

FINTECH & BANKING INDUSTRY

21 October 2017 • Hotel NEO Malioboro Yogyakarta

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INTRODUCTION

Indonesia Digital Economy



DIGITAL ECONOMY VISION OF INDONESIA

The biggest digital economy in ASEAN by 2020
US\$ 130 billion E-Commerce transaction in 2020

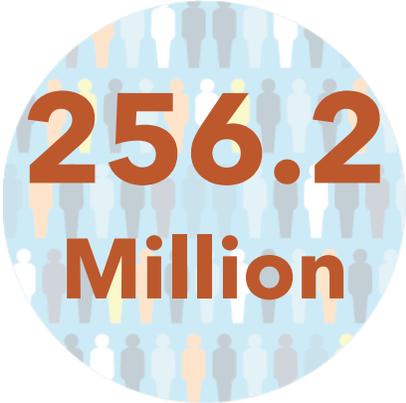
INDONESIA THE DIGITAL ENERGY OF ASIA 2020 GO DIGITAL VISION



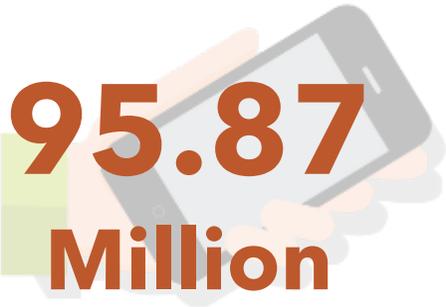
Source: MCIT (2016)

INDONESIA IS A DIGITAL COUNTRY

TOTAL
POPULATION



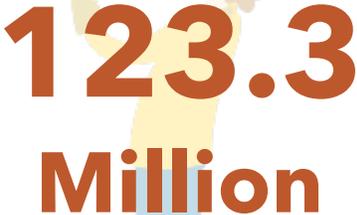
SMARTPHONE
USERS



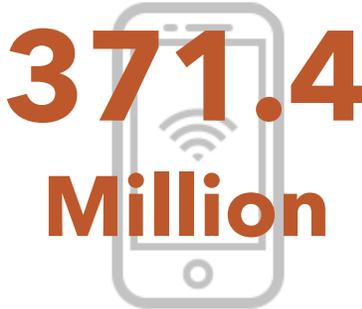
ACTIVE
INTERNET USERS



ACTIVE MOBILE
INTERNET USERS



MOBILE
CONNECTIONS

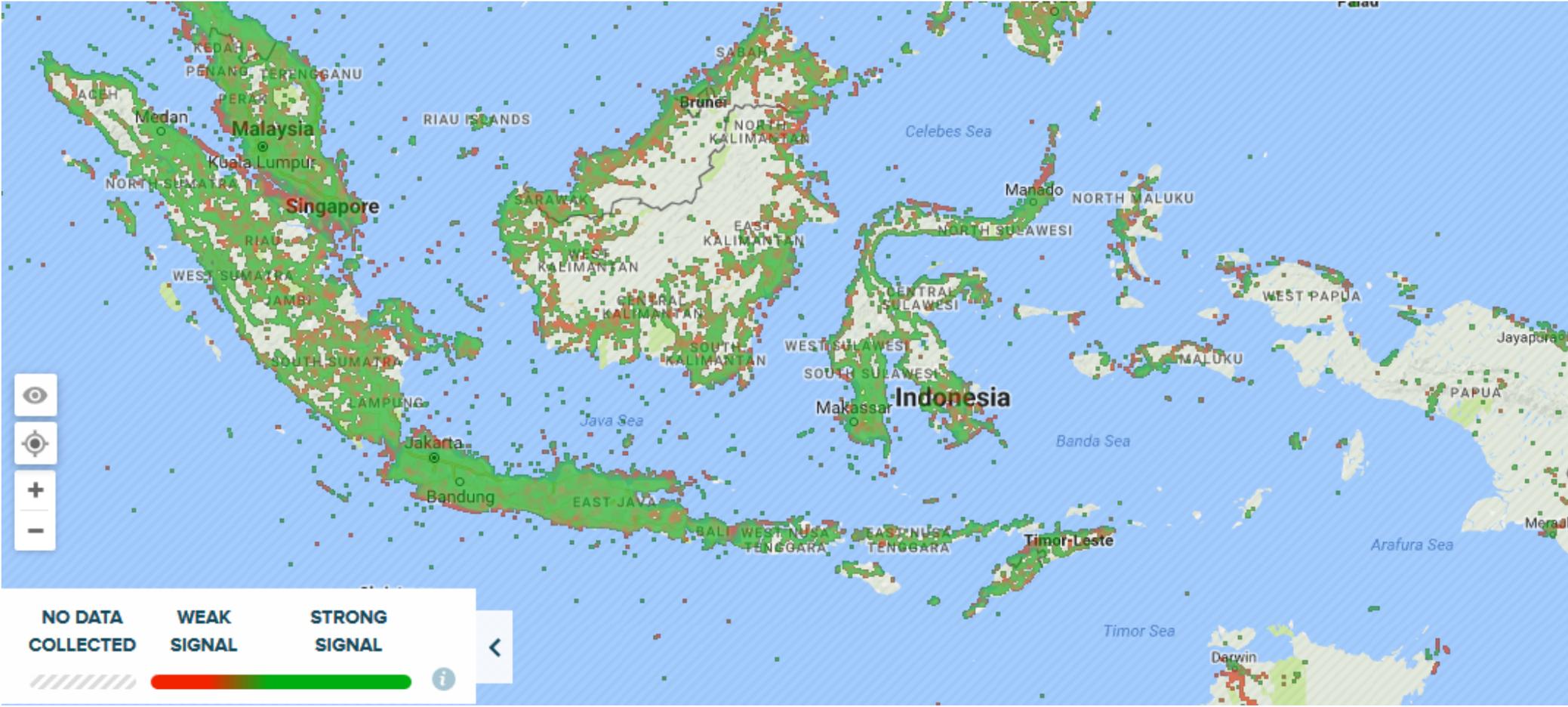


AVERAGE DAILY USAGE
OF MOBILE INTERNET



Source: APJII (2016), We Are Social (2017)

INEQUALITY IN INFRASTRUCTURES



WORLDWIDE COMPARISON

Network Readiness Index 2016 (Rank)

- Singapore (1)
- Malaysia (31)
- Thailand (62)
- **Indonesia (73)**
- Philippines (77)
- Vietnam (79)
- Cambodia (109)
- Myanmar (133)

Global ICT Development Index 2016 (Rank)

- Singapore (20)
- Malaysia (61)
- Brunei (77)
- Thailand (82)
- Vietnam (105)
- Philippines (107)
- **Indonesia (115)**
- Cambodia (125)
- Timor Leste (128)
- Myanmar (140)
- Laos (144)

GSMA Mobile Connectivity Index (Score)

- Singapore (80.8)
- Malaysia (65.4)
- Thailand (63)
- Brunei (61.6)
- Philippines (59.2)
- Vietnam (54.4)
- **Indonesia (53.9)**
- Laos (38.4)
- Cambodia (37.9)
- Myanmar (28.6)

DIGITAL ECONOMY HYPE IN INDONESIA

RIDE-SHARING SERVICES



UBER

FINTECH



E-COMMERCE



DIGITAL ECONOMY BENEFITS

- Efficiency
 - ICT capital replacing labor and non-ICT capital
- Innovation
 - New type of economy, disruption
- Inclusion
 - Trade expansion, financial inclusion, jobs creation

BANKING THE FUTURE

Digital Innovation in Banking and Finance



PREDICTING A FUNDAMENTAL SHIFT IN BANKING

- Demographic development and societal change
 - The rise of emerging countries
 - The rise of millennial generations
 - Rapidly rising inequality
 - Aging population and retirement
 - Increasing diversity and gender equality
 - Living in a post-truth era
- Technological innovation
 - Agency cost
 - Transaction cost economies
 - Network externalities
 - Disruptive innovation
 - Other technological factors
- Shifts in the regulatory context
 - Banking institutions and organisational isomorphism
 - Challenges to develop an optimal distinctiveness

DEMOGRAPHIC DEVELOPMENT AND SOCIETAL CHANGE

- The rise of emerging countries, including Indonesia
 - By 2030 the world's population is projected to become over eight billion
 - 97% of this population growth will come from emerging or developing countries
 - People in all regions are tend to be living longer and having fewer children
- Millennials are becoming the most dominant forces shaping the way we bank
 - Those between the ages of 18 and 30
 - Usually university educated, sometimes graduated overseas
 - Professional workers or lifestyle entrepreneurs
 - Relatively well paid, tech savvy and more globally minded
 - Relatively high expectations and more demanding
 - YOLO (you only live once) spending habit -- work hard, play hard
- Declining extreme poverty, but rapidly rising inequality
 - Over the last 30 years, extreme poverty (living on \$1.9 a day or less) has been cut in half (World Bank, Our World in Data, 2013)
 - People who live below the higher poverty line (\$5.04) was cut by 18% from 1980 to 2012, and the poverty headcount at the lower line (\$2.52) was reduced by 37 percent
 - Millennials, born in the 1980s, only have a 50% likelihood of earning more money than their parents did
 - The top 1% of earners captured less than 21% of total income in the late 1930s, rising to 22% today (Piketty, 2013)

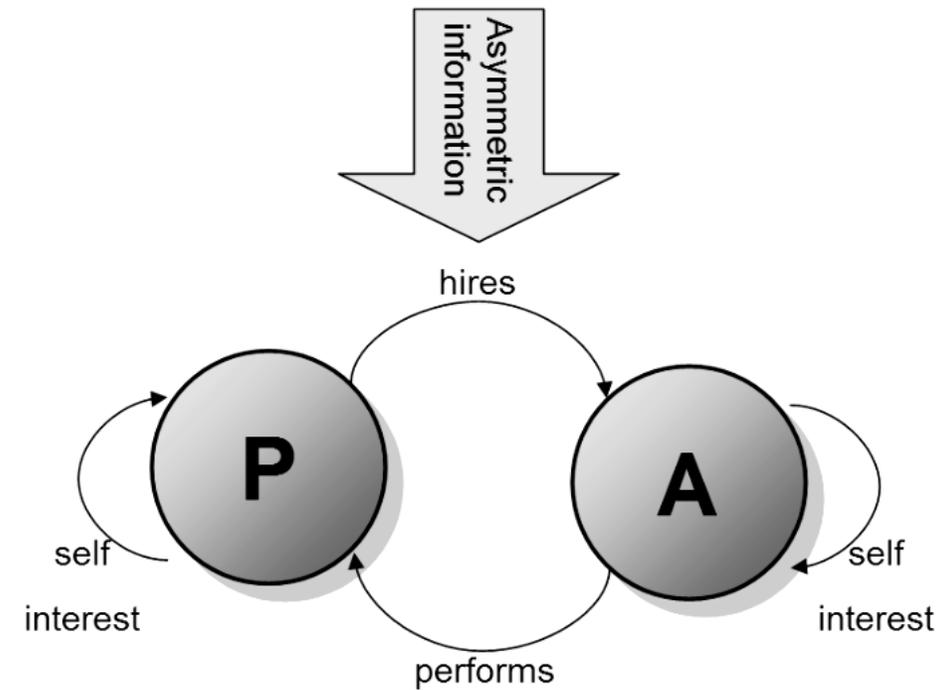
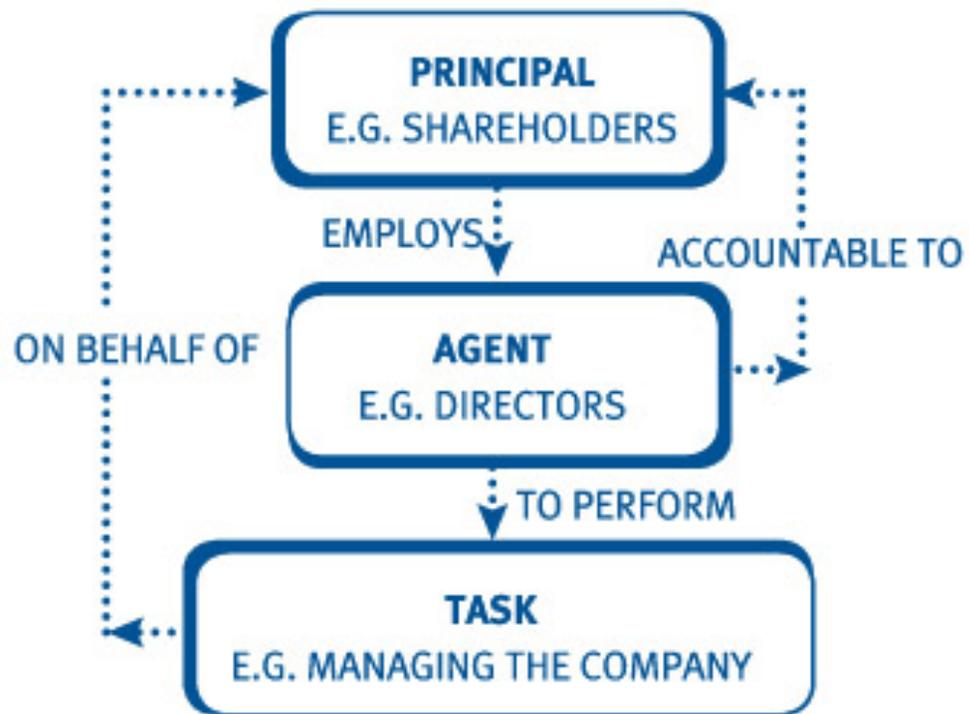
DEMOGRAPHIC DEVELOPMENT AND SOCIETAL CHANGE

- Ageing populations and retirement
 - Asia has nine people of working age to support each elderly person on average. By 2050 that number will more than halve to four people (UN Population Division, 2015)
 - Addressing that shortfall will require greater workforce participation by two groups: women and the elderly themselves
 - Greater participation in the workforce by people in their late 50s, 60s and 70s could have a significant impact on GDP
 - An ageing population and lower asset returns could double the annual cost of maintaining retirement standards
- Increasing diversity and gender equality
 - Global pressure towards increasing racial and ethnic diversity
 - Affirmative action to achieve equal opportunity, including those with disabilities
 - Favor towards greater female participation, expand the number of women in the workforce
 - Women are having fewer children and having them later in life
 - Women already control two thirds of the household budget and will continue to rise
 - Globally 85% of consumer purchases are made by women, equivalent to a worldwide spend of \$20 trillion (PwC, 2017)
- Living in a post-truth era
 - Objective facts are less influential in shaping public opinion than appeals to emotion and personal belief
 - Driven by a combination of the 24-hour news cycle, false balance in news reporting, and the increasing ubiquity of social media

AGENCY COST

- Historically, companies were owned and managed by the same people. For economies to grow it was necessary to find a larger number of investors to provide finance to assist in corporate expansion.
- Agency costs are a type of internal cost that arises from, or must be paid to, an agent acting on behalf of a principal (Jensen and Meckling, 1976).
 - An agent is employed by a principal to carry out a task on their behalf.
 - Agency refers to the relationship between a principal and their agent.
 - Agency costs are incurred by principals in monitoring agency behavior because of a lack of trust in the good faith of agents.
 - By accepting to undertake a task on their behalf, an agent becomes accountable to the principal by whom they are employed. The agent is accountable to that principal.
- Agency costs arise because of core problems, such as conflicts of interest, between shareholders and management.

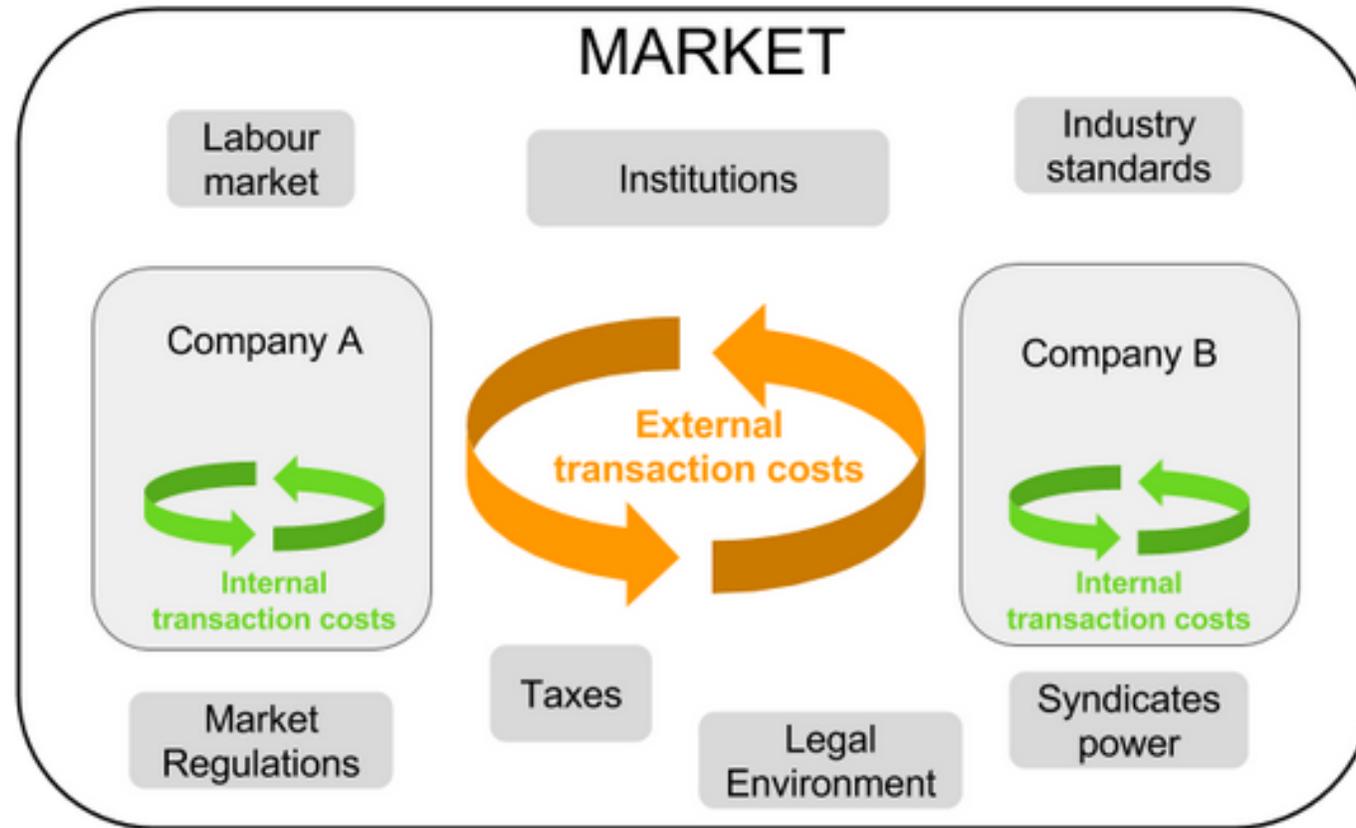
AGENCY COST



TRANSACTION COST ECONOMIES

- A transaction cost, often known as coordination cost, is a cost incurred in making an economic exchange (Ronald Coase, 1937, 1960; Oliver Williamson, 1981, 1985).
- A number of different kinds of transaction costs exist.
 - Search and information costs: costs incurred in determining that the required good is available on the market, who has the lowest price, etc.
 - Bargaining costs: costs required to come to an acceptable agreement with the other party to the transaction, drawing up an appropriate contract, etc.
 - Policing and enforcement costs: costs of making sure the other party sticks to the terms of the contract, and taking appropriate action (often through the legal system) if this turns out not to be the case.
- Transaction costs consist of costs incurred in searching for the best supplier/partner/customer, the cost of establishing a supposedly "tamper-proof" contract, and the costs of monitoring and enforcing the implementation of the contract.
- In short, transaction costs are all the information processing necessary to coordinate the work of people and machines that perform the primary processes.
- Technological innovations, in general, promotes lower transaction costs.

TRANSACTION COST ECONOMIES

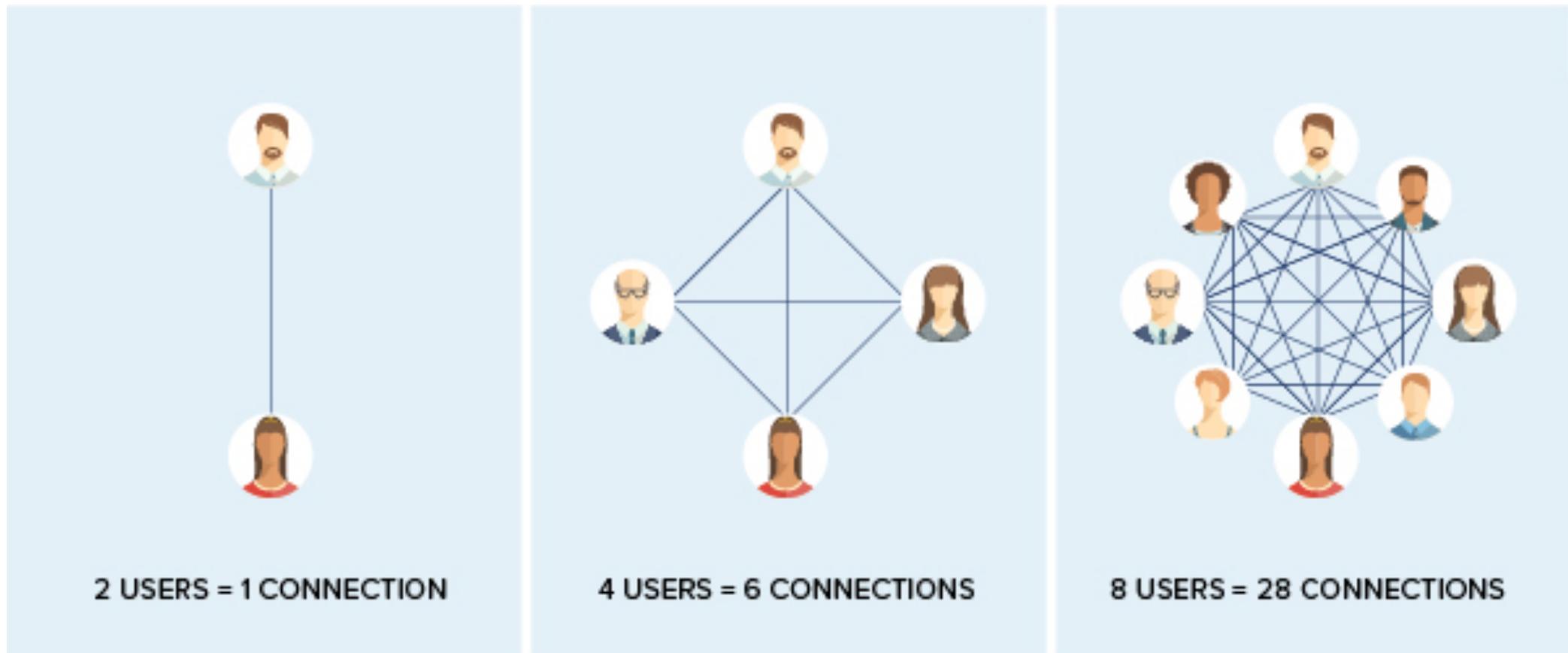


Source: APIdays Conferences (2014)

NETWORK EXTERNALITIES

- Network externalities are the effects on a user of a product or service of others using the same or compatible products or services (Katz and Shapiro, 1985; Liebowitz and Margolis, 1994/1995).
- Positive network externalities exist if the benefits (or, more technically, marginal utility) are an increasing function of the number of other users. It promotes bandwagon effect or network effect.
 - Facebook likely confers positive network externalities since it is more useful to a user if more people are using it as well.
- Negative network externalities exist if the benefits are a decreasing function of the number of other users. It promotes snob effects or a desire to own exclusive products.
 - A road probably confers negative network externalities since a consumer of the road creates traffic for other consumers of the road.
- Network externalities can arise through:
 - Fashion or stylishness: The desire for wearing jeans by girls is influenced by the number of other girls who have chosen to wear them. To be in keeping with the fashion, more and more girls have opted for wearing jeans. This has led to the increase in demand for jeans.
 - Complementary goods or services: If the number of people owning DVD players increases significantly, desire for opening DVD store or for manufacturing DVD will increase. Thus, the more the number of individuals who own DVD players, the more DVD will be produced.
- Metcalfe's Law was one of the first attempts to quantify the network effect, and proposes that the value of a network is proportional to the square of the number of users (n^2).

NETWORK EXTERNALITIES



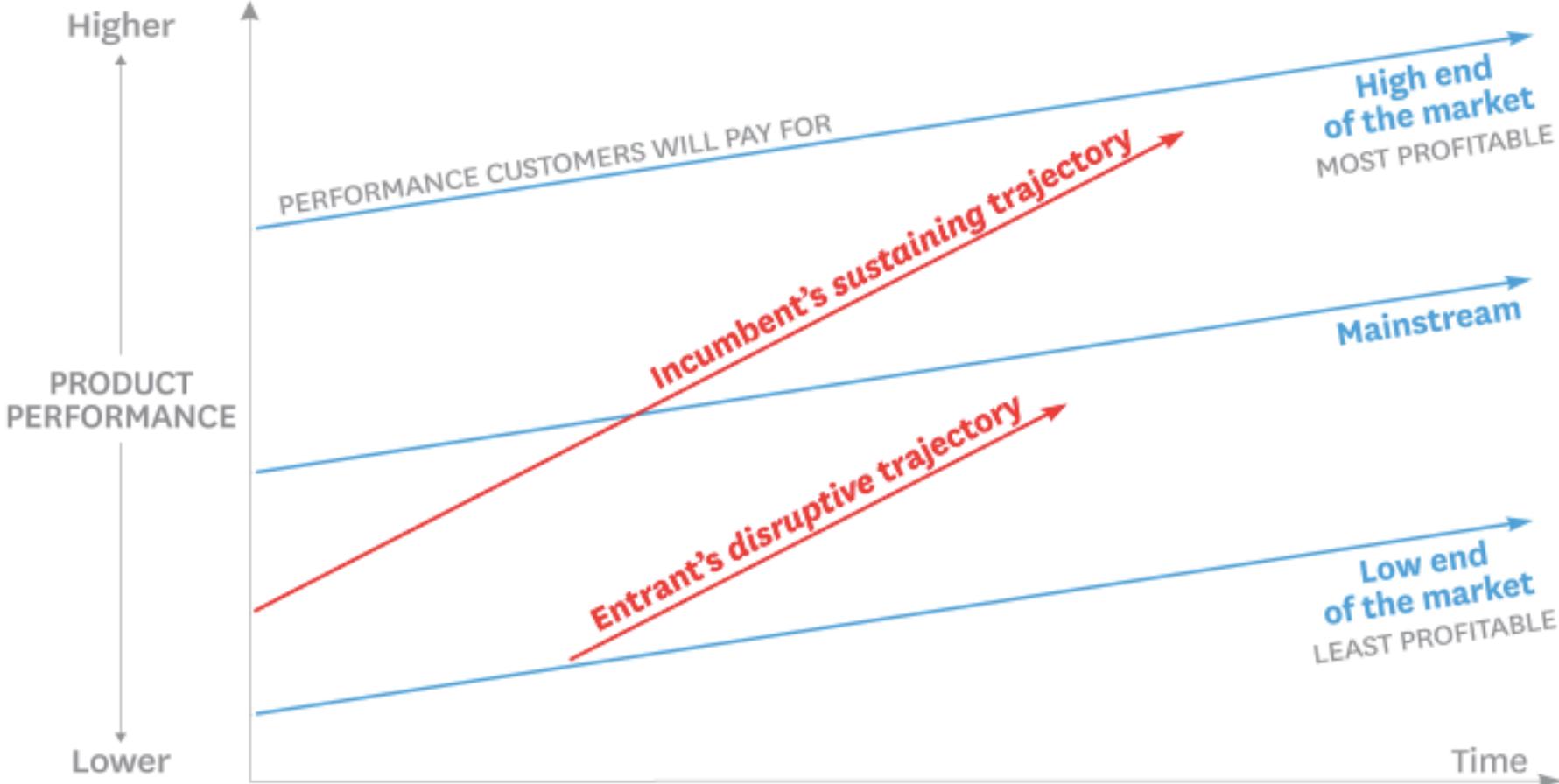
Sumber: Cornerstone (2015)

DISRUPTIVE INNOVATION

- A process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves up market, eventually displacing established competitors (Christensen, 1997).
- A smaller company with fewer resources can unseat an established business by targeting segments of the market that have been neglected, typically because it is focusing on more profitable areas.
- The small company is gaining a foothold and tapping a new market the incumbent had failed to notice, typically with new or innovative technologies to deliver products or services better suited to the incumbent's overlooked customers at a lower price.
- Then it moves steadily upmarket until it is delivering the performance that the established business's mainstream customers expect, while keeping intact the advantages that drove its early success.
- Disruption happens when the incumbent's mainstream customers start taking up the start-up's products or services in volume.

Disruptor	Disruptee
Personal computers	Mainframe and mini computers
Wikipedia	Microsoft Encarta, Encyclopædia Britannica
MOOC (edX, Coursera, Khan Academy)	School and universities
Ride-sharing (Uber, Grab, Go-Jek)	Conventional taxi/ojek
Low-cost airlines (Ryan Air, Lion Air)	Full-service airlines (British Airways, Garuda Indonesia)

DISRUPTIVE INNOVATION



Source: Christensen et al. (2015)

OTHER CONSIDERING TECHNOLOGICAL FACTORS

- **Moore's law:** It refers to an observation made by Intel co-founder Gordon Moore in 1965. He noticed that the number of transistors per square inch on integrated circuits had doubled every year since their invention. The number of transistors per square inch has since doubled approximately every 18 months. (speed)
- **Kryder's law:** It is based on the work of Mark Kryder, Seagate CTO, which claims that the density of information it can record has swelled from a paltry 2,000 bits to 100 billion bits (gigabits), all crowded in the small space of a square inch. That represents a 50-million-fold increase that took place over 41 years. In short, the density of computer drives increases by a factor of 1,000 every 10.5 years or doubling every 13 months. (memory)
- **Nielsen's law:** Jakob Nielsen, a web usability expert, predicted many years ago that the bandwidth available to high-end broadband connections will grow by 50 per cent every year, or double every 21 months, leading to a 57x compound growth in capacity in a decade. (bandwidth)
- These laws suggests exponential growth, and possibly are going to continue indefinitely.

SHIFTS IN THE REGULATORY CONTEXT

- Banking institutions and organisational isomorphism
 - New fundamental reform initiatives of Basel III & Basel IV
 - Better capital planning and stress-testing program
 - Extensive liquidity requirements
 - Better consumer protection, including KYC and credit quality concerns
 - Fintech firms and regulatory sandbox
 - Financial risk compliance, including AML and CFT
 - Cyber risk as part of the operational risk
- Challenges to develop an optimal distinctiveness?

FINTECH

Technological Change and Regulatory Realms



BASIC DEFINITION

The Oxford Dictionary: "Computer programs and other technology used to support or enable banking and financial services".

Wikipedia: "Financial technology, also known as FinTech, is a line of business based on using software to provide financial services. Financial technology companies are generally startups founded with the purpose of disrupting incumbent financial systems and corporations that rely less on software."

FinTech Weekly: "A business that aims at providing financial services by making use of software and modern technology."

BASIC DEFINITION

- Implementasi dan pemanfaatan teknologi untuk peningkatan layanan jasa perbankan dan keuangan
- Umumnya dilakukan oleh perusahaan rintisan (*startup*), tetapi tidak sama
- Memanfaatkan teknologi software, internet, komunikasi, dan komputasi terkini
- Bersifat “merusak” (*disruptive*) pasar/industri yang sudah mapan (*established*)

BUSINESS PROCESS

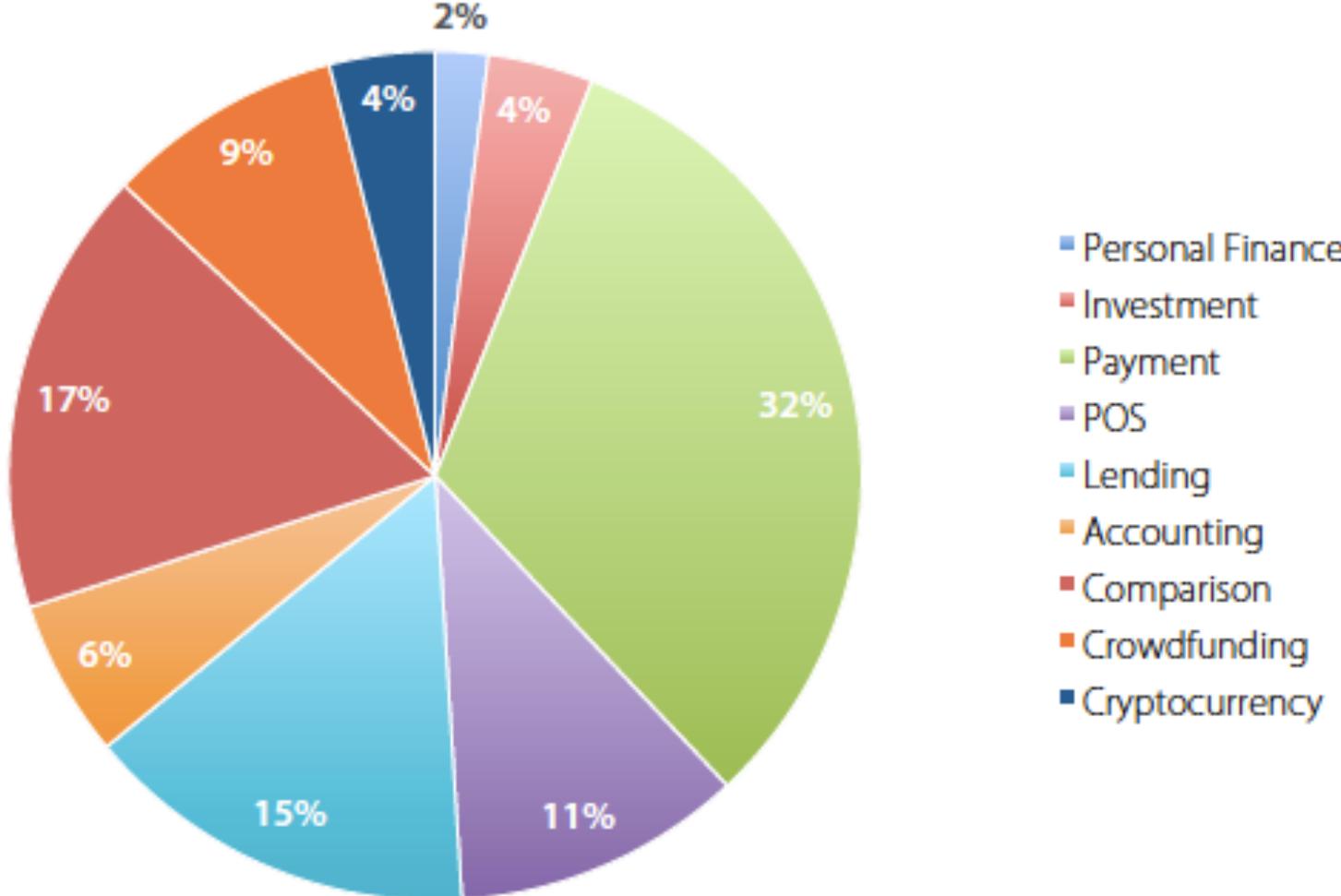
Proses Bisnis	Bentuk Interaksi
Pembayaran (<i>digital wallets, P2P payments</i>)	C2C
Investasi (<i>equity crowdfunding, P2P lending</i>)	
Pembiayaan (<i>crowdfunding, micro-loans, credit facilities</i>)	B2C
Asuransi (<i>risk management</i>)	
Lintas-proses (<i>big data analysis, predictive modeling</i>)	B2B
Infrastruktur (<i>security</i>)	

SEVERAL FINTECH INITIATIVES

The image displays a collection of fintech logos organized into six main categories:

- Payments & Transfers:** Includes logos for DWOLLA, stripe, PayPal, Square, Klarna, venmo, Braintree, iZettle, SHOPKEEP, adyen, Paydiant, VISA Checkout, EXPRESS CHECKOUT, Apple Pay, pay, SAMSUNG pay, CURRENTC, and Pay.
- Lending & Financing:** Includes logos for LendingClub, PROSPER, OnDeck, Funding Circle, prêt d'union, Zopa, AVANT CREDIT, BOND STREET, SoFi, auxmoney, Patch of Land, Orchard, Rate%Setter, credible, lendio, FUNDRISE, AssetAvenue, Lufax.com, CREDIBLY, CAN CAPITAL, affirm, Even, Biz2Credit, zest finance, Bendora, Upstart, earnest, and EVEN.
- Retail Banking:** Includes logos for xoom, REMITLY, azimo, worldremit, TransferWise, BitPesa, currency cloud, flywire, SIMPLE, Moven, ally, GObank, WeBank, TANDEM, 微众银行, Capital One, and Atom.
- Financial Management:** Includes logos for LendingRobot, Credit Karma, Betterment, motif INVESTING, wealthfront, nutmeg, robinhood, BILL GUARD, and v-mint.
- Insurance:** Includes logos for metromile, oscar, friendurance, MyDrive, and bizinsure.
- Markets & Exchanges:** Includes logos for WeSwap, ripple, coinbase, BITSTAMP, kraken, LendingRobot, BTC, coinsetter, and BI INTELLIGENCE.

FINTECH DISTRIBUTION IN INDONESIA



Source: Fintech News Singapore (2016)

FINTECH EXAMPLES IN INDONESIA



Source: Fintech News Singapore (2016)

FINTECH: ROLES

Memberi solusi struktural bagi pertumbuhan industri berbasis elektronik (*e-commerce*)

Mendorong pertumbuhan usaha kecil dan menengah serta lahirnya wirausahawan (*entrepreneur*) baru

Mendorong usaha kreatif (seperti artis, musisi, pengembang aplikasi, dsb.) untuk meraih distribusi pasar yang luas (*critical mass*)

Memungkinkan pengembangan pasar, terutama yang masih belum terlayani jasa keuangan dan perbankan konvensional (*unbanked population*)

FINTECH: THREAT AND CHALLENGES

Regulasi belum matang, aturan tumpang-tindih, berpotensi menimbulkan penyelewengan (contoh: *shadow banking*, MLM, *money game*, dll.)

FinTech membawa inovasi yang bersifat "merusak" (*disruptive*), berpotensi membuat air menjadi keruh

Percepatan problem klasik teknologi: polarisasi pekerjaan akibat disintermediasi (*job polarisation*), melebarkan *digital divide*, dan "pengkultusan" sebagai jalan potong (*shortcut*) pertumbuhan ekonomi

FINTECH VS CONVENTIONAL BANKING

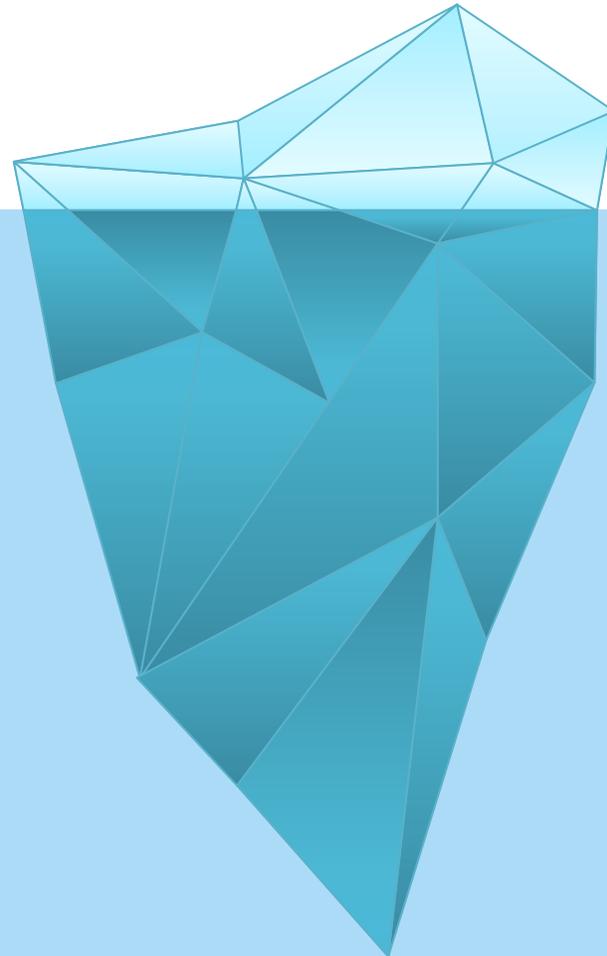
Pada umumnya pengguna sebatas kalangan urban, menengah atas, relatif muda, melek teknologi

Klaim mampu zero-default, tapi pengalaman mitigasi risiko pada perusahaan lending FinTech masih terbatas

Dari total 60 juta pelaku UKM di Indonesia hanya 11 juta UKM yang bisa menikmati layanan kredit perbankan -- ini target pasar lending FinTech

Kebutuhan pembiayaan total Rp 1.600 triliun/tahun, kapasitas pembiayaan di lembaga jasa keuangan hanya Rp 660 triliun -- ini target pasar lending FinTech

FINTECH VS CONVENTIONAL BANKING



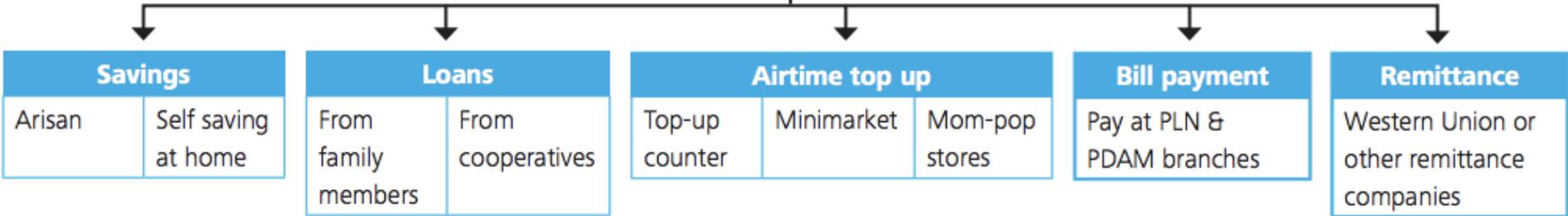
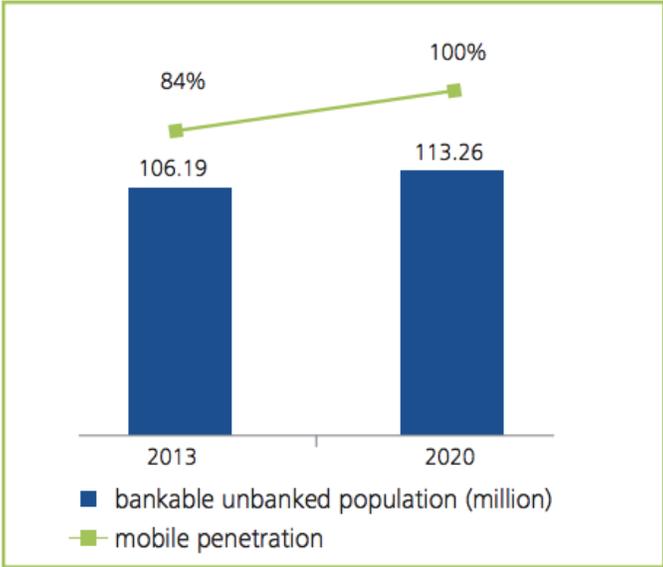
Conventional banking

Masih mendominasi industri.
Cakupan luas. Pertumbuhan tinggi.
Sektor industri mapan (*well-established*) dan matang (*mature*).
Cenderung stabil dan mitigasi risiko baik. Didukung regulasi yang ketat.

Fintech

Pemain baru. Pertumbuhan sangat tinggi. Sektor industri belum mapan dan belum matang. Fokus menggarap pasar *unbanked*.
Menggandeng bank dan lembaga keuangan konvensional sebagai mitra kerjasama. Stabilitas dan mitigasi risiko perlu belum teruji.

INNOVATIONS IN FINTECH



Source: World Bank (2015)

P2P LENDING

Democratising Payments and Exchanges



UNDERSTANDING P2P LENDING

- Peer-to-peer lending is a new method of debt financing that allows people to borrow and lend money without a financial institution.
- Borrowers take out loans from companies that pair potential borrowers with individual investors that are willing to lend them their own money.
- The individual investors decide after reading a profile whether or not they want to take the risk of loaning money to the potential borrower. Potential lender investors can agree to loan part, or all of the money the borrower is asking for.
- Harnessing technology and big data, P2P platforms connect borrowers to investors faster and cheaper than any bank.
- A notable example including Lending Club, Prosper, Upstart, Funding Circle (UK), etc.

P2P LENDING IN INDONESIA

Amartha.com <https://amartha.com/>

Dikelola oleh PT Amartha Mikro Fintek

Crowdo - Finansialku <https://p2p.crowdo.com/>

Dikelola oleh Crowdo

Investree.com <https://investree.id/>

Dikelola oleh PT Amartha Mikro Fintek

Koinworks.com <https://www.koinworks.com/>

Dikelola oleh PT. Lunaria Annua Teknologi

Modalku.com <https://modalku.co.id/>

Dikelola oleh PT Mitrausaha Indonesia Grup

Update tanggal 2 September 2016

CASE: INVESTREE

Menyediakan platform (marketplace) peer-to-peer lending (P2PL): menghubungkan pemberi pinjaman (lender) yang ingin berinvestasi dan peminjam (borrower)

Business Loan: pinjaman modal kerja untuk memperlancar cash flow bisnis dengan menjaminkan tagihan (invoice), khusus PT, Jadetabek, beroperasi minimal 6 bulan.

Employee Loan: pinjaman pribadi bagi karyawan di perusahaan yang bekerjasama dengan Investree, skema potong gaji.

Bunga pinjaman 1,2%-2,5% per bulan; return investor 18%

Memverifikasi, menganalisa, menyetujui, memaintain akun peminjam (borrower); membantu strategi monitoring, collection, dan recovery agar tidak ada kredit macet

Mayoritas pembiayaan sektor industri kreatif (EO, PH, Advertising) (36%) dan outsourcing (29%)



CASE: AMARTHA

Menyediakan platform (marketplace) peer-to-peer lending (P2PL): menghubungkan pemberi pinjaman (lender) yang ingin berinvestasi dan peminjam (borrower)

Target pasar adalah usaha mikro dan kecil, pembiayaan antara Rp 1 juta hingga Rp 20 juta

Pendekatan syariah dan bagi hasil: return untuk investor 10-20%, fee Amartha 5-10% dari pemohon pinjaman

Cakupan wilayah Kabupaten Bandung, Bogor, Subang

Mitra usaha dibentuk kelompok, diberi pelatihan, dan pertemuan mingguan dengan field officer untuk memonitor perkembangan usaha

Pemanfaatan teknologi algoritma untuk grading dan profiling peminjam



CASE: MODALKU

Menyediakan platform (marketplace) peer-to-peer lending (P2PL): menghubungkan pemberi pinjaman (lender) yang ingin berinvestasi dan peminjam (borrower)

Target pasar adalah startup dan UMKM yang ingin untuk berkembang tapi belum bankable: WNI, 21-60 tahun, PT/CV atau peorangan, omzet minimal Rp 20 juta/bulan, telah beroperasi minimal satu tahun, area Jabodetabek

Bunga 14-20% untuk pinjaman senilai Rp 50 juta hingga Rp 500 juta dengan tenor 3 hingga 12 bulan

Pemanfaatan teknologi untuk meminimalkan kredit macet (profile screening, anti-fraud verification, psychometric test, dsb.)



P2P LENDING AS AN ALTERNATIVE INVESTMENT NICHE

- Most peer-to-peer loans are funded by several different investors, and as the loan payment is made each month, a portion of the payment goes back to each of the different investors involved with the loan.
- The ability to diversify when investing in P2P lending attracts all types of investors, from the seasoned investor to those just beginning in investing.
- P2P lending has also grown rapidly in recent years and is becoming a new source of fixed income for investors.
- Compared to stock markets, P2P investments usually have less volatility and a low correlation. They also offer higher returns than conventional sources of yield.
- With interest rates at a relatively low level, investing in P2P loans is considered to be a no-brainer.

CRYPTOCURRENCIES

Blockchain, Bitcoin, and Digital Money



WHAT IS CRYPTOCURRENCY?

- Cryptocurrency is a form of digital money that is designed to be secure and, in many cases, anonymous. It is associated with the internet that uses cryptography, the process of converting legible information into an almost uncrackable code, to track purchases and transfers.
 - Cryptography was born out of the need for secure communication in the World War II.
- Cryptocurrencies use decentralised technology to let users make secure payments and store money without the need to use their name or go through a bank. They run on a distributed public ledger called **blockchain**, which is a record of all transactions updated and held by currency holders.
- Units of cryptocurrency are created through a process called **mining**, which involves using computer power to solve complicated mathematical problems that generate coins.
 - Users can also buy the currencies from brokers, then store and spend them using cryptographic wallets.

WHY CRYPTOCURRENCY?

- **Anonymity:** Cryptocurrencies are known for being secure and providing a level of secrecy.
- **Security:** Transactions in them cannot be faked or reversed and there tend to be low fees, making it more reliable than conventional currency.
- **Accessibility:** Their decentralised nature means they are available to everyone, where banks can be exclusive in who they will let open accounts.

DRAWBACKS OF CRYPTOCURRENCY

- **Volatility:** As a new form of cash, the cryptocurrency markets have been known to take off meaning a small investment can become a large sum over night. But the same works the other way. People look to invest in cryptocurrencies should be aware of the volatility of the market and the risks they take when buying.
- **Associated with illegal activity:** Because of the level of anonymity they offer, cryptocurrencies are often associated with illegal activity, particularly on the dark web. Users should be careful about the connotations when choosing to buy the currencies.

WHAT IS BITCOIN?

- A digital currency, used to make payments of any value without fees
- Runs on the blockchain, a decentralised ledger kept running by “miners” whose powerful computers crunch transactions and are rewarded in bitcoins
- Invented by Satoshi Nakamoto, a secretive internet user, in 2008 before it went online in 2009
- People see value in money free from government control and the fees banks charge; as well as the blockchain, to verify transactions
- Bitcoin has also been seen as a tool for private, anonymous transactions, and it’s the payment of choice for drug deals and other illegal purchases

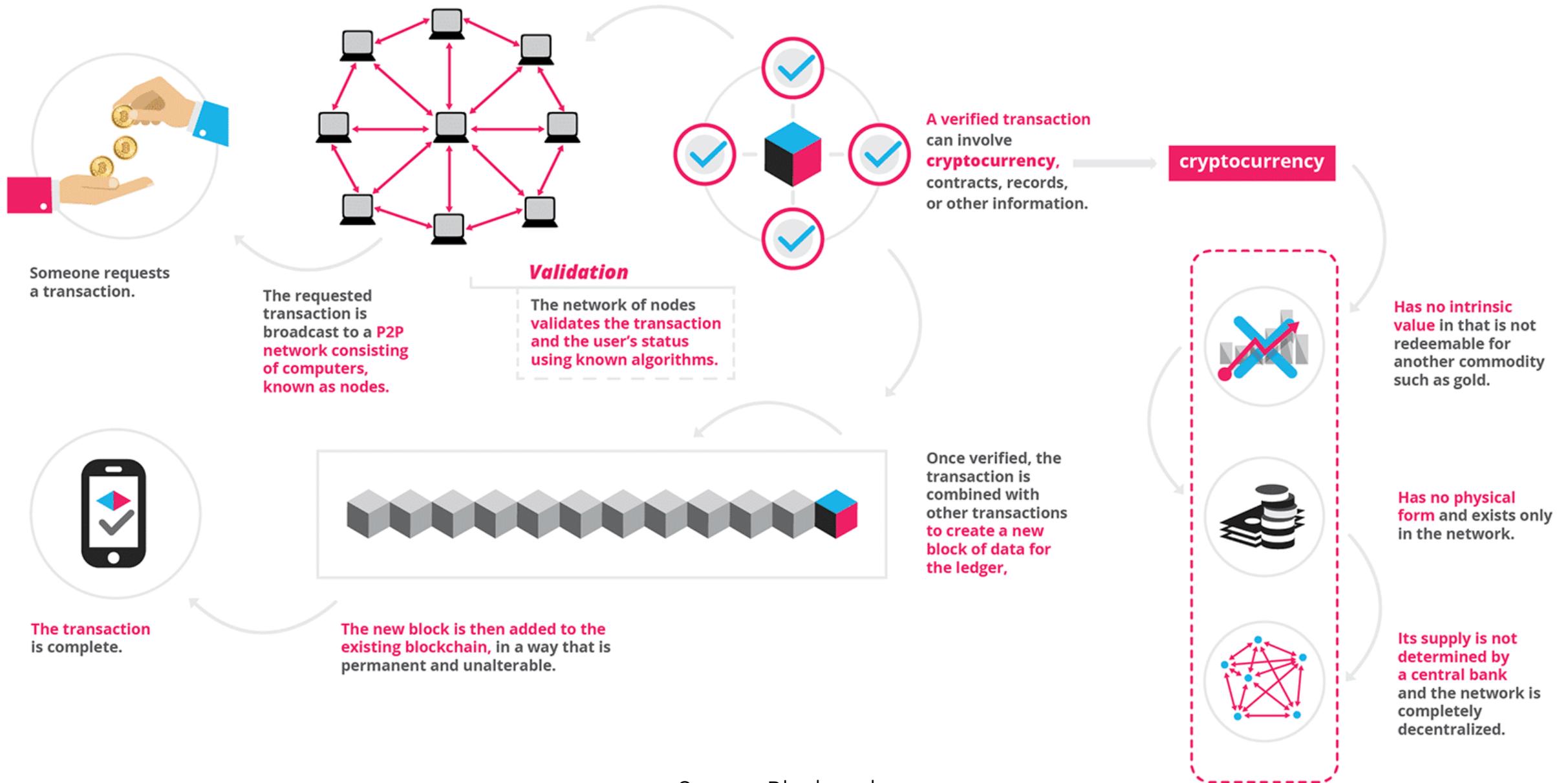
CRYPTOCURRENCY MARKET CAPITALISATION (19/10/2017)

▲ #	Name	Symbol	Market Cap	Price	Circulating Supply	Volume (24h)	% 1h	% 24h	% 7d
1	 Bitcoin	BTC	\$94,880,476,976	\$5704.42	16,632,800	\$2,053,740,000	-0.40%	8.65%	8.75%
2	 Ethereum	ETH	\$29,815,433,663	\$313.21	95,193,413	\$449,219,000	1.69%	5.06%	2.24%
3	 Ripple	XRP	\$8,097,171,715	\$0.210144	38,531,538,922 *	\$249,277,000	0.24%	-5.03%	-18.32%
4	 Bitcoin Cash	BCH	\$5,537,098,360	\$331.47	16,704,775	\$258,021,000	-1.01%	3.41%	3.65%
5	 Litecoin	LTC	\$3,188,421,503	\$59.66	53,445,532	\$231,767,000	-0.93%	7.37%	9.39%
6	 Dash	DASH	\$2,253,594,124	\$295.33	7,630,766	\$32,978,700	0.12%	4.02%	0.29%
7	 NEM	XEM	\$2,010,384,000	\$0.223376	8,999,999,999 *	\$3,780,420	-0.35%	6.47%	6.92%
8	 BitConnect	BCC	\$1,442,843,567	\$199.99	7,214,470	\$14,890,500	-0.23%	9.72%	10.16%
9	 NEO	NEO	\$1,437,310,000	\$28.75	50,000,000 *	\$33,672,700	-0.61%	-0.89%	-0.89%
10	 Monero	XMR	\$1,370,064,812	\$89.91	15,239,011	\$34,077,300	0.98%	2.89%	2.60%

Source: Coinmarketcap.com

WHAT IS BLOCKCHAIN?

- Blockchain is a continuously growing list of records, called blocks, which are linked and secured using cryptography
- Transactions take place every second – orders, payments, account tracking. Often, each participant has his own ledger – and, thus, his own version of the truth
- Having multiple ledgers is a recipe for error, fraud and inefficiencies. The goal is to see a transaction end-to-end and reduce those vulnerabilities.
- Cryptocurrencies and applications of blockchain technology are still nascent in financial terms and more uses should be expected. Transactions including bonds, stocks and other financial assets could eventually be traded using the technology.
- Other applications including:
 - Stock market
 - Medical records
 - Land registry
 - Patent registration
 - Software development



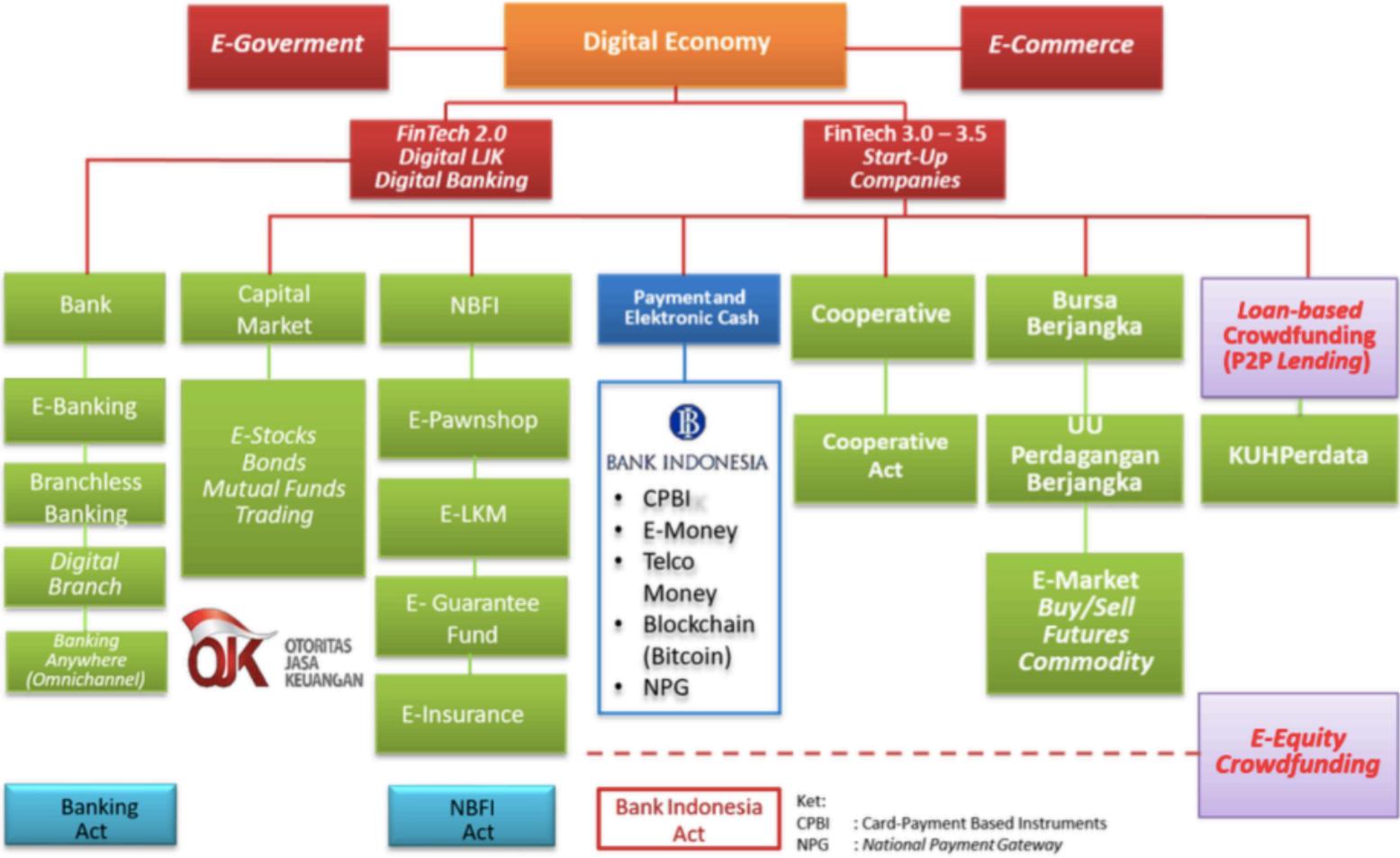
Source: Blockgeeks

MOVING FORWARD

What to Do Next?

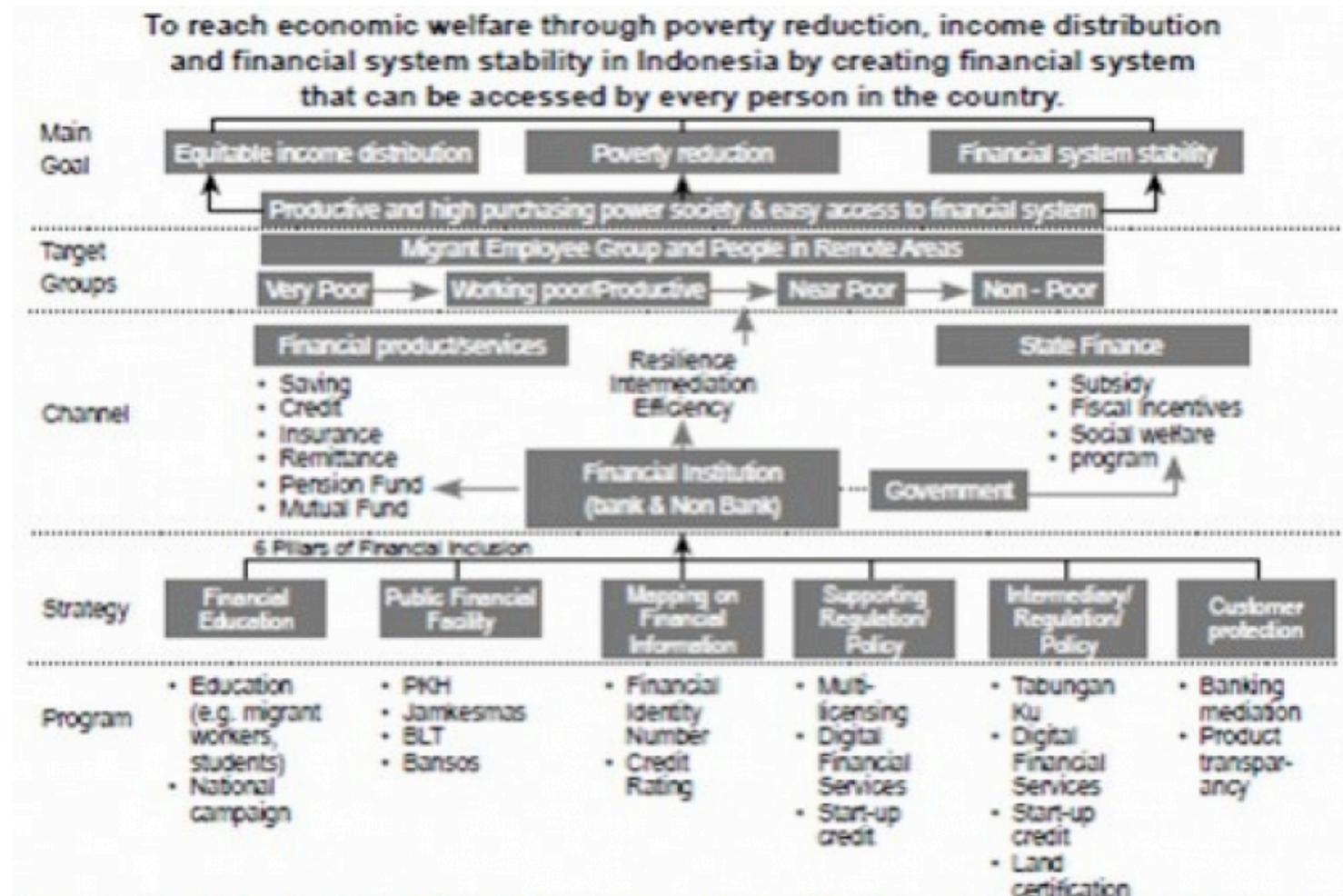


DIGITAL ECONOMY VISION OF INDONESIAN GOVERNMENT



Source: Bank Indonesia & Otoritas Jasa Keuangan

INDONESIAN GOVERNMENT POLICY MAPPING



Source: Bank Indonesia, Otoritas Jasa Keuangan, TNP2K

GOVERNMENT SUPPORT FOR THE DIGITAL ECONOMY IN INDONESIA

Indonesia Broadband Plan 2014-2019

Economic Policy Package: Roadmap of E-commerce

Finishing of Palapa Ring Project in Eastern Indonesia, expected to be done in 2019

All capital city of regency/municipality (514) will be connected with fiber optic

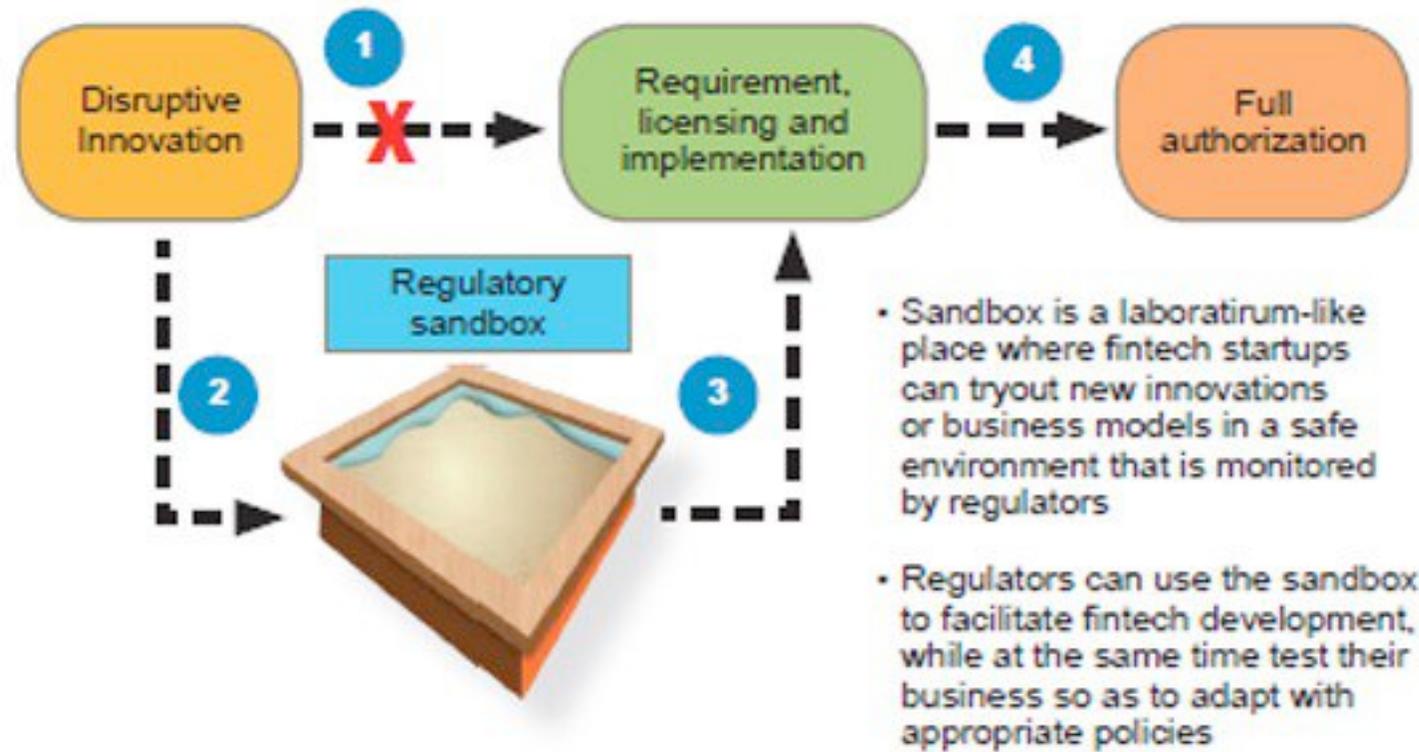
1 million domain names

50 million SME's to go digital

1000 tech start-up entrepreneurs in 2020

Digicoop smartphone: made in Indonesia!

REGULATORY SANDBOX



STRATEGIC CHOICE

Adaptive regulation through lobbying

- Regulation always behind of technology, but do not let regulation kills innovation
- The government should have different "layers" in responding to digital innovation

Business unit separation

- Garuda Indonesia/Citilink vs. Lion Group (Wings, Batik, Malindo)
- iPhone (regular) vs. iPhone C-series

New market expansion

- Fuji (film) against Kodak
- Blue ocean (niche) strategy
- Under-developed investment opportunities to be explored and exploited further

To compete or to cooperate

- Calculative speculation
- Conventional banks are also investing and put their money in P2P lending

Finding qualified digital talents

- Digital savvy professional across function with specific knowledge still hard to find
- Talent war: common practice among startups

THANK YOU

Any comments? Questions?