the number of Low-Income Indonesians who are able to save and invest**
3	**Restart Collaboration between Sumatra and Java**	• Create a shared IT platform • Establish joint marketing initiatives • Create a dedicated team to facilitate collaboration	**Increased number of Regional Transactions**
4	**Introduce Agriculture Financing**	• Offer loans and savings products that are tailored to the needs of farmers	**Increase in Farmers' Income**

Sources: Team Analysis

IMPLEMENTATION TIMELINE

Decoding the step by step formulation and implementation of Strategy Phoenix

Priority wise Collaborations to generate maximum impact…

FINANTIER: *Company solving business problems via Tech*

One step solution for Automation, Credit Scoring and Account Aggregation

1

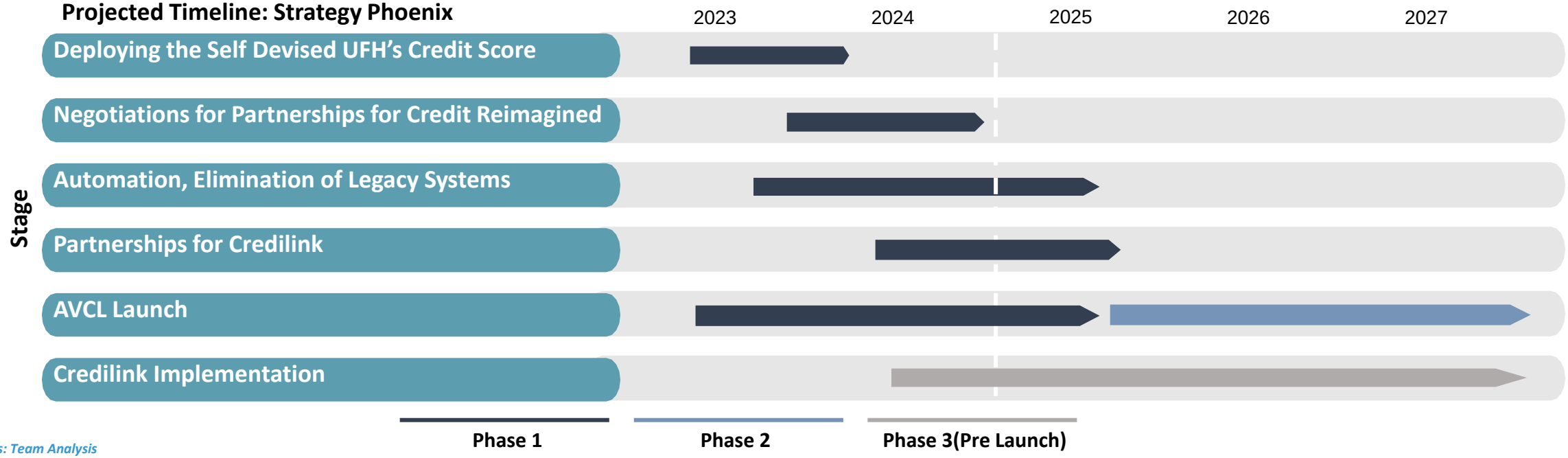
AYOCONNECT: *Company aiding Loan Disbursement*

Integral ending node of the Payment Layer in Credilink Mechanism

2

…Impact creation through Fulfillment of SDGs

Projected Timeline: Strategy Phoenix



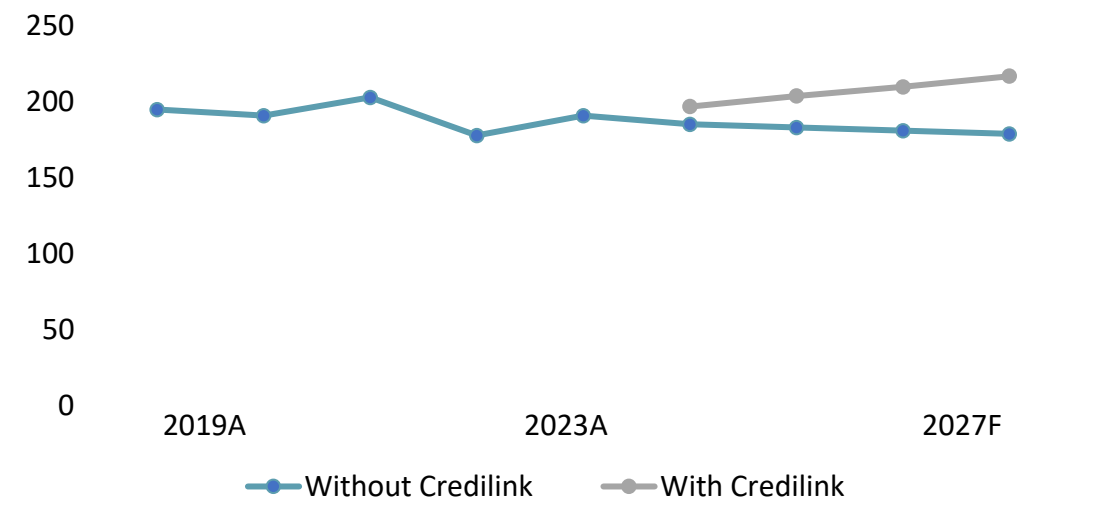
Sources: Team Analysis

FINANCIAL ANALYSIS OF THE PROPOSED STRATEGY

Leveraging the need of the hour to get a high positive NPV through Phoenix

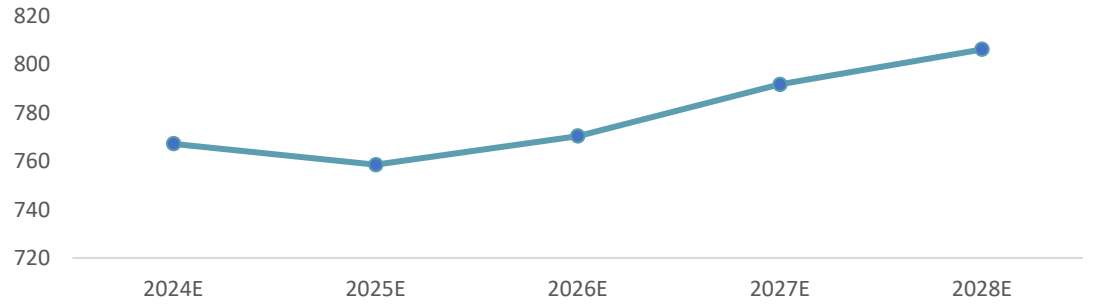
Rise in Loan Acceptance Rate: Increase in Operational Efficiency and Financial Inclusion

Number of Loans Accepted



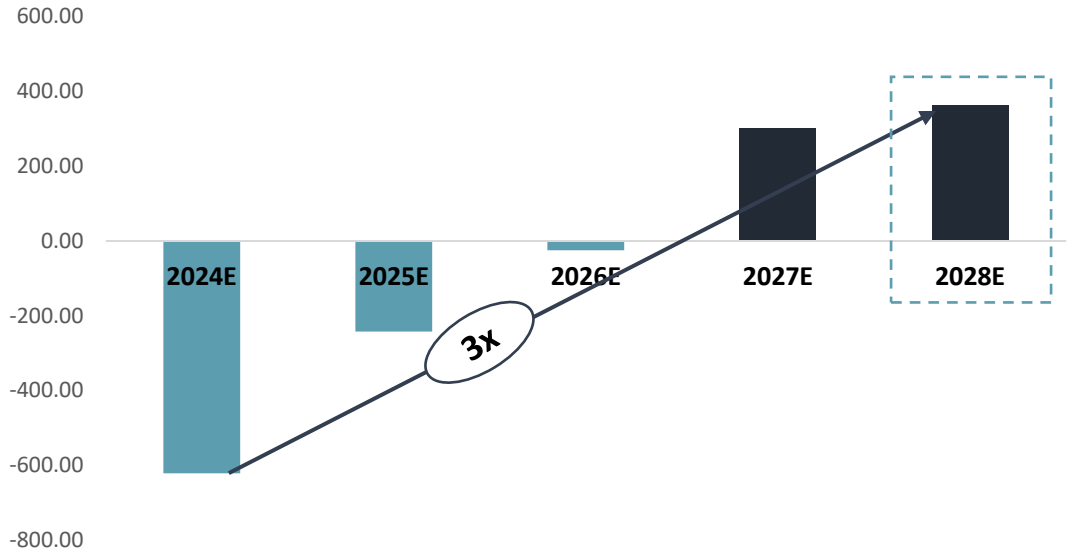
Cost required to develop Credilink

Cost(in mn IDR)



Positive Cash Flows: Viable and Implementable Strategy

Cash Flow Projections(in mn IDR)



Why Strategy Phoenix?

36%	8969	8.21%	1647
IRR	(mn IDR) Loans and Advances	CAPM	(mn IDR) NPV

Refer to Appendix

Sources: Team Analysis

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Solutions

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Appendix

APPENDIX: AUTOMATION

Unveiling the potential of automated processing and an all encompassing credit score

Cost and time savings via automation (Automation leads to a 30% fall in the time taken to complete each step, on an average)

Total Time Taken Presently	70			Rationale: 7 hour workday

Procedure	Cost Attributed	Time Spent(as a proportion of cost)	Savings in Time Spent
Loan Application	409	16.77211482	5.031634446
Online Form and Documentation	409	16.77211482	5.031634446
Automated Verification	267	10.94903339	3.284710018
Loan Eligibility	401	16.4440539	4.933216169
Auxiliary Services	221	9.06268307	2.718804921
Total	1707	70	21

Total Cost Savings	512.1			Rationale: No. of Hours saved* Hourly Costs

Improvement in Financial Inclusion via Organic Growth of our Credit Reimagined Policy

Region	Population	Financially Excluded	Financially Inlcusion after Credit Reimagined
Sumatra	59977300	8936617.7	211524.7762
Java	151600000	22588400	534654.8789
Papua New Guinea	10329931	1539159.719	36431.05546
East Nusa Tangerra	5466285	814476.465	19278.20544
			801888.916

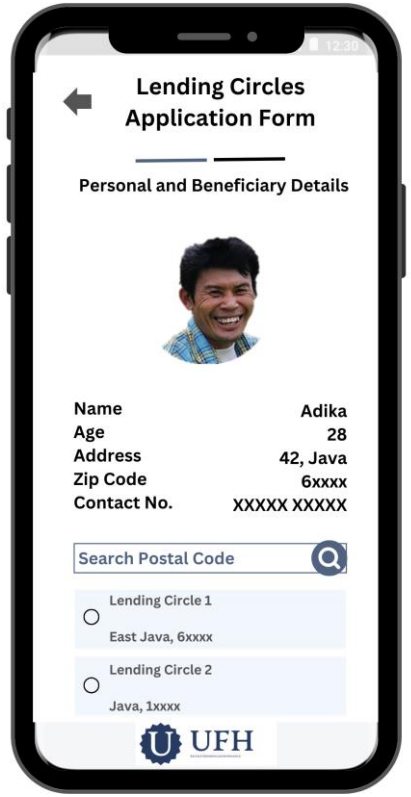
USA(Lending Circle	0.291666667
India(SHG Model)	2.5
Indonesia	2.97
Weighted Average	2.366944444

APPENDIX: LENDING CIRCLES

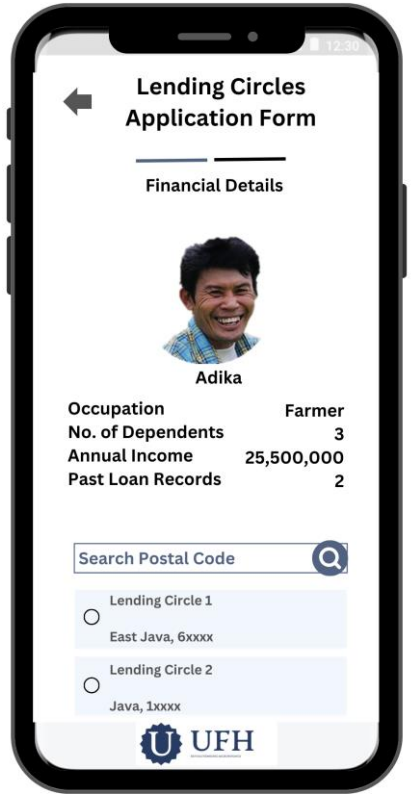
Exploring the mechanism

Lending Circles

Mobile Literate: Approximately 30%
Targeted through Online Applications



Personal and Beneficiary Details



Financial Details

Less Aware about Mobile
Targeted through Agent Network

Agents or Field Officers visit the Tier 2/3 areas

Target groups individually after looking at synchronized data server

Awareness through pamphlets, on the spot application filling using Officer's device

Goal Fulfilled: Financial Inclusion

APPENDIX: CREDIT SCORING

Unveiling the potential of automated processing and an all encompassing credit score

The Lending Circle Risk Score(P2P Credit Score)

Any default increases lending circle risk score which if pushed beyond a limit will **suspend loans**.
Acts as measure of Social Capital

Nominal Default	**1** risk score addition
Wrong Information Provided	**2** risk score addition

- Establishment of 0% interest initial lending circles aims at financial inclusion of low and middle income households
- Each circle would be required to furnish with details about the risk score of other members
- Large number of responses collected will remove any bias involved

Based on the final Credit Score, the following alternatives are recommended

LOW SCORE

ACCELERATED REPAYMENT

The loan repayment can be pushed a little earlier and at faster intervals, so that the overall risk is minimalised and spread out.

PROGRESSIVE LENDING

The loans can be lent out in a progressive manner with a **higher rate** starting from a smaller amount and then progressing towards larger sums to judge the credibility based on farmer's repayment.

HIGH SCORE

The person is granted the loan amount and the repayment would not be in a accelerated manner, but normalized manner

Adika, who struggled to get a loan earlier due to unavailability of information and low credit score is now granted a loan

APPENDIX: PRODUCT OFFERINGS

Exploring the attractiveness of Agriculture Value Chain Loans

Current situation of farmers…

Unfamiliar with loan products

Only **seven per cent** of farmers interviewed had taken out a loan from a formal institution.

Longer-Loan Terms

Both field agents and farmers prefer loan terms of **six months or more** to secure sufficient time for raising funds and repaying the loan.

Diverse needs for credit

Fifty-five per cent said they needed the loan for multiple reasons (crop diversification, non-farm expenses) while **45 per cent** said they would use the loan only for their cash crop.

…Existing Loan Products available to small farmers in Indonesia(focus on Papua)

PRODUCT	PARTNERS	VALUE CHAIN	TYPE OF LOAN	REGION	LAUNCHED	MONTHLY INTEREST
Agriculture Value Chain Loan (AVCL) [25]	MiBank, PNGAC, Cocoa Board, ADB, Pacific Private Sector Development Initiative (PPSDI)	Cocoa	Moveable asset: future contracted sales as collateral	East New Britain	2019	2%
Fisheries Loan[26]	MiBank, NDB, National Fisheries Authority of Papua New Guinea	Fish	Collateral equivalent to 30% of equity	Madang, Morobe	2019	1.5%
Speed Loan[27]	MiBank, Digicel	Various	Collateral in savings or deposit account	Nationwide	2019	2%-3%
Agricultural Loan	Women's Micro Bank, Kiva	Various	NA	Nationwide	NA	NA

Our Solution: Revamping the product on the basis of Bottlenecks

APPENDIX: CREDILINK

Choice of Account Aggregator and Key Savings through utilization of e-KYC

Choosing the Account Aggregator
Finantier

Choice of Account Aggregator

Account Aggregator	Ease of Use	Data cleanliness	API Offerings	Breadth of Connections
Finantier	✓	✓	✓	
FinFini	✓		✓	✓
Musoni		✓		✓
Oradien	✓		✓	

Data points used in the model from the study	Value (assumptions)
Average cost of the current process (including customer, merchants, borrowers, and lenders) a) E-money b) P2P	 IDR 24,000 (USD 1.62) IDR 48,500 (USD 3.28)
Assumed cost of e-KYC through Dukcapil for one application	IDR 5,000-7000 (USD 0.34-0.47)
Current administrative costs	IDR 8,000
Assumed savings in administrative cost	50%

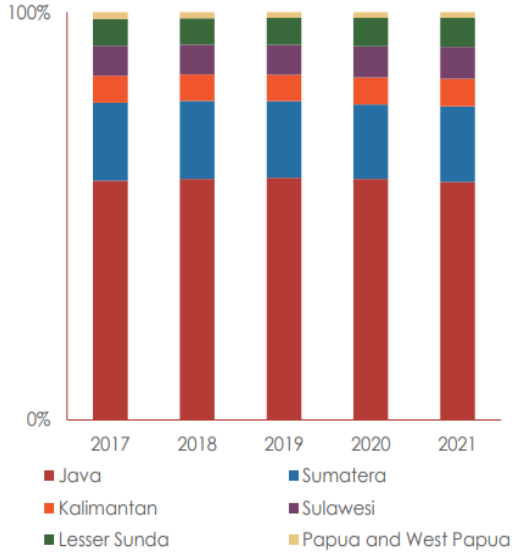
Data points used in the model	Value
Current number of customers: a) E-money b) P2P	 125 million 16.4 million
Growth rate for the e-money sector Assumed mean revert rate	15% for 5 years 5%
Growth rate for the P2P sector Assumed mean revert rate	10% for 5 years 2%
Population growth	1.01%
Interest-free rate used for present value calculations (across all years)	6.73%

Credilink Impact: Assumptions

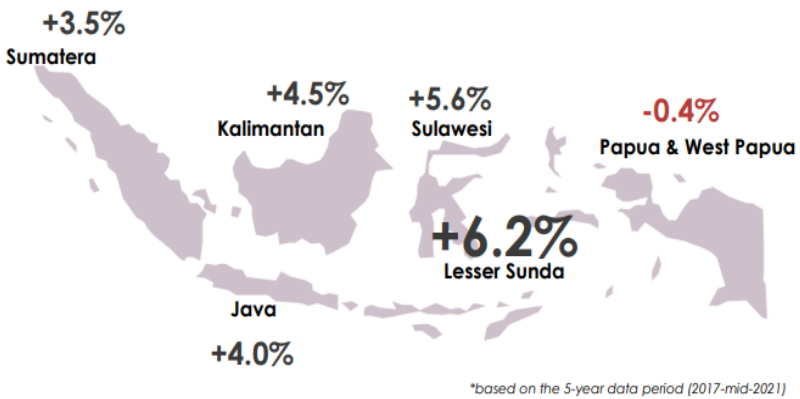
APPENDIX: Quantitatively Analysing Reasons for Expansion

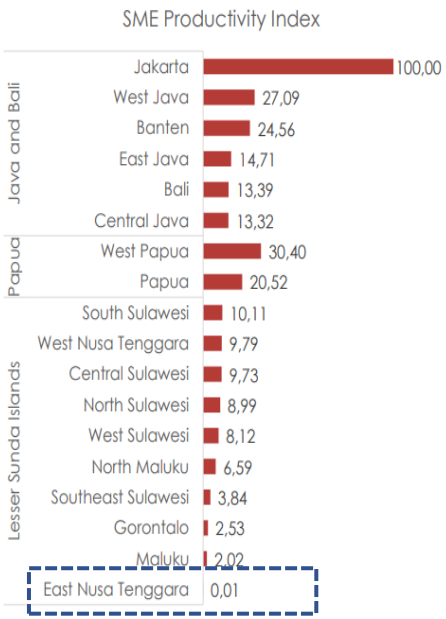
Exploring the untapped SME loan potential of East Nusa Tengarra

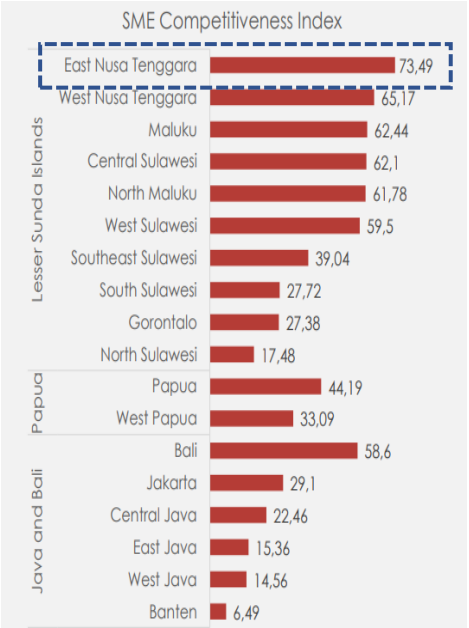
Around 59% of MSME loans are concentrated in Java



While the average annual growth* of MSME loans are the highest in the Lesser Sunda Islands







Unmet Demand and High Growth Potential

- Low disbursal of MSME loans
- Highest Annual Growth Rate of loans
- Lowest Productivity and Highest Competitiveness

APPENDIX: ASSUMPTIONS

preliminary clarifications for assessing targeted market growth rate

ASSUMPTIONS										
Years	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	
Base Case											
Growth Factor used to obtain market share					0%	0.00%	0.00%	0.20%	0.10%	0.10%	
Net Increase in Loan Books(%)											
With Project Credilink					5.20%	**5.73%**	**6.30%**	**6.94%**	**7.64%**	**8.41%**	
CAGR of Microfinance Industry(Indonesia)					10.10%						
(Assumption taken based on the industry cagr and pre-existing digital solution growth rates)											
Additional Investment Assumptions(y-o-y rate, % of Revenue)											
Maintenance						8.00%	8.00%	8.00%	8.00%	8.00%	*Average growth rate with respect to average loan size*
Adoption and education - Marketing						7.00%	7.00%	7.00%	7.00%	7.00%	*Average growth rate with respect to average loan size*
Platform						3.00%	3.00%	3.00%	3.00%	3.00%	*After inception, these reduce drastically*
Set up costs							5.00%	5.00%	5.00%	5.00%	*Nominal for consecutive years after inception*
Data Validation and analysis						8.00%	8.00%	8.00%	8.00%	8.00%	*More number of borrowers and more complex methods will increase costs in a sustained way*
Salary Assumptions											
Employee Costs(% of total expenses)					79%	73%	71%	61%	53%	49%	
(Employee costs would tend to decrease drastically owing to unemployement trends and recent layoffs)											
Total Expenses					2,192.00	2,025.54	2,066.41	2,057.60	2,077.91	2,083.13	
Total Employee Costs					**1,731.68**	**1,478.64**	**1,467.15**	**1,255.14**	**1,101.29**	**1,020.74**	

APPENDIX: CASH FLOW PROJECTIONS

Impact Assessment on the basis of Cash Flow Projections

Years	2023A	2024E	2025E	2026E	2027E	2028E	
			Cashflow Projections				
Cashflow Projections(000,000's IDR)							
Loans and Advances							
Without Credilink	*8,969.50*	*8,518.12*	*8,533.01*	*8,677.75*	*8,694.20*	*8,677.01*	*The client breakdown given in the problem statement to find the total amount of loans disbursed in Jun 23 using flat rates and size of each loan*
Project Credilink		**9483.02**	**9055.05**	**9125.20**	**9340.82**	**9425.63**	
y-o-y growth(%)		*5.73%*	*6.30%*	*6.94%*	*7.64%*	*8.41%*	*Calculated in assumptions with a weighted average sum of Indonesia's GDP and lending sector CAGR*
Net Interest Income Earned							
Without Project Credilink	*1,995.86*	*1,895.42*	*1,898.74*	*1,930.94*	*1,934.60*	*1,930.78*	
Project Credilink		**2,110.13**	**2,478.00**	**2,563.78**	**2,780.03**	**2,803.98**	
Increased Cashflows from lending		**214.71**	**579.26**	**632.84**	**845.43**	**873.20**	
SALARY AND WAGES							
Project Credilink	1,731.68	1,478.64	1,467.15	1,255.14	1,101.29	1,020.74	
Without Project Credilink	1,734.00	1,637.00	1,663.44	1,658.17	1,667.98	1,671.80	
Cashflows from Costs Savings		158.36	196.29	403.04	566.69	651.07	
Cashflow after adjusting for salaries and wages		**373.07**	**775.55**	**1,035.87**	**1,412.11**	**1,524.27**	

APPENDIX: CASH FLOW PROJECTIONS

Impact Assessment on the basis of Cash Flow Projections

ADDITIONAL EXPENSES							
Maintenance	143.00	265.07	286.27	309.17	333.91	360.62	
Transaction Costs		*94.83*	*90.55*	*91.25*	*93.41*	*94.26*	*As per industry estimates, 1% of the total amount of disbursals is incurred in transaction costs*
Merchant Discount Rate (MDR)		*28.45*	*27.17*	*27.38*	*28.02*	*28.28*	*0.03% of total loans and advances*
Technology Infrastructure Upgrade Fees		*141.79*	*144.65*	*144.03*	*145.45*	*145.82*	*Global proxy used for technological expenditure(7%) in credit lending sector*
Aggregator Charges		142.25	135.83	136.88	140.11	141.38	*OneMoney India Account Aggregator and Data Analytics charges taken as proxy*
Platform charges		152.02	156.58	161.28	166.12	171.10	*Average Financial services app platform costs is $5000/year in Indonesia*
App development and functioning		*152.02*	*156.58*	*161.28*	*166.12*	*171.10*	
Set up costs		250.00	262.50	275.63	289.41	303.88	
Identification Layer		*150.00*	*157.50*	*165.38*	*173.64*	*182.33*	*Based on team analysis and estimation of various components of each layer, a weightage of 60%(of total set-up costs) was given*
Payment Layer		*25.00*	*26.25*	*27.56*	*28.94*	*30.39*	*Based on team analysis and estimation of various components of each layer, a weightage of 10%(of total set-up costs) was given*
Data Layer		*45.00*	*47.25*	*49.61*	*52.09*	*54.70*	*Based on team analysis and estimation of various components of each layer, a weightage of 30%(of set-up costs) was given*
Data Validation and analysis		184.92	176.57	177.94	182.15	183.80	
Data Validation(E-KYC setup)		*9.48*	*9.06*	*9.13*	*9.34*	*9.43*	*assumed to be 0.001% due to Presence of E-KTM with 98% population leads to no onboarding or data collection c*
Data Analytics cost		*175.44*	*167.52*	*168.82*	*172.81*	*174.37*	*OneMoney India Account Aggregator and Data Analytics charges taken as proxy*
Total		**994.25**	**1,017.75**	**1,060.90**	**1,111.69**	**1,160.78**	
NET CASH FLOW		**-621.18**	**-242.20**	**-25.02**	**300.42**	**363.49**	

APPENDIX: KEY CALCULATIONS

Important financial indicators to justify out strategy

NPV AND IRR CALCULATIONS					
	2024E	2025E	2026E	2027E	2028E
Year	1	2	3	4	5
Cashflows	-621.18	-242.20	-25.02	300.42	363.49
Present Value(P.V)	-574.05	-206.84	-19.75	219.11	244.99
Last Cashflow	363.49				
WACC	10.22%				
Value	3,556.63				
PV	1,983.70				
NPV	**1,647.16**				
FCF	-574.05	-206.84	-19.75	219.11	244.99
Terminal Value					1,983.70
Total	-574.05	-206.84	-19.75	219.11	2,228.69
IRR	**36%**				

COST OF EQUITY	
Risk-Free Rate	6.41%
Indonesia ERP	7.89%
Country Risk Premium	2.89%
Regression Beta	0.36
Cost of Equity(CAPM	**8.21%**

*(The financial structure only inculcates the cost of equity as **debt component is not present**)*

*(All measures taken from the website of **Aswath Damodaran**)*

APPENDIX: CALCULATIONS FOR CREDILINK

Justifying Credilink's 3-pronged costing strategy

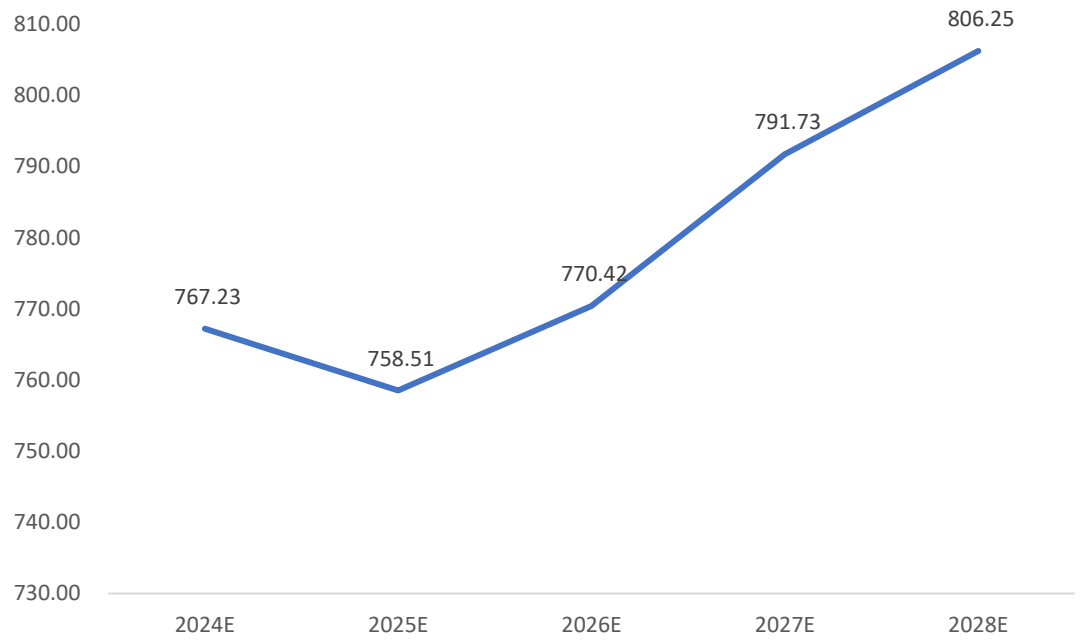
IDENTIFICATION LAYER	2024E	2025E	2026E	2027E	2028E
Setup Cost	150.00	157.50	165.38	173.64	182.33
Data Validation	9.48	9.06	9.13	9.34	9.43
Identifaction Layer Cost	**159.48**	**166.56**	**174.50**	**182.98**	**191.75**

PAYMENT LAYER	2024E	2025E	2026E	2027E	2028E
Transaction Costs	94.83	90.55	91.25	93.41	94.26
Merchant Discount Rate (MDR)	28.45	27.17	27.38	28.02	28.28
Technology Infrastructure Upgrade Fees	141.79	144.65	144.03	145.45	145.82
Setup Costs	25.00	26.25	27.56	28.94	30.39
Payment Layer Cost	**290.07**	**288.61**	**290.22**	**295.83**	**298.74**

DATA LAYER	2024E	2025E	2026E	2027E	2028E
Aggregator Charges	142.25	135.83	136.88	140.11	141.38
Data Analytics Charges	175.44	167.52	168.82	172.81	174.37
Setup Costs	45.00	47.25	49.61	52.09	54.70
Data Layer Cost	**317.68**	**303.34**	**305.69**	**312.92**	**315.76**
CREDILINK TOTAL PROJECT COST	**767.23**	**758.51**	**770.42**	**791.73**	**806.25**

Assumptions & Sources

1. Presence of E-KTM with 98% population leads to no onboarding or data collection cost
2. KYC Setup Cost -https://seon.io/resources/cost-of-kyc/#h-3-implement-dynamic-friction-checks = $130 (= 2Mn IDR)
3. Authentication and E-KYC cost post setup - https://www.microsave.net/wp-content/uploads/2021/01/PB-24_-KYC-practices-in-Indon
4. Transaction Cost as per AyoConnect website, covers operational and other expenses
5. AyoConnect has waived off setup fees and disbursement integration fees for early birds
6. OneMoney India Account Aggregator and Data Analytics charges taken as proxy



APPENDIX: LOAN BREAKDOWN AND CLIENT OUTREACH

Assessing the effect of Credilink on credit lending in Indonesia

Loan Breakdown

LOAN BREAKDOWN(AS OF JUN-23)

Type of Loan	Number of Clients	Size(000's IDR)	Loans and Advances	Flat Rate(%)	Net Income Earned
Individual	1,051.00	3,500.00	36,78,500.00	22.50%	8,27,662.50
Small Enterprise	671.00	7,000.00	46,97,000.00	22.50%	10,56,825.00
Established Client	54.00	11,000.00	5,94,000.00	18.75%	1,11,375.00
Total			**89,69,500.00**		**19,95,862.50**

Client Outreach Projections

CLIENT OUTREACH

Years	2019A	2020A	2021A	2022A	2023A	2024E	2025E	2026E	2027E	2028E	Rationale
Loan applications											
Applied for loan											
With Credilink							340	351	362	374	386	
y-o-y growth(%)							3.24%	3.24%	3.24%	3.24%	3.24%	
Without Credilink		271	361	291	309	329	331	338	344	351	357	Forecasted by Regression Analysis
y-o-y growth(%)			33.21%	-19.39%	6.19%	6.47%	0.73%	1.93%	1.89%	1.86%	1.83%	
Year weight		1	2	3	4	5	6	7	8	9	10	
Accepted loans											
With Credilink							197	204	210	217	224	
y-o-y growth(%)							3.24%	3.24%	3.24%	3.24%	3.24%	
Without Credilink		195	191	203	178	191	185.3	183.2	181.1	179	176.9	
y-o-y growth(%)			-2.05%	6.28%	-12.32%	7.30%	-2.98%	-1.13%	-1.15%	-1.16%	-1.17%	

29 0.080855561

APPENDIX: MARKET PENETRATION

Estimating Market Size with Phoenix

CLIENT ESTIMATION IN THE POTENTIAL STATES					
In Mn					Rationale
Population Divide	**Java**	**Sumatra**	**Papua**	**East Nusa Tengarra**	
Total Population	151.6	59.98	4.42	5.47	*2022 Official Estimate - Wiki*
Males(%)	*49.60%*	*49.95%*	*49.44%*	*50.10%*	*Determined from sex ratio calculations*
Females(%)	*50.40%*	*50.05%*	*50.56%*	*49.90%*	*Determined from sex ratio calculations*
Males	75.19	29.96	2.18	2.74	
Females	76.41	30.02	2.23	2.73	
Urban-Rural Divide					
Urban Population(% of total population)	*56.60%*	*56.20%*	*62.20%*	*62.20%*	*https://www.adb.org/sites/default/files/publication/28436/informal-sector-indonesia.pdf*
Rural Population(% of total population)	*43.40%*	*43.80%*	*37.80%*	*37.80%*	*https://www.adb.org/sites/default/files/publication/28436/informal-sector-indonesia.pdf*
Rural Population	**65.8**	**26.3**	**0.8**	**2.1**	
Occupation Divide					
% people engaged in agriculture(% of Rural Population)	*63.50%*	*57.70%*	*67.20%*	*45.20%*	*World bank Estimates - Assumption of % as Indonesia's employment*
% people not engaged in agriculture(% of Rural Population)	*36.50%*	*42.30%*	*32.80%*	*54.80%*	*World bank Estimates - Assumption of % as Indonesia's employment*
People Engaged in Agriculture	**41.8**	**15.2**	**0.5**	**0.9**	
Informal sector(%)	*70.00%*	*57.80%*	*70.90%*	*61.20%*	*World bank Estimates - Assumption of % as Indonesia's employment*
Informal sector	**29.2**	**8.8**	**0.4**	**0.6**	
Formal sector(%)	*30.00%*	*42.20%*	*29.10%*	*38.80%*	*World bank Estimates - Assumption of % as Indonesia's employment*
Formal sector	**12.5**	**6.4**	**0.2**	**0.4**	
People not Engaged in Agriculture	**24.0**	**11.1**	**0.3**	**1.1**	
NECESSATY BASIS					
Farmers that require Credit	16.7	6.1	0.2	0.4	*Based on Survey analysis, 40% require credit*
Non-Farmers that require Credit	4.80	2.22	0.05	0.23	*Based on Survey analysis, 20% require credit*
Total	**21.5**	**8.3**	**0.3**	**0.6**	
Intended market share(%)	*10.00%*	*10.00%*	*10.00%*	*10.00%*	*Based on Team estimates accounting for similar proportion in lending sector*
Market size to capture	*2.15*	*0.83*	*0.03*	*0.06*	
Conversion Ratio(%)	*0.20%*	*0.20%*	*0.20%*	*0.20%*	*Based on Team estimates accounting for similar proportion in lending sector*
Potential Clientele(Number of Clients)	**4303**	**1657**	**53**	**120**	

APPENDIX: FAILED INITIATIVE - KUR

Analysing Micro KUR requirements

Micro KUR requirements (according to BRI):
- Individuals who carry out productive and viable businesses
- Has been actively doing business for at least 6 months
- Not receiving credit from banks except for consumer loans such as KPR (Home Ownership Loans), KKB (Motor Vehicle Loan), and credit cards
- Administrative requirements: Identity in the form of KTP (Indonesian identity card), Family Card (KK), and business permit
Micro KUR's terms:
- Maximum loan of IDR 50 million/debtor
- Loan types: Working Capital Loan (KMK) with a maximum term of three years/ Investment Loan (KI) with a maximum term of five years
- Effective interest rate of 6% per year
- No provision fee or administration fee
- No collateral required

KUR requirements (according to BRI):
- Have a productive and productive business
- Not receiving credit from banks except for consumer loans such as KPR, KKB, and Credit Cards
- Has been actively doing business for at least 6 months
- Have a Micro and Small Business Permit (IUMK) or other business permit that can be equalized
KUR terms:
- Loan of IDR 50 – 500 million
- Loan types: Working Capital Loan (KMK) with a maximum term of three years; Investment Credit (KI) with a maximum term of five years
- Effective interest rate of 6% per year
- No provision fee or administration fee
- Collateral per the bank's regulation

APPENDIX: REFERENCES

The sources we referred to

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- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8082208/

Thank you