

Financial Inclusion Industry

Global Landscape Overview 2018

100 FinTech Companies
Competitive Analysis



MARKETS, TECHNOLOGIES,
COMPANIES, TRENDS

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Financial Inclusion Industry

100 FinTech Companies

Competitive Analysis

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Financial Inclusion Industry

100 FinTech Companies

Competitive Analysis

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Introduction

The present report offers an in-depth overview of the FinTech for Financial Inclusion industry landscape, with regional and competitive analysis of key players and companies, and a classification framework for the core technologies driving progress in the industry (which can be used to obtain a quantitative understanding of a company's current and future potential).

FinTech Investment Market Overview delivers a broad overview of the FinTech industry landscape, including coverage of the most active and well-established companies and investors, and a summary of main industry trends that have emerged over the past several years, posed to shape the near-term future of the industry for the next several years.

Technological Application in Financial Inclusion Industry: Competitive Analysis delivers a deep competitive analysis of FinTech for Financial Inclusion companies from a technological perspective, showing how a comprehensive analysis of a company's technological underpinnings, and the extent to which it incorporates the core enabling technologies identified in this report, can be used in order to quantitatively assess a given FinTech company's potential promise and possibility for growth. This section pays particular attention to Artificial Intelligence and its use and adoption by FinTech companies and organizations. It analyses the main use-cases for AI in the FinTech industry, and shows how Big Data Analytics and Machine Learning in particular are the predominant segments of AI that are having the largest disruptive impact on the industry. It then outlines the main use-cases for AI in the FinTech industry, along with concrete examples of companies utilizing AI for those use-cases, including Credit Risk Assessments (Loans), Risk Predictive analytics (Insurance), Fraud-detection systems (Payments), Behaviours based on customer spending patterns (Savings), and others (Personal Financial Management).

Regional Overview of FinTech Companies Operating in Financial Inclusion Industry gives a detailed breakdown of FinTech companies according to the regions in which they are active, showing which regions have the most industry activity, the largest proportion of companies and investors, and which regions dominate the industry in terms of the development and adoption of the core enabling technologies identified in this report.

Crowdfunding Model in the Blockchain Era discusses the emerging trend of FinTech companies raising funds via Initial Coin Offerings rather than traditional Venture Capital Financing. It also discusses blockchain as an industry versus blockchain as a component of the ICO fundraising model.

100 Leading Companies in Financial Inclusion

1. Abe AI
2. Absa Bank
3. Aella Credit
4. AirFox ICO
5. Akiba Digital
6. Allgoo
7. Amartha
8. Arya.ai
9. Aseguradora
10. Awamo
11. BankBazaar
12. Bankbuddy.ai
13. BanQu
14. Baobab
15. BigML
16. Billon Group
17. Bitsoko
18. BlockchainCybertech Limited
19. Bradesco
20. Branch
21. ByteMoney
22. CCAvenue
23. Cignifi
24. Code Money
25. Compara online
26. CompareAsiaGroup
27. CreditVidya
28. CrediWatch
29. CredoLab
30. DataProphet
31. Destacame
32. DiFin
33. Ewally
34. Ezyremit
35. FARMDRIVE
36. FinChatBot
37. First Access
38. Go-jek
39. Guiabolso
40. Harvesting
41. Hero
42. Hollard
43. Humaniq
44. InsuredHQ
45. Juntos
46. Juspay
47. Kakau
48. Kaleidofin
49. Kaoun
50. KiaKia
51. KREDICO
52. Kreditech Holding
53. Kudi
54. LALA World
55. Lenddo
56. Lidya
57. Loanadda
58. LoanStreet
59. Lulalend
60. M-Pesa
61. Mambu
62. Matchmove
63. Mensajea
64. Moneytor
65. Mutual.Life
66. Nibo
67. Nubank
68. Oakam
69. OmiseGO
70. OTC Payments
71. Pagar.me
72. Paylatr
73. PayParty
74. Pezesh
75. Planner.bot
76. Policybazaar
77. Pundi X Labs
78. Recarga Pay
79. Temitly
80. Rukula
81. Shubham
82. Smartcoin
83. SmartPesa
84. Smile Identity
85. stellar
86. Tala
87. Teller
88. ThirdWatch
89. ToGarantido
90. TransferFriend
91. Trulioo
92. Trustingsocial
93. UangTeman
94. UbaPesa
95. VeriTran
96. Wala (Getwala)
97. Wallettec
98. WeCashUp
99. Worldcover
100. Yatis

Financial Inclusion Landscape 2018 Companies Specialization

100 - Companies

Loans

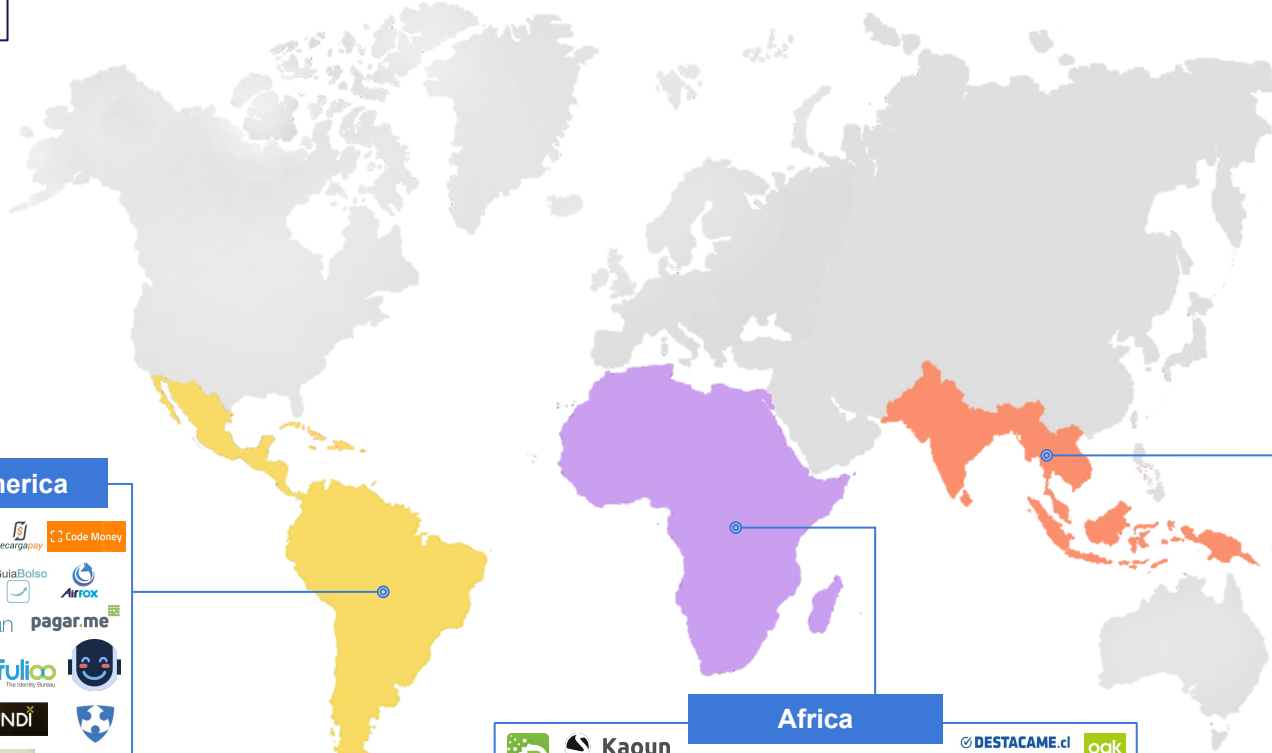
Payments

Savings

Insurance



The Geography of 100 Financial Inclusion Companies

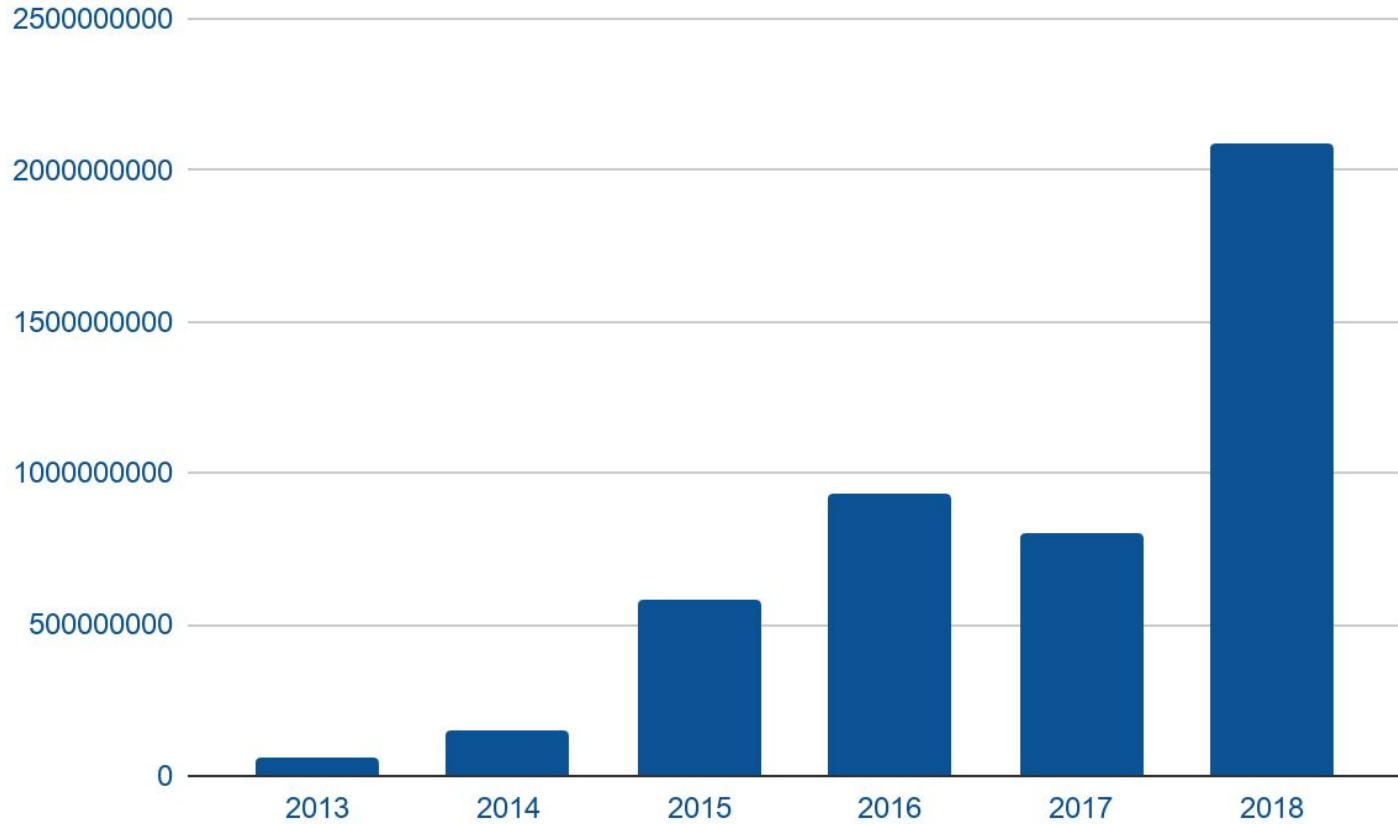


Latin America









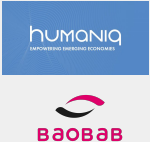

Africa

Asia












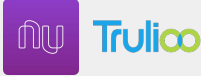








Investments in 100 Leading Financial Inclusion Companies (in Millions USD)



25 Leading Financial Inclusion Companies by Number of Customers (Companies with 10,000+ Users)

Insurance					
Loans					
Savings					
Payments					
	Machine Learning	Data Analysis	Computer Vision / Bio Identification	ChatBots	Blockchain

20 Leading Financial Inclusion Companies by Funding Amount (Companies with 10m+ USD in Funding)

Insurance				 Compare. Buy. Save.	
Loans	      				
Savings					
Payments	 			 Remitly	 
Machine Learning	Data Analysis	Computer Vision / Bio Identification	ChatBots	Blockchain	

3 Technological Generations of FinTech Companies

Companies involved in Financial Inclusion initiatives in developing countries can be divided into 3 generations by technology level:

1st Generation Technologies can be classified as projects that use very basic technologies (*in this report we are not considering such companies as absolutely outdated*).

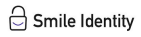













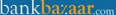




























What distinguishes 1st Generation of FinTech Apps from 2nd and 3rd Generation of FinTech Apps?

2nd Generation Technologies use mobile applications incorporating data analysis and basic algorithms for various tasks, such as data encryption or client profile analysis.

3d Generation Technologies use combination of advanced technologies identified below in either their products and/or services, or in their internal operations as a company, and can be considered to embody a very high level of technological sophistication, often using the core technologies in a synergistic manner (e.g. better data analysis enables more sophisticated AI, which in turn enables better data analysis in a positively-reinforcing feedback loop). These FinTech companies can be considered to be on the leading edge of technological sophistication and business development within the FinTech and Financial Inclusion industries.








	Technologies	Crypto Economy / Tokenization	Biometric identification systems	ChatBot / Advanced ChatBot	Blockchain	Machine Learning / Deep Learning	Data Analysis	Computer Vision (Other than Bio Identification)
19XX - 2016	1st Generation	-	-	-	-	-	-	-
2017 - 2018	2nd Generation	-	+	+	-	+	+	-
2018 - 2019	3d Generation	+	+	+	+	+	+	+

30 Leading Financial Inclusion Companies Based on Technology Advancements

<p>2nd Generation Technologies</p>		 	    		       	   	
<p>3d Generation Technologies</p>	 	  	  	    	    	   	 
	<p>Crypto Economy / Tokenization</p>	<p>Biometric identification systems</p>	<p>ChatBots</p>	<p>Blockchain</p>	<p>Machine Learning / Deep Learning</p>	<p>Data Analysis</p>	<p>Computer Vision (Other than Bio Identification)</p>

30 Leading FinTech Companies

Based on Technological Advancements (FinTech Subsector Specialization)

<p>2nd Generation Technologies</p>				
<p>3d Generation Technologies</p>				
	<p>Insurance</p>	<p>Loans</p>	<p>Savings</p>	<p>Payments</p>

3rd Generation Technologies

10 FinTech Leading Companies (*Working in Developing World*)

Company Name	Web Site	Type of Technologies	AI and Blockchain Application	Specialization
Farmdrive	www.farmdrive.co.ke/	Machine Learning, Data Analysis	FarmDrive collects and aggregates alternative datasets from multiple sources, in Kenya and around the world, to build credit scores for smallholder farmers in Africa.	Lending and related ecosystem
Baobab	www.baobab.bz	Machine Learning, Bio-identification, Data Analysis	The agents of Baobab conduct cash-in and cash-out transactions as well as money transfer services for Microcred clients using biometric devices and laptops to tap into Microcred's system.	Identity Verification
BanQu	www.banquapp.com/	ChatBot, Bio-identification, Blockchain	BanQu has developed the first ever blockchain economic identity technology solution that enables a secure and immutable platform for creating economic opportunities for people around the world who are refugees and/or living in extreme poverty. BanQu created a digital identity for several hundred refugees and individuals in extreme poverty zones, with the aim of creating a long-term, secure economic profile they could leverage for access to financial and government services.	Digital payments
Harvesting	www.harvesting.co/	Machine Learning, Computer vision	Harvesting provides machine learning-enabled computer vision services to banks. Remote sensing satellites continually monitor farmlands over the term of a loan, and changes in vegetation/crop cover are tracked against historical seasonal performance. As soon as on-farm performance varies from predicted performance beyond a certain threshold, the lending institution receives automatic notification.	Lending and related ecosystem
Humaniq	humaniq.com/	Machine Learning, ChatBot, Bio-identification, Blockchain	Humaniq is a bio-identification-enabled FinTech app that provides core banking operations, as well as P2P lending, business loans, personal loans, insurance, and data security.	Digital payments

3rd Generation Technologies

10 FinTech Leading Companies (*Working in Developing World*)

Company Name	Web Site	Type of Technologies	AI and Blockchain Application	Specialization
Lenddo	www.lenddo.com	Data Analysis, Bio-identification	Lenddo uses non-traditional data to provide credit scoring and verification to economically empower the emerging middle class around the world.	Lending and related ecosystem
Wala	getwala.com	ChatBot, Blockchain	Think of Dala as digital money. Like airtime & data or mobile money, Dala holds value, you can send it to friends, you can buy things with it, and you can turn it into cash.	Digital payments
WeCashUp	www.wecashup.com	Machine Learning, Blockchain	WeCashUp enables organizations to manage cross-network, cross-border, cross-currency and interoperable payments seamlessly. WeCashUp is a Payment Platform driven by a Financial Artificial Intelligence that leverages the security potential of the blockchain to create a global interoperability loop that facilitates and accelerates money flow between the emerging payment systems and the traditional banking system globally.	Digital payments
Worldcover	www.worldcovr.com	Computer vision	Worldcover provides crop insurance that is affordable and effective in reducing risk from droughts. They use satellites to monitor rainfall and trigger payouts automatically.	Insurance
Mutual.Life	mutual.life	Machine Learning, Blockchain	Mutual.life aims to eliminate the asymmetry of information present in the insurer-insured relationship through the use of Blockchain and Smart Contracts, providing a platform for forming mutual aid groups so that the risks of close and reliable people can be quoted and the possible damages prorated among the group members themselves in a simple and safe way.	Insurance

5 Core Technologies in FinTech

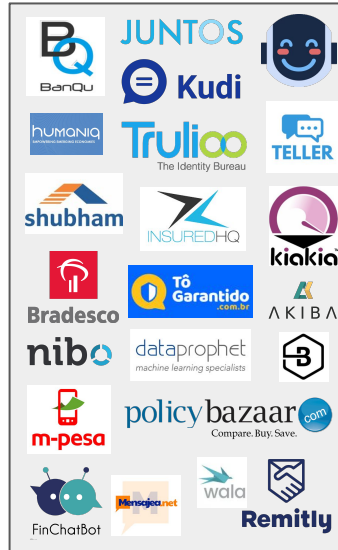
As discussed elsewhere in this report, the five core technologies enabling the accelerated development of the FinTech Industry landscape are AI (machine learning in particular), Data Analysis, Chatbots, Blockchain, Computer Vision and Bio-identification. Whether or not a FinTech company integrates these core technologies into their platforms, products and services, how many distinct categories they integrate and the depth with which they do so can be used to quantify their level of advancement. Below is a graphic overview of which companies utilize each of the core technology categories within their own operations, as well as their products and services.



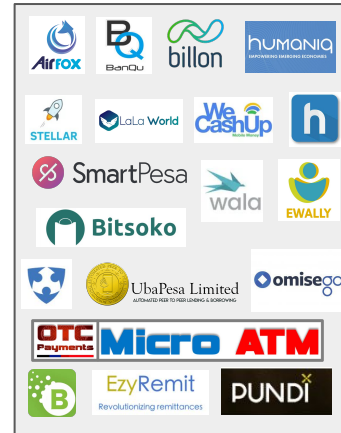
Machine Learning



Data Analysis



ChatBots



Blockchain

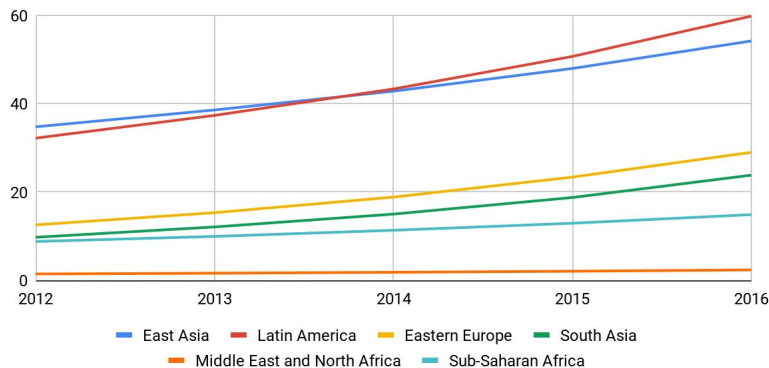


Computer Vision
Bio Identification

Technologies

1. Credit Scoring Algorithms, which predominantly use Data Analysis and Machine Learning. This includes: use of data generated via users' phones; use of small business transaction and accounting data; alternative sources analysis; behavioral and psychometric testing. Credit Scoring Algorithms are unique for companies providing loans and credits.
2. Personal Financial Management, which includes: proactive alerts and notifications; overdraft predictions; savings alerts or automation. Personal Financial Management makes use of the common directions of AI and ML development in the FinTech Industry and is not unique.

Global Microfinance Market by Geographical Segmentation 2012-2016 (US\$ billion)



A credit score is a quantitative representation meant to measure individuals' creditworthiness, used by banks for making decisions relating to credit applications. Traditionally, banks use logistic regression models to predict customer's likelihood of credit delinquency over the next several years. These models are intuitively attractive because the process of how they arrived at their answers and output is easily understandable and explainable. However, linear regression models are encumbered by the fact that they use linear analysis, which faces an uphill battle when the volume and diversity of data increases. They have a hard time dealing with large amounts of data. Machine learning has garnered great interest and enthusiasm over the past several years for its ability to deal with very large and diverse sets of data efficiently. Because they are not constrained by the linear methods common in traditional statistical analysis, they are able to model, classify and predict non-linear interactions between input variables, and could be used in the context of credit scoring to find hidden correlations in customer credit data. Some variants like unsupervised learning models can even discover new features previously uncategorized in customer populations.

However, machine learning has not received widespread adoption by retail credit institutions because they are black boxes, in the sense that the way in which they arrive at their answers is not easily understandable or explainable. Because regulators insist that lenders be able to explain their decisions, this is not optimal for traditional credit institutions.

14 Companies in Financial Inclusion Industry

Category: Loans

Name	Web Site	Description	Funding Amount	AI Type	Number of Customers	Number of Employees	Based in
Absa Bank	www.absa.co.za/	Absa provides banking and financial products and services to personal, commercial, and corporate customers primarily in South Africa.	n/a	Machine Learning	1300000	42 000	Cambodia
BankBazaar	www.bankbazaar.com/	BankBazaar.com is a neutral online marketplace that gives instant customized rate quotes on loans and insurance products.	103000000	Machine Learning	n/a	1000+	India
Bradesco	http://www.bradesco.com.br	Financial services company in Brazil.	n/a	Chatbot	11600000	108 794	Brazil
Branch International	www.branch.co/	Branch is a new way to access credit over a smartphone in emerging markets.	84674000	Machine Learning	n/a	252	United States
CompareAsiaGroup	www.compareasiagroup.com/	CompareAsiaGroup is a personal finance management platform committed to help people across Asia to save time and money.	96000000	Machine Learning	1000000	233	Hong Kong
Compara online	comparaonline.com.br	ComparaOnline is the leading price comparison site for financial & insurance services in Latin America	28050000	Machine Learning	n/a	45	Chile
CreditVidya	www.creditvidya.com/	CreditVidya offers alternate data based credit scores for underwriting first time borrowers using machine learning and big data analytics.	7000000	Machine Learning	n/a	101	India
Harvesting	www.harvesting.co/	Connecting finance with farmers.	n/a	Machine Learning, Computer Vision	n/a	n/a	United States

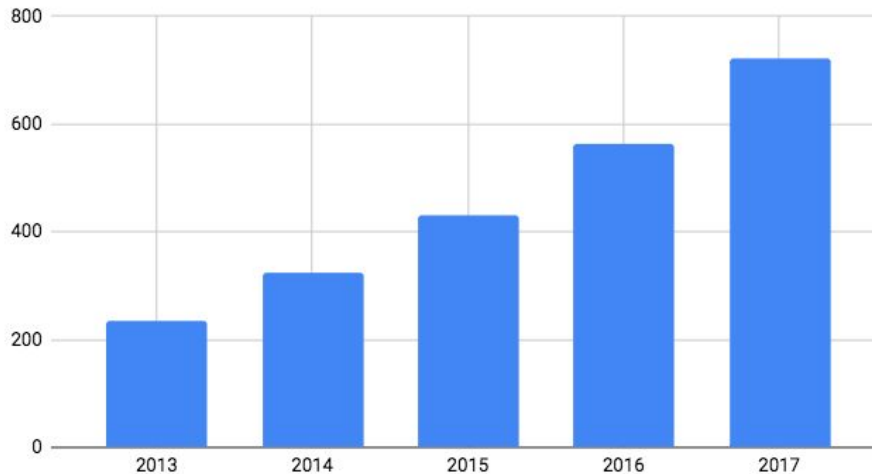
14 Companies in Financial Inclusion Industry Category: Loans

Name	Web Site	Description	Funding Amount	AI Type	Number of Customers	Number of Employees	Based in
Kreditech Holding	www.kreditech.com/	Kreditech uses machine-learning technologies to provide access to better credit for the underbanked	503328000	Machine Learning	n/a	251-500	Germany
Lenndo	www.lenndo.com	Lenndo is a technology company that uses non-traditional data to provide credit scoring and verification.	6000000	Data Analysis, Computer vision	n/a	51-100	Hong Kong, Asia
Oakam	www.oakam.com/en	Oakam is a digital micro-lender for the UK's unbanked and underbanked consumers.	45000000	Machine Learning	n/a	109	United Kingdom
Paylatr	www.paylater.ng/	is a simple, entirely online lending platform that provides short-term loans in Nigeria to help cover unexpected expenses or urgent cash needs.	n/a	Machine Learning	420000	177	Nigeria
Shubham	www.shubham.co/	SHDFC Is an affordable housing lender headquartered in New Delhi targeting low-income, self-employed families in urban and semi-urban India.	99367000	ChatBot	800,000	n/a	India
Tala	tala.co	Tala is mobile technology and data science company that is revolutionizing financial services in emerging markets.	109200000	Machine Learning	n/a	722	United States
UangTeman	uangteman.com/	UangTeman.com is an online lending service that provides instant short-term microcredit to Indonesian consumers.	127300000	Machine Learning	1000000	250	Indonesia

Payments

AI is growing to play a pivotal role in mobile and peer-to-peer payments, which remains one of the largest FinTech applications globally, as well as by traditional banks to facilitate payments and transfers as well. A growing number of banks are using AI to secure client identities and to execute customer service inquiries via chatbots. Meanwhile, on the back end AI are increasingly used to automate processes and to detect problems preemptively through data analysis and machine learning. The most predominant use cases for AI in payments specifically include fraud detection, KYC and AML. A global economic crime survey conducted by PwC in 2016 estimates that one in three organizations experience economic crime. New ways to commit fraud and new ways to combat it co-evolve with the ongoing evolution of information technology. The use of data analysis to detect fraud is industry standard and falls into two main classes: statistical analysis and AI.

Global Mobile Payments Volumes (in Billion USD)



Subclasses of statistical analysis for fraud detection include: data preprocessing (error detection, validation and correction); models and probability distributions of business activities; user profile computation; time series analysis; clustering and classification to identify associations between variables; and matching algorithms to detect behavioural anomalies in transaction data.

Subclasses of AI for fraud detection include: data mining to classify, cluster and segment data, the use of expert systems to detect fraud by encoding human expertise in the form of rule-sets, pattern recognition to detect behavioural anomalies in an unsupervised manner, machine learning to detect unseen associations and hidden features indicative of fraud, and neural networks trained to detect suspicious transaction data.

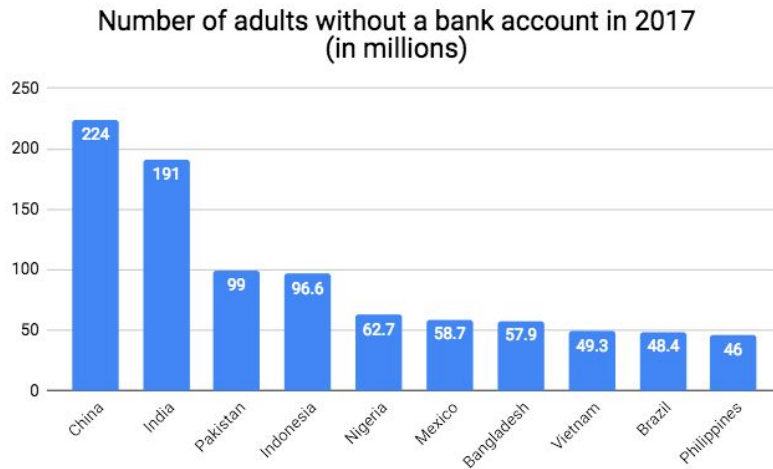
10 Companies in Financial Inclusion Industry Category: Payments

Name	Web Site	Description	Funding Amount	AI Type	Number of Customers	Number of Employees	Based in
BanQu	www.banquapp.com/	BanQu seeks to provide financial inclusion for the un/underbanked of the world using blockchain technology	2600000	ChatBot, Bio-identification, Blockchain	n/a	12	United States
Baobab	www.baobab.bz/	Baobab is a digital finance company focusing on financial inclusion in Africa and China.	86247000	Bio-identification	100000	128 branches and 3000 staff	France
Billon Group	www.billongroup.com	Billon Group is a tech company that uses blockchain to create next-gen solutions that reimagine the flow of regulated money and data.	12048000	Blockchain	n/a	91	United Kingdom
CCAvenue	www.ccavenue.com/	All the Avenues solutions – CCAvenue, ResAvenue, EventAvenue and HotelsAvenue are designed and created exclusively for Avenues using three	9000000	Data Analysis	n/a	231	India
Go-jek	www.go-jek.com/	Go-Jek specializes in ride-hailing, logistics, and digital payments.	205000000 0	Machine Learning	n/a	3,282	Indonesia
Juspay	juspay.in	Juspay is the simplest way to make online payments in India.	5800000	Data Analysis	n/a	122	India
M-Pesa	www.mpesa.in/	M-Pesa is a fast, secure and convenient way to transact on mobile brought to you by Vodafone.	n/a	ChatBot	23400000	n/a	India
matchmove	www.matchmove.com/	MatchMove Pay is Singapore's fastest growing financial technology company providing innovative enterprise payments solutions	30000000	Data Analysis	20000000	100	Singapore
Recarga Pay	recargapay.com.br	RecargaPay is the leading mobile payments platform & wallet of Brazil	28600000	Machine Learning	16000000	84	Brazil
remitty	www.remitly.com/us/en	Remitty is a mobile payments service that enables users to make person-to-person international money transfers from the United States.	197600000	ChatBot	n/a	454	United States
VeriTran	www.veritrans.com/	VeriTran is a software solution provider for Secure Digital Banking and Mobile Payments solutions for the Financial Services industry.	n/a	Data Analysis	10000000	87	Argentina

Savings

Researchers have shown that machine learning can be effectively applied to analyze and classify risky spending behaviour.

Many of the same tools and techniques used to rank individuals' creditworthiness through a risk-based analysis of spending behaviour can also be applied in order to help clients save more effectively and identify patterns of spending that are detrimental to their own objectives in terms of effective monetary savings. A mounting effort by financial institutions to shift toward the adoption of digital banking platforms and from transactional platforms to engagement platforms is enabling clients to better manage their own finances.



Source: World Bank

Furthermore, digital banking platforms provide a foundation upon which more sophisticated, interactive and engaging personal financial management tools, like spending analysis charts, savings goals visualization and budget tools can be seamlessly integrated.

Now, advances in AI that have enabled a large majority of financial institutions to gain access to ML and other AI capabilities is creating an ecosystem poised for the introduction of AI-driven personal financial management systems.

One of the most prominent use-cases for AI in personal finance management is the use of chatbots and interactive assistance platforms, which is thought to increase client engagement.

A more involved use-case is the use of machine learning technology in order to analyze clients' spendings and savings patterns and to identify ways in which they could spend in order to save more effectively.

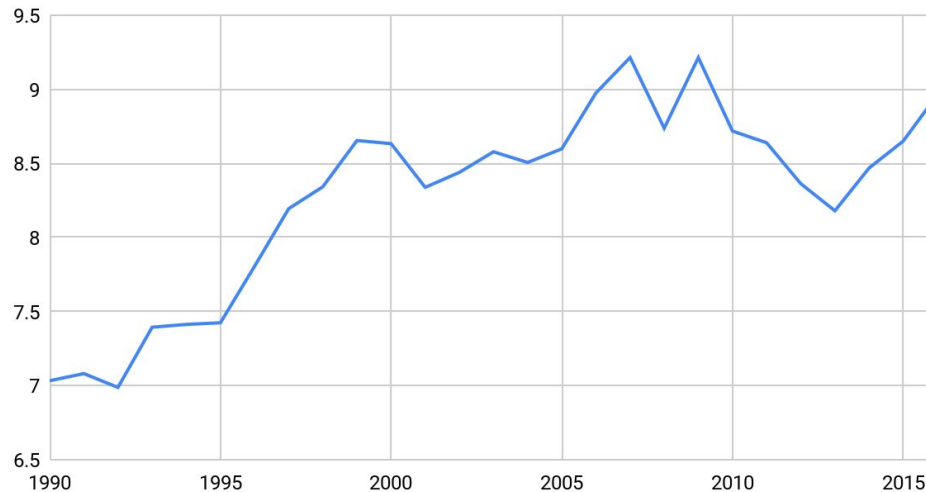
5 Companies in Financial Inclusion Industry Category: Savings

Name	Web Site	Description	Funding Amount	AI Type	Number of Customers	Number of Employees	Based in
Guiabolso	www.guiabolso.com.br/	Guiabolso is Brazil's leading personal finance platform, with over 4M users of its #1 Finance app and consumer credit marketplace.	74000000	Machine Learning	n/a	182	Brazil
Kaleidofin	kaleidofin.com/	A fintech platform.	2800000	Machine Learning	600000000	16	India
Mambu	www.mambu.com/	Mambu is the leading SaaS banking engine powering innovative lending and deposits.	12650000	Data Analysis	n/a	143	Germany
Nubank	nubank.com.br/	Nubank provides financial services for Brazilian users.	496986000	Data Analysis	3000000	850	Brazil
Trulioo	www.trulioo.com/	Trulioo, an online identity verification company, enables trust and safety online by powering fraud and compliance systems worldwide.	21000000	Data Analysis, ChatBot	n/a	85	Canada

Insurance

There are very few insurance companies in developing countries that are using ML and DA in their activities. For the most part, the use of these technologies by insurance companies is limited to developing predictive analytics algorithms for insurance risk by analyzing a large amount of data associated with individuals classified as high-risk historically, in order to tease out as-yet unnoticed correlations. While insights can be gleaned using techniques common in big data analytics, the use of machine learning (and deep learning in particular) can yield more impressive results because they have come to be recognized for their ability to neutralize the effect of statistical noise and outliers, and in their ability to develop highly accurate predictive models based on smaller amounts of data.

Insurance spending Total, % of GDP, 1990 – 2016



However, much as is the case with the use of machine learning techniques and technologies for credit score assessment, one of the largest barriers to this technology adoption by mainstream insurance companies is the black-box aspect of machine learning algorithms, and the fact that the specific way in which they arrive at their outputs is not clearly understandable and explainable.

Nonetheless, as the ability for machine learning to identify unseen associations between behaviour and to identify new features and characteristics impacting clients' insurability continues to grow and prove its capabilities, it is likely that the added benefits of machine learning will come to be recognized as net-useful enough to counterbalance those perceived issues and bottlenecks.

3 Companies in Financial Inclusion Industry Category: Insurance

Name	Web Site	Description	Funding Amount	AI Type	Number of Customers	Number of Employees	Based in
Arya.ai	arya.ai	Arya.ai is a Deep Learning platform offering multiple tools to build, manage and scale complex Deep Learning applications.	750000	Data Analysis, Machine Learning	n/a	11-50	India
Awamo	awamo.com	Mobile, biometric banking app for microfinance	2250000	Computer vision / bio-identification	n/a	28	Germany
Policybazaar	www.policybazaar.com/	Policybazaar is an insurance aggregator website that compares financial services from major insurance companies.	346600000	ChatBot	n/a	1860	India

FinTech Services Landscape

B2B and B2C



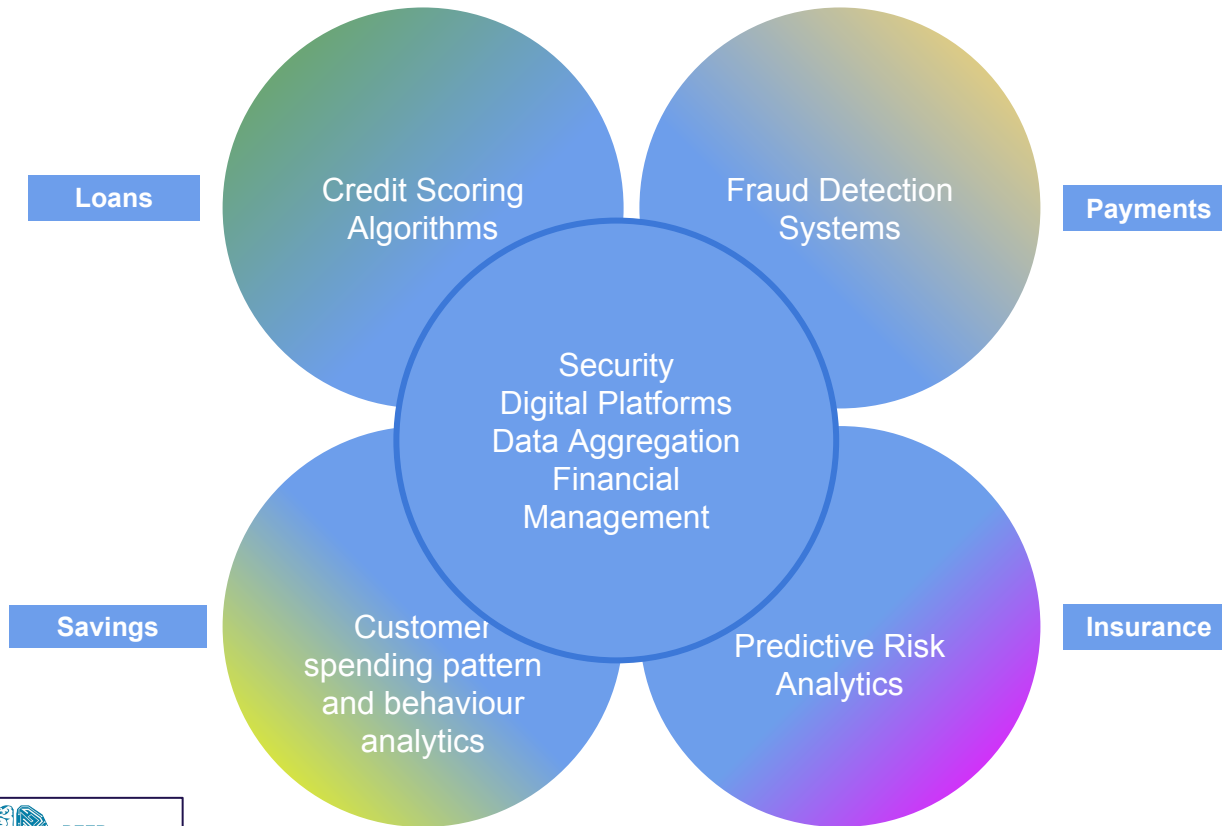
SAAS



Software as a Service (SAAS) is enabling more rapid technology and business development for FinTech companies operating in developing regions. The circle on the left shows those companies that develop their own AI technologies in-house, while the circle on the right shows those FinTech companies that in-source AI expertise and software from other companies, a trend that we can expect to see increase in the years to come. One of the foremost challenges facing FinTech companies that develop AI technologies internally is lack of access to proper infrastructures for education and training. Most developing countries do not prioritize teaching AI in universities, and as such entrepreneurs in developing countries have to attempt to build expertise in this area through internet-based resources. However, this bottleneck can be effectively leapfrogged by utilizing SAAS to in-source the required expertise from companies operating in regions that do have infrastructures for AI education and training already established.



Common and Specific AI Applications in the Financial Inclusion Industry

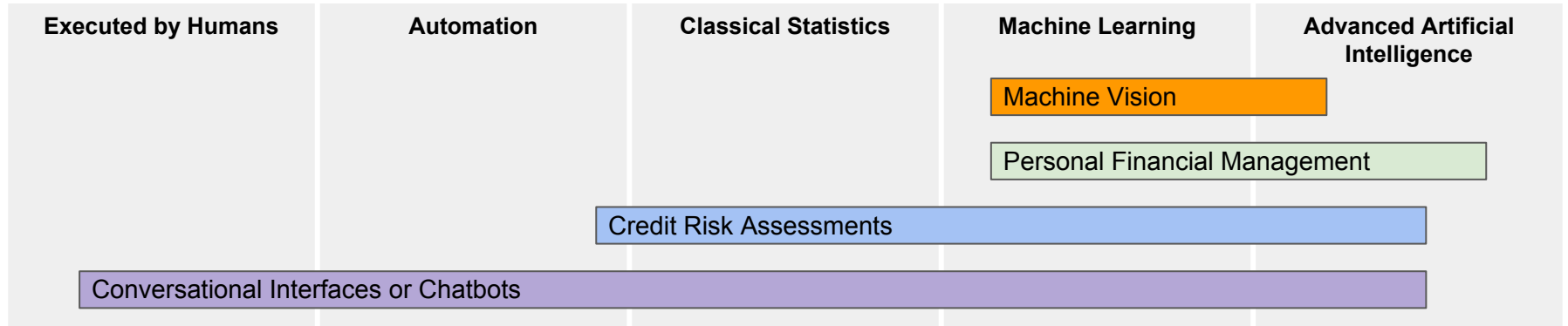


This infographic visualizes the patterns between specific FinTech for financial inclusion use-cases, and the overlaps between various underlying data analysis and AI technologies that are commonly used for each particular use-case or application.

As can be seen, FinTech apps aiming to provide loans utilize credit scoring algorithms, while payment apps commonly utilize fraud detection systems, insurance apps utilize predictive risk analytics and savings apps utilize algorithms that classify and predict behaviour based on customer spending patterns.

Meanwhile, we can also see a suite of technologies that share common use for all four FinTech applications, which include security technologies, digital platforms, data aggregation and financial management algorithms.

Algorithms in FinTech



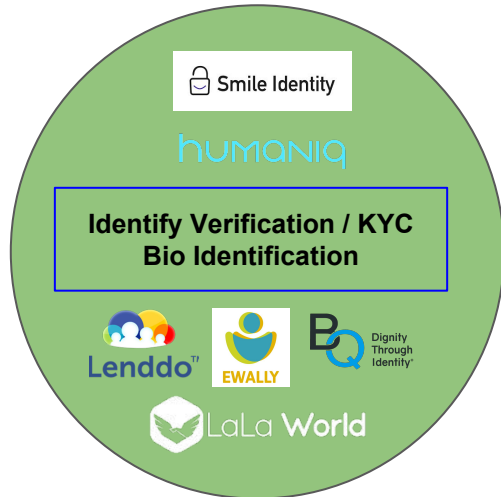
The figure above shows the overlap in core FinTech algorithms in terms of their use for core functionalities within the FinTech technology landscape.

Conversational interfaces and chatbots utilize the broadest array of data analysis and machine learning technologies, from human execution to automation to classical statistics, machine learning and artificial general intelligence.

By contrast, Credit Risk Assessment for the most part only utilizes classical statistics, machine learning and artificial general intelligence, whereas machine vision and personal financial management utilize machine learning and artificial general intelligence.

Source: <https://www.fibrproject.org/news-events-list/2018/4/25/fibr-report-launch-artificial-intelligence-practical-superpowers>

Computer Vision Applications



Why computer vision in FinTech?

Computer vision is becoming increasingly used in FinTech companies for two main purposes: bio-identification mechanisms as an alternative to government-issued identity documentation for the purposes of identity verification for the purposes of KYC and AML.

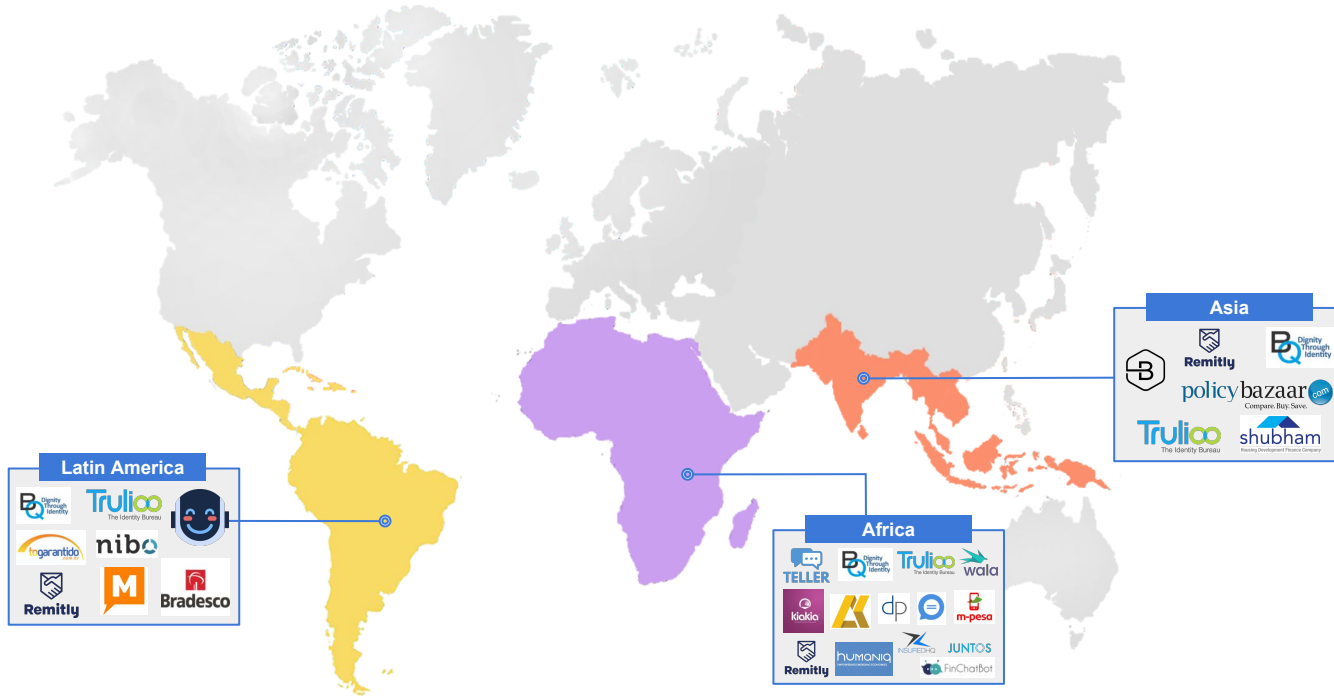
Some analysts have also speculated that banks might use computer vision to determine a client's creditworthiness based on computer-aided analysis of photos in order to extract information like the size of a shop, the diversity and quantity of products in their visible inventory, and the quality of building materials shown in photos.

Main trends in bio-identification

Lack of issued by Government IDs preclude people from opening bank accounts and access to banking system. However, there is one opportunity to include those people in financial life - using recent advancements in "Bio-identification" technology sphere. FinTech apps that utilize bio-identification measures as a proof of ID mechanism -- such as by utilizing voice recognition and computer vision for facial recognition purposes -- are rapidly emerging and represent one of the foremost use-cases for computer vision technologies in the FinTech industry. An estimated 1.1 billion people globally lack any form of officially recognized identification.



Chatbots in Financial Inclusion Industry



Chatbots are being increasingly used by FinTech apps to overcome the illiteracy barrier that makes many segments of rural populations unable to interact with banks via text-based interfaces and statements. They are also being used to educate populations about their possibilities by being financially included in the economic life of their country. The use of chatbots can help improve user engagement with FinTech apps as well.

Some of the most predominant applications for chatbots in FinTech apps include customer service and general enquiries, customer onboarding and acquisition, translation, financial and product education, the provision of proactive alerts and notifications, and optimization of conversation flow.

One of the foremost obstacles faced by the use of chatbots in FinTech mobile apps is the issue of language. In order to deploy a chatbot in a specific developing region, it needs to speak the language of that region's population, which makes the quick adoption of a given chatbot in multiple developing regions a difficulty. Furthermore, developing regions also often have a multitude of distinct dialects and accents, which makes the creation of a one-size-fits-all chatbot for use in a given developing region like Africa or Asia difficult.

FinTech for Financial Inclusion

Technology Insights and Main Findings

- ❖ The rapid rise of mobile phone and internet penetration in the developing world is enabling the rapid emergence of a robust FinTech industry aiming to increase financial inclusion by offering local populations access to crucial financial services through FinTech mobile apps.
- ❖ Indirectly, these efforts also enable users to access not just financial products and services, but also access to the global economy, as well as increased access to basic human amenities by virtue of the increased opportunities for savings and employment, combined with the increases in regional socioeconomic development created by increased financial equality and increased access to economic opportunities.
- ❖ FinTech companies are increasingly using data analytics and various forms of AI (of which machine learning is the most predominant) in order to optimize their internal operations as well as the products and services they offer.
- ❖ This report has identified a set of five critical technologies underpinning recent developments in FinTech apps. These technologies are: AI, Bio-identification, Gamification, Blockchain and Crypto Economy.
- ❖ The inclusion or exclusion of these technologies can be used to tangibly assess the sophistication of a given FinTech app, and can be used to classify apps as 1st generation, 2nd generation or 3rd generation.

Conclusion

The diverse array of financial products and services delivered by the rapidly growing number of FinTech mobile apps has quickly established themselves over the course of the past few years as one of the most optimal ways for the unbanked and financially-marginalized populations of developing nations to gain access to basic financial services. Moreover, access to such services also serves as effective gateways to many other opportunities; it means access to a broader array of economic opportunities and participation within the global economy, and through this, to further socioeconomic development and access to basic human amenities.

This report has sought to chart the landscape of the emerging FinTech for Social Good and Financial Inclusion industry landscape emerging in the developing world, outlining the industry's history, present and near-term future, identifying the most active and well-established companies, the FinTech start-ups with the greatest potential. The report also develops a framework for classifying the core technologies upon which present and future FinTech products are based upon. These include:

- Artificial Intelligence
- Bio-identification, which can be used as proof-of-identity mechanisms for clients who do not possess the necessary forms of government-issued ID that banks traditionally require when opening accounts;
- Blockchain-enabled infrastructures which allow transactions to occur in a secured and provable manner,
- Chatbots, which can serve to overcome the illiteracy barrier that makes many segments of rural populations unable to interact with banks via text-based interfaces and statements;
- Gamification (the use of game elements and game design techniques in a non-game context), which can be used as a tool for educating clients on the use of financial service interfaces, and ultimately serve as a tool for enhancing user experience, satisfaction and, above all else, user engagement.

The synergetic convergence of the above core technologies will enable increased financial inclusion in the developing regions and will take shape within the next 5 years, and prove to be the most disruptive factors changing the shape of the financial services industry in the developing regions. More importantly, the inclusion or exclusion of the above technologies in a given FinTech product or service can be used to classify them according to their level of sophistication and their likelihood of having a disruptive impact on the FinTech industry.

About Deep Knowledge Analytics:

Deep Knowledge Analytics is the analytical arm of Deep Knowledge Ventures, a VC firm focused on investments in disruptive DeepTech projects and regularly producing advanced industry analytical reports on the subjects of Artificial Intelligence, Longevity, Crypto Economy and Convergence of Technological MegaTrends.

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