



Unlocking Public and Private Finance for the Poor

Annexes 1-6 Technical Paper 1.1

BigFintechs and their impacts on sustainable development

Katherine Foster, Sofie Blakstad, Martijn Bos, Sangita Gazi, Charlotte Melkun and Becky Shapiro

Annex 1: BigFintech and Sustainable Development Goals (SDG) tiered impact tables

Based on our tabulated data, case studies and research, we identified impacts (intentional and unintentional and both positive and negative) across a range of environmental, social and economic SDGs for the LDCs. We determined three tiers of impacts: (i) from direct service offerings; (ii) from integrated services, operations, infrastructure and processes; and (iii) from business models, the value chain and the overall ecosystem (vertical and horizontal integration) including cumulative and systemic impacts. A summary table of the tiered impacts is provided in Technical Paper 1.1 while the full version by BFT category is provided below.

This categorization is a concluding descriptive rather than normative or prescriptive tool to help better understand the intended and unintended and the positive and negative impacts across BFTs direct services and operations, as well as the broader ecosystem and value chains of BFTs on LDCs. We believe this warrants further examination and such a tool as is currently used to define Scope 1, 2 and 3 climate emissions, could serve to better understand the scope of SDG impacts as well as fluid regulatory implications.

BFT CATEGORY LEVEL TIERED IMPACT TABLES

BFTs type/category and examples	Tier 1 impacts: from direct services offering <i>Impacts relate to the direct intended goals (financial inclusion and economic growth) which are generally positive but also include the direct unintended impacts which are both positive and negative.</i>	Tier 2 impacts: from services, operations, infrastructure and processes <i>Impacts include positive and negative individual and institutional effects.</i>	Tier 3 impacts: from business model, value chain and ecosystem (vertical and horizontal integration) including cumulative and systemic impacts <i>Impacts relate to activities stemming from inherent business models and ecosystems (across regulatory sectors and SDGs).</i>

<p>Payment platforms</p> <p>Regional mobile money providers and global payment platforms</p> <p><i>Alipay (Ant technology group), Apple Pay, Fidelity, Facebook, Google Pay, JPM Coin, MTN, Paytm, People's Bank of China, Safaricom, Tencent (WeChatPay).</i></p>	<p>Access to financial services has a positive impact in addressing poverty (SDG 1), gender equality (SDG 5) and reducing inequalities of other minorities or segments of LDC populations (SDG 10).</p> <p>An increase in financial inclusion positively impacts industry, innovation and infrastructure (SDG 9).</p> <p>The availability of micropayments to SMEs and facilitation of remote payment positively impacts decent work and economic growth (SDG 8).</p> <p>Data privacy and data security negatively impact peace, justice and strong institutions (SDG 16).¹</p>	<p>Data privacy, security and algorithm bias also negatively impact gender equality and other inequalities (SDG 5 and SDG 10) by increasing rather than reducing the gaps in financial access and inclusion for women, LGBTQ and minorities without access to technologies who therefore cannot access these new financial services (SDG 10).</p> <p>Partnerships and initiatives of payment platforms, such as Alipay's Ant Forest and M-Pesa's solar energy initiatives positively impact good health and well-being (SDG 3), responsible consumption (SDG 12) and underpinning environment (SDGs 14 and 15) and climate initiatives (SDG 13).</p>	<p>Payment platform ecosystems have both negative and positive impacts on peace, justice and strong institutions (SDG 16), work and economic growth (SDG 8) and industry, innovation and infrastructure (SDG 9.)</p> <p>Payment platforms underpin and enable a growing number of clean energy (SDG 7), biodiversity (SDGs 14 and 15) and climate mitigation initiatives (SDG 13). However, offsetting schemes and techniques are rife with challenges including in measuring impact and the potential to do harm (biodiversity, land change, etc.)² particularly in LDCs.</p> <p>Increased consumerism and enabling activities such as online gambling are negatively impacting as these cause economic losses and can lead to poverty (SDG 1) deterioration of health and well-being (SDG 3) and excessive consumption (SDG 12).</p> <p>Rapid evolution of technology means underlying issues of literacy and education for specific segments or regions will see further inequalities (SDGs 4 and 10). A 'new digital divide' will negatively impact jobs and economic growth (SDG 8) and industry, innovation and infrastructure (SDG 9).</p> <p>Increased access to debt by lowering barriers and encouraging credit can create a systemic default/liquidity crisis, negatively impacting both individuals and financial institutions (SDG 1 and SDG 16).</p>
<p>e-commerce/marketplace platforms</p> <p>Online platforms for marketplaces, connecting sellers with buyers (products or</p>	<p>e-commerce and marketplace platforms provide infrastructure and capacity to sell goods (and cases of training programmes) to increase financial inclusion, and have a positive impact on reducing poverty (SDG 1) and hunger (SDG 2), facilitating quality education (SDG 4) and achieving gender (SDG 5) equality (SDG 10).</p>	<p>'Bricks and mortar' SMEs are being displaced.</p> <p>On e-commerce/market platforms prices for vendors are being depressed or products blocked by market algorithms, which negatively impact the development goal of promoting decent work and economic growth (SDG 8) as well as reducing inequalities (SDG 10).</p>	<p>The new tier of market and growing invisible and unregulated third-party value chains have negative impacts across labour (SDG 8), sustainable consumption and production (SDG 12), environment (SDGs 14 and 15) and climate (SDG 13) as these platforms are likely to emit more CO₂ than a small country.</p>

¹ There is no single SDG related to data privacy and security but there is a call for SDG 18 Ensuring the Digital Age Supports People and Planet. See Luers A, 'The Missing SDG: Ensure the Digital Age Supports People, Planet, Prosperity & Peace' *IPS*, Montreal, July 2020, <www.ipsnews.net/2020/07/missing-sdg-ensure-digital-age-supports-people-planet-prosperity-peace/>.

² Whieldon E, 'Scientists See Problems with Some Carbon-Offsetting Tree Planting Programs', S&P Global Market Intelligence, June 2020, <www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/scientists-see-problems-with-some-carbon-offsetting-tree-planting-programs-59163058>.

<p>services) B2B, B2C, C2C</p> <p><i>Amazon, Alibaba, Facebook, eBay, Fiverr, Jio, Jumia, Reliance, Upwork, Mercado</i></p>	<p>Micropayments to SMEs provide access to capital, goods and services for decent work and economic growth (SDG 8).</p> <p>Issues of data privacy and data security regarding consumer information and protection negatively impact individuals as well as the soundness and stability of strong institutions (SDG 16).</p>	<p>Climate (SDG 13), environment (SDG 15) and labour rights (SDG 8) are covered by some CSR initiatives with positive impact, specifically on core operations and goods but this does not generally apply for activities in LDCs. Moreover, offsetting scheme issues may exist as noted under 'BigTech cloud services'.</p> <p>Lack of traceability of vendors, suppliers and goods negatively impacts employment conditions (SDG 8), gender equality (SDGs 5 and 10) and overall inequalities (human rights and labour issues) (SDG 10) directly in LDCs where goods are manufactured.</p>	<p>The opaque value chains (comprising almost 50 per cent of the market) are bypassing regulatory and CSR standards having global implications related to third-party vendors which are similar in scope to social media content issues.</p> <p>Counterfeit items fuel activities that undermine democracy, peace, justice and strong institutions (SDG 16) as well as gender (SDG 5) and inequalities (SDG 10). Strong institutions (SDG 16) are also negatively impacted as BFT are not paying benefits or taxes with LDCs.</p>
<p>Social media platforms</p> <p>Venturing into payments and social commerce</p> <p><i>Facebook' Marketplace, Facebook Pay, Diem, SME Grants, WeChat</i></p>	<p>Access to technology and the Internet has a positive impact on industry, innovation and infrastructure (SDG 9) and increasing employment (SDG 8).</p> <p>Social media platforms venturing into cryptocurrencies could offer broader financial inclusion (SDG 1) without access to the formal financial system.</p> <p>Issues of data privacy and data security regarding consumer information and protection are negatively impacting individuals as well as peace, justice and strong institutions (SDG 16).</p>	<p>Targeted advertisements and misinformation campaigns have influenced elections, climate denial and the spread of conspiracy theories, negatively impacting peace, justice and strong institutions (SDG 16) .</p> <p>Integration with payment infrastructure is providing financial inclusion (SDGs 1 and 5) for women.</p>	<p>Social media platforms could further exacerbate the digital divide, especially for women and rural populations, furthering inequalities (SDGs 5 and 10).</p> <p>Platforms can enable misinformation campaigns or agendas undermining peace, justice and strong institutions at international scale (SDG 16).</p> <p>The combined business models of payments integrated in social media platforms can result in 'digital colonialism'.</p> <p>Integration with payment stablecoins could have an impact on financial institutions and on global financial stability.</p>
<p>BigTech cloud services</p> <p>Providing data and infrastructure services to financial players</p> <p><i>Amazon Web Services, Alibaba Cloud Services, Azure, Google Cloud, Ethereum, Microsoft, Next Gen DLT</i></p>	<p>BigTech cloud platforms provide access to inexpensive technology which enables financial inclusion (SDG 1) and direct opportunities for developers to innovate in LDCs (SDG 9) and create jobs (SDG 8).</p> <p>Concentrated cloud risks, issues of data privacy and data security (and algorithm bias) negatively impact individuals and SMEs, as well as peace, justice and strong institutions (SDG 16)³, and gender and inequality (SDGs 5 and 10).</p>	<p>Access to cheap technology allows LDCs to bolster industry and infrastructure (SDG 9), education (SDG 4), and economic growth and jobs (SDG 8) overall.</p> <p>SME access credit against their assets but are locked in (not inter-operable) (SDG 1).</p> <p>Water and electricity usage for data centres and user farms for computation and cooling impact SDG 6, 7 and 13). While data farms are often more efficient than locally hosted or proprietary servers, the impacts are not fully accounted for nor disclosed. Tech platforms purchase offsets to address energy and emissions and this is upheld as a positive impact on climate and energy</p>	<p>Where energy usage and emissions are disclosed, initiatives focus on renewable energy platforms (SDG 7) or offsetting through carbon markets (SDG 13). However, offsetting schemes and techniques are rife with challenges including in measuring impact and the potential to do harm (biodiversity, land change, water, etc.) particularly in LDCs.⁴</p> <p>Interconnected services, infrastructure and business models may enable fraud and illegal or illicit activities, monopolies creating silos, issues of inter-operability and locking in entire regions and populations.</p> <p>Partnerships (SDG 17) with global networks for social impact</p>

³ Ibid., note 1.

⁴ Ibid., note 2.

		(SDGs 7 and 13). However, offsetting challenges have a particular impact on LDCs (as noted in Tier 3 impact).	innovation (i.e. Ethereum) are enabling a cross section of SDG initiatives for LDCs.
<p>TechFin platforms</p> <p>Originating from tech players venturing into financial services and digital livelihood</p> <p><i>Airbnb, Amazon, Apple, Binance, Grab, Mechanical Turk, Uber, including cryptocurrency exchanges</i></p>	<p>TechFin platforms provide access to financial services and money transfers at lower expense, positively impacting poverty reduction (SDG 1), gender and other inequalities (SDGs 5 and 10).</p> <p>Platforms like Uber, Grab and Airbnb create alternative job opportunities (SDG 8) and economic activity ('gig economy'), which can help reduce inequalities (SDGs 5 and 10).</p> <p>Car and other loans including those in partnership with local or national banks, enable financial inclusion and economic growth (SDG 8) and reduced inequalities (SDGs 5 and 10).</p> <p>Cryptocurrency security breaches and cyberattacks, as well as price manipulation and fraudulent activities, impact individuals, SMEs and institutions (SDG 16).</p>	<p>Gig economy platforms have a negative impact on decent work (SDG 8) through long work hours, low wages, no job security and lack of employment benefits.</p> <p>There are cases of discrimination, sexual harassment and violence against women and other minorities (SDGs 5 and 10).</p> <p>Defaults on auto or other loans or leases as a result of the COVID-19 crisis are impacting individuals, driving them back into poverty (SDG 1) and impacting credit ratings (SDG 8). The defaults impact partner financial institutions (SDGs 9 and 16) as well as the services offered in communities (SDG 11).</p>	<p>The gig economy results in a diminished tax base, (undeclared) weakening infrastructure and public institutions including decreases in public transportation, diminishing affordable housing (SDG 11) as well as increases in traffic fatalities and CO₂ emissions (SDG 13).</p> <p>The gig economy is creating an ecosystem of interdependence with single points of failure now being tested by COVID-19. Defaults on auto and other loans resulting from diminished users, are negatively impacting the economy, the banking sector and national banks (SDGs 8 and 16)</p> <p>Gig economy models result in a decrease in declared income and tax base for infrastructure and institutions (SDG 16).</p>
<p>Incumbents/ mature 'Fintechs'</p> <p>Digitalizing global banks and financial actors, in retail or wholesale</p> <p><i>BlackRock, JP Morgan, Mastercard, SaxoBank, Swift, Visa</i></p>	<p>The incumbents support financial inclusion projects and fund microfinance and SMEs in developing economies, including some activities in LDCs increasing financial inclusion (SDG 1) and bolstering jobs and economic growth (SDG 8).</p> <p>For instance, the BlackRock Foundation invested US\$ 589 million to support financial inclusion projects.</p>	<p>Most of the incumbents support clean energy (SDG 7) with some commitments to 100 per cent renewable energy in 2020 and sustainability and climate initiatives (SDGs 13, 14 and 15); however, few of these are directly in LDCs.</p> <p>Overall there is little reach in the LDCs in terms of access to services (SDG 10).</p>	<p>Some investments are linked to deforestation (SDGs 13 and 15) while at the same time, billions have been committed to ESG investments in 2020.</p> <p>The business models are more compatible with developed economies; however, the interconnectedness of the payments and financial system means incumbents have an overall impact on financial stability and integrity as exemplified in the 2008 financial crisis.</p>

Annex 2: Tools and methodologies

Information and data were harvested via a landscape analysis combining SDG and social impact space with the Corporate Social Responsibility (CSR) and Environmental, Social, and Corporate Governance (ESG) space. The landscape analysis technique approach developed under the Green Digital Finance Alliance⁵ served as an underpinning method. Data were picked up from the BigFintech landscape via primary source corporate reports, secondary source academic and news reports and other relevant literature where available.

A meta-level landscape of key BFT companies was undertaken through a CSR-ESG-SDG lens we created for the purpose of providing a baseline of qualitative data and information analysis for this paper. The identification of SDG impacts was completed by applying this lens for a keyword content analysis scanning approach using the terminology of the SDGs, targets and guidelines as the basis for identifying the signals from the BFT reports and other sources.

- We undertook a sample landscape examination of BFTs based on a cross sectional representation of categories and on the availability of primary and secondary sources.
- CSR, ESG and sustainability reports, where available, were reviewed (the selection of cases was largely determined by the availability of these and other secondary sources).
- This was not intended as an analysis/assessment of individual company CSR reporting and sustainability efforts (i.e. it was not intended to call out individual limitations of individual companies) nor was it a deep dive of the particularities of the CSR and ESG frameworks.
- Rather, it underscores the parameters defining SDG impacts in this first layer of 'governance' (self-governance) in comparison with the external issues and impacts emerging in the BFT-SDG landscape.
- The development and employment of this lens was a necessary step to understand the limits and gaps in information about BFT and SDG impacts as well as on self-governance methodologies and tools, and points to both the capacity and need for a new level of impact analysis (including unforeseen impacts—globally and specifically for LDCs) to help inform governance discussions.

CSR-ESG-SDG combined lens

For the purpose of this paper, given the limitation of data and sources, we developed a CSR-ESG-SDG lens to provide a baseline of information and qualitative data analysis as well as a frame of reference to better identify and capture BFT impacts on developing economies and LDCs from various sources.

The main finding from the exercise of creating a new lens and analysis tool is that there is an opportunity to bridge the digital economy lens with a combined CSR-ESG-SDG lens to better understand the BFT impacts on LDCs. We note that there is a massive gap between the 'self-governance' framework and business model parameters with regard to CSR reporting.

Caveats and findings of development and application of the CSR-ESG-SDG lens

In undertaking this exercise, we note the following findings and caveats which have implications also for other papers in the series related to the UNCDF 'Dialogue on Governance of Global Digital Finance':

CSR and ESG landscape limitations

- **Governance dialogues and even international trade agreement models** that emerged in the 1990s and 2000s that included consideration of some elements of the current SDGs (such as the NAFTA side agreements on labour and environment) could not have

⁵ See Holland Fintech and Sustainable Digital Finance Alliance, 'A Green and Sustainable Digital Finance Landscape: Market Analysis for the Netherlands', Report, 2019, <<https://greendigitalfinancealliance.org/wp-content/uploads/2019/11/Green-and-Sustainable-Landscape.pdf>>.

conceived of the emerging and scaling business models, reach and unforeseen challenges and impacts.

- **CSR and other governance and reporting tools were drawn up along the public-private lines**, but also in period when **international trade agreements and their related governance structures** were just being signed (i.e. NAFTA) and the digital world was in its embryonic stage.
- The CSR and ESG landscape evolved out of conventional parameters of industry and sectoral categories whereas the **operations, reach, and activities of BFTs reach far beyond these parameters**.
- The **SDGs may broaden the capacity to identify impact** in the currently defined 'public realm' outside the 'material definitions' of CSR and ESG.
- But the **SDGs are viewed largely as a compass** pointing to self-defined targets across the goals and the means to measure impact on these.

BFT CSR, ESG and sustainability reporting are limited even for less complex business models but provide a baseline in terms of identifying SDG parameters considered by a company as a form of first level 'self' governance.

- **CSR, sustainability reporting and ESG reporting**, where available, is conducted at headquarter level, focuses on SDG impact on core operations, facilities and suppliers (within self-identified boundaries, issues and methodologies across a heterogeneous reporting landscape).
- Although BFT business models and activities **cross multiple categorizations in the regulatory landscape, they are usually** categorized as 'finance or information industry' and as such they have a limited scope of SDG impacts in terms of sustainability reporting and perhaps in regulatory frameworks that need to be considered as they expand.
 - An example outside of the BFT category but still tech-related is Tesla, which emerged as a tech company but is active in automobile, solar, battery storage production, etc. As such it has 'an ecosystem' approach not only in its business model⁶ but also in its activities and sustainability reports.⁷ Similar parallels can be considered as BFT cross sectoral and geography boundaries.⁸
- **Platforms/marketplaces that sell third-party goods or services**, such as Amazon, all have environmental, social and governance impacts (human rights, gender, waste, energy, climate, etc.) that cannot be identified let alone assessed, because their dynamic multifaceted business models are not compatible with parameters of CSR and ESG reporting.
- This means that an **entire segment directly related to BFT business models and a core operational raison d'être cannot be 'identified, measured nor addressed'** using standard CSR-ESG and sustainability frameworks. This segment is a titanic challenge, as are the related issues of gender, human rights, environmental impacts as the current scope of reporting, measuring, mitigating and improving is focused on a company's own content, materials and operations. For example, **Amazon's own brand label** is reported but not third-party items. In addition, the company has announced a new 'Climate Pledge Friendly' programme that will label certain products that meet one of 19 certifications for sustainability, but this is limited to a fraction of items.⁹
- Moreover, from our research we found that **numerous BFTs are not reporting on CSR at all**, but instead are focusing on a narrow view of climate or SDG impact and actions (operations and technological fixes which risk perpetuating the reliance on technology if not bolstering the companies' bottom lines and spinoffs directly and in future).
- The **BFT corporate climate commitments** related to emissions reductions (sustainable planning—future facing) focus within the limited parameters of direct operations,

⁶ De Pin F, 'How Tesla Integrates Shared Value Principles with Ecosystem Innovation to Build Sustainable Competitive Advantage', 2015, <www.semanticscholar.org/paper/How-Tesla-integrates-Shared-Value-principles-with-Pin-Federico/bd0de1c507e786a8dfd76d9e33aef56ce8a5ff5a#paper-header>.

⁷ 'Impact Report 2019', Tesla, <www.tesla.com/ns_videos/2019-tesla-impact-report.pdf>.

⁸ Ibid., note 6.

⁹ 'The Climate Pledge', Amazon, <<https://sustainability.aboutamazon.com/about/the-climate-pledge>>.

facilities, offices, data centres, and transport and along largely self-identified targets and voluntary evaluation methodologies.¹⁰

- Similarly, the focuses of most climate goals and **solutions in sustainability planning and commitments are technological** and address only elements, activities and products related to core operations.
- Many BFT models are **bypassing traditional investment routes**: an additional issue in applying ESG frameworks to determine BFT impact on SDGs is that business and investment models of emerging BFTs are themselves bypassing traditional investment approaches.
- Entities such as Diem and M-Pesa **shift the notion of ‘primary’ stakeholder, shareholder and interests beyond the scope of relevant ESG standards** as the partners are the only stakeholders.¹¹

BFT definition and Sustainable Development Goals (SDG) landscape matrix

This paper initially aligned with the definition of BFTs outlined in the draft foundational paper ‘BigFintechs, A New Paradigm’, which lays out the inception of the UNCDF ‘Dialogue on Governance of Global Digital Finance’ on the characteristics of and the scope, potential scale and emerging governance challenges associated with BFT companies. This scope encompassed:

... BigFintechs [which] originate from different contexts, often non-financial yet regulated industries, from China’s Ant Financial to Africa’s regional mobile money providers, South East Asia’s ride-hailing services (Grab, Gojek) and Facebook Pay in the US. Some are evolving from social media and e-commerce origins, others from non-tech industries, existing financial institutions, or large data, telecoms and infrastructure providers to the financial sector, and native Fintech companies. Some will originate from central banks, in the form of Central Bank Digital Currencies, with varied goals and approaches. Others, yet to come, might one day originate from FMCG companies which operate large supply chains across geographies and are in the midst of digitalizing interactions across their ecosystems.¹²

However, research followed the definition of BFTs to non-financial yet regulated industries which necessitated a more expansive examination of potential policy and governance challenges across sectors, SDGs and geographies. In addition, regional and business model variation (such as those in which financial services are secondary to streamlining and facilitating digital services) were considered and included in the definition and categories of BFTs¹³ within the landscape matrix.

To capture organizations that did not fit directly into these defined categories, and yet had a potential direct or indirect impact on SDGs, we developed the BFT-SDG landscape matrix to include the organizations that may not fit directly into the above defined categories, and yet may have a direct or indirect impact on SDGs. We employed the redefined BFT categories in our analysis.

¹⁰ For example, the Amazon commitments (Net Zero Carbon by 2040, 100% Renewable Energy by 2025, Shipment Zero, and Electric Delivery Vehicles) are Scope 1 and 2. Hence, the front operations are being cleaned up while the door is left open to the rest of the value chain.

¹¹ Kimani K, ‘safaricom Unveils Fuliza an Overdraft Facility for M-Pesa Users’, January 2019, <<https://web.archive.org/web/20190702182706/https://alchemy.co.ke/business-news/safaricom-unveils-fuliza-an-overdraft-facility-for-m-pesa-users/>>.

¹² BigFintechs, ‘A New Paradigm XXX*’, Version: 31 August 2020, Digitalization Is Transforming Finance, p. 2.

¹³ Ibid. at p. 3.

BIGFINTECH (BFT) CATEGORIES

For the purpose of our research and paper we use the following definitions of BFT categories.

BigFintech (BFT) category	Examples of companies active in this category
Payment platforms <i>Regional mobile money providers and global payment platforms—including alternative currencies*, CBDC (along with synthetic CBDCs¹⁴), stablecoins, bank cash on ledger, credit card companies</i>	<i>Alipay (Ant technology group), Apple Pay, Fidelity, Facebook, Google Pay, JPM Coin, MTN, Paytm, People’s Bank of China, Safaricom, Tencent (WeChatPay)</i>
e-commerce/marketplace platforms <i>Online platforms for marketplaces, connecting sellers with buyers (products or services) B2B, B2C, C2C</i>	<i>Amazon, Alibaba, eBay, Fiverr, Jio, Jumia, Reliance, Upwork, Mercado, Facebook Diem</i>
Social media platforms <i>Venturing into payments and social commerce</i>	<i>Facebook Marketplace, Facebook Pay, Diem, SME Grants, WeChat</i>
BigTech cloud services <i>Providing data and infrastructure services to financial players</i>	<i>Amazon Web Services, Alibaba Cloud Services, Azure, Google Cloud, Ethereum, Microsoft, Next Gen DLT</i>
TechFin platforms <i>Originating from tech players venturing into financial services and digital livelihoods</i>	<i>Airbnb, Amazon, Apple, Binance, Grab, Mechanical Turk, Uber, including cryptocurrency exchanges**</i>
Incumbents/mature ‘Fintechs’*** <i>Digitalizing global banks and financial actors, in retail or wholesale</i>	<i>BlackRock, JP Morgan, Mastercard, SaxoBank, Swift, Visa</i>

Analysis and recommendations of BFT categorizations and definitions

While the grouping of businesses, models and services into categories is a key step towards examining the landscape when considering policy and regulation, it is important to note that many businesses are cross sectoral and deliver services that fit into multiple categories. If we consider the failings of current regulations and laws to address current big tech company activities (i.e. data use, shadow banking, tax avoidance), it is clear that there is a gap between the existing structures and categorization of regulation/legislation and how businesses operate in the real world. This will become even more acute unless a new approach to regulation is adopted. Hence, we highlight opportunities for alternative considerations and approaches.

*Alternative currencies

We levered these somewhat artificially into payments platforms but believe they should be considered as a category as they are issued by a number of different types of organizations including central banks, commercial banks, tech companies, social media platforms and marketplaces, among others. It is an

¹⁴ Coined as ‘synthetic CBDC’, the International Monetary Fund proposes that a ‘synthetic CBDC’- backed by central banks reserves, will ensure that consumers and retail customers only have access to verified and regulated digital currencies. See Adrian T and Mancini-Griffoli T, ‘The Rise of Digital Money’, IMF FinTech Note 19/01, 2019, <www.imf.org/en/Publications/fintech-notes/Issues/2019/07/12/The-Rise-of-Digital-Money-47097>. While CBDCs are public assets issued by central banks, which are governmental rather than private companies, there is an increasingly grey area between CBDCs and stablecoins, which are privately issued digital assets pegged to a national currency. Increasingly, ‘synthetic CBDCs’, that is digital assets escrowed at a central bank, are being issued by private companies. Because of the systemic importance of these assets and their likely influence on SDGs, they have been included in this category for the purposes of this paper.

important consideration for analysis as alternative currencies have the potential to achieve near universal financial inclusion but also the potential to destabilize national monetary systems and currencies.

We further note that it is important to distinguish between cryptocurrencies like Bitcoin, which are volatile, and stablecoins like Diem, which are not. Bitcoin and other volatile cryptocurrencies are mostly used as tradable assets, while stablecoins, especially in dominant currencies, have the potential to threaten the stability of smaller or less stable monetary systems. In some cases, for example where the government has lost control of monetary policy through uncontrolled inflation, this could actually result in positive outcomes; however, the more stable of the LDCs would also suffer. We suggest distinguishing and separating these into four categories (although it should be noted that there is some overlap between categories):

- **retail digital currencies** (mostly stablecoins, e-Yuan, Diem, etc.)
- **cryptocurrencies** (Bitcoin, ETH, Ripple, etc.)
- **commercial settlement instruments** (Fnality, JPMCoin, Cash on Ledger)
- **iDLT settlement systems** (distributed financial market infrastructure blockchain payments systems such as Fnality International, which is a consortium of international banks and an exchange to create a network of distributed financial market infrastructures for payment-on-chain for wholesale banking markets, using its Utility Settlement Coin (USC), a blockchain-based peer-to-peer digital token that is being designed to allow banks to settle transactions with each other without having to involve a third-party intermediary).

****Cryptocurrency exchanges**

Along the lines of these findings, we believe that cryptocurrency exchanges should be included in the macroeconomic and regulatory examination (supra-national level) because of their potential impacts on LDCs. For example, individuals in Africa (especially, in Kenya, Nigeria and South Africa) are still buying cryptocurrencies as ‘a store of value’, but there are key issues and future risks to consider. For instance:

- *transportability with high cross-border exchange on fiat, BitPesa is a great example of how Bitcoin is being used to overcome this for trade*
- *accessibility—this is more of a future consideration as most cryptocurrencies to date can only be used via wallets/exchanges on smartphones, but the next generation digital currencies based on blockchain (such as Diem), will be much more accessible and therefore are likely to supersede mobile money as the currency of choice. This also brings up the question of liquidity risk for unstable currencies, if there is a move to e-Yuan, euro or dollar versions of Diem*
- *relative volatility, particularly in countries with illiquid currencies/liquidity risk.*

*****Incumbent institutions**

In terms of Fintech solutions, incumbent institutions are the oldest on record. The earliest payments systems were developed by the banks (e.g. Citi Flexcube, which was one of the most widely used core banking systems) and they are also key to developing centralized payments infrastructure in every country. Saxo and BlackRock are Fintechs which have evolved to be full-service banks; SWIFT, Visa and Mastercard are also important Fintech infrastructure providers and what they do directly impacts millions of SMEs and individuals.

*We also believe that **retail BFTs** need to be considered in further detail with regard to their potential impacts across a broader range of SDGs versus wholesale BFTs. Going forward, other elements to consider that were not within the scope of our paper, are **network-focused companies in other sectors** such as Tesla, Amazon, Apple or Facebook as well as core technology that BFTs are using and amplifying.*

Annex 3: BFT-LDC-SDG landscape analysis full findings

BFT and LDCs landscape analysis methodology

All results are based on tabulation of qualitative observations, and inputs from the analysis of reports and cases as well as the landscape observations of the BFTs, and specific impacts of BFTs across various sectors (payments, e-commerce, social media, BigTech, TechFin and incumbents/mature Fintechs). A full observation of positive and negative impacts is currently beyond the scope of this analysis as few data are available. The main caveat to the analysis (and the rationale for the methodology as outlined in Annex 1) is that there are few data, and where available, data are highly fragmented, and limited in scope so a full understanding of the positive and negative effects was not fully viable but demands further attention.

Key findings of the BFT-SDG landscape overview analysis

The big tech platforms transcend national and sector boundaries

- Big platforms are all becoming financial actors, so the term Fintech will become irrelevant.
- These commercial giants have opaque supply chains which have environmental, social and economic impacts, but publicly claim to meet SDGs by cleaning up core operations.
- As entities with enormous customer reach, they have distribution power in excess of every global bank, so as they move into financial services, they will have the leverage to disrupt financial services organizations and even economies.
- SMEs and sole traders increasingly rely on these platforms as a source of sales; ‘bricks and mortar’ SMEs are being driven out; if this is perpetuated in LDCs, it will drive down employment and increase the pool of sole traders/cheap labour in developing countries.¹⁵
- Regulations largely cannot reach much of their operations because of their multinational status, and their ability to manipulate bordered taxation and regulations.¹⁶
- Big platforms are starting to penetrate LDCs in preparation to launch financial and other services, with potential to overtake local financial service providers and telcos, reaching wider and deeper into customer wallet share, benefitting from high-volume, low-value transactions common to these markets.

Distributed platforms create challenges and opportunities for LDCs

Distributed platforms such as blockchain or directed acyclic graphs (DAGs) including Ethereum, Ripple and Bitcoin, are a class of technology that creates multiple identical copies on independently managed nodes, with no central database. Because they are not centrally controlled, they cannot be regulated posing distinct challenges while simultaneously offering transformational opportunities for LDCs.

Opportunities

- running on non-proprietary kit (nodes) operated by anyone so cannot control energy source type (i.e. renewable or non-renewable) used
- not owned by anyone so no operating entity to regulate/hold accountable for consumer protection
- enable full traceability of transaction chains for tracking investments and disbursements
- facilitate more types of social impact and green bond issuance to a wider range of private investors
- can distribute validated assets and demonstrate where they are going, without the need for intermediaries like banks.

¹⁵ Bundhun R, ‘Why Small Traders in India Fear the Amazon Effect’, *The National News*, 19 January 2020, <www.thenational.ae/business/economy/why-small-traders-in-india-fear-the-amazon-effect-1.965981>.

¹⁶ Scherer AG, et al., ‘Managing for Political Corporate Social Responsibility: New Challenges and Directions for PCSR 2.0.’, *Journal of Management Studies* 53(3), 273, 2016.

Challenges

Supply chains are opaque, and platforms are not held accountable for supplier behaviour

- These commercial giants have opaque supply chains which have environmental, social and economic impact, but claim to be SDG positive by cleaning up core operations
- Just as social media platforms such as Facebook are facing regulatory challenges regarding user content on the platforms, so will or should e-market platforms consider third-party goods and services, customer protection, supply chain traceability, content and materials verification and security, emissions, waste, labour and human rights issues related to these opaque supply chains and activities that make up over 50 per cent of marketplace activities (i.e. 53 per cent of Amazon's sales).¹⁷ The issue of customer scams is not prevalent. These growing markets and activities mean also that the hard-won regulatory frameworks and many emerging technology solutions currently cannot be applied.
- Energy use and pollution is not monitored/reported.
- They are not held accountable for social impact in supply chain—slavery, child labour.
- They are not held accountable for impact on oceans, life on land (e.g. overfishing, palm oil production).
- Out of scope for CSR regulatory frameworks, certifications and verification standards (as well as tech traceability capacity).
- Extractive approach channels wealth to the wealthy, while suppressing wages in poorer countries.

Observations from CSR-ESG-SDG lens examination

- CSR, sustainability reporting and ESG reporting where available, conducted at headquarter level, focus on (SDG) impact on core operations, facilities and suppliers (within self-identified boundaries, issues and methodologies across a heterogeneous landscape). Such methods of reporting are not set up to capture the SDG impacts (positive and negative) of these new and complex value chains and business models (such as Amazon and Facebook Marketplace).
- SDGs are forward-thinking (focused on planning towards public goals and initiatives).
- Even a CSR-ESG-SDG combined lens will not be able to capture the dynamic nature and extensive related impacts on SDGs (positive or negative) as many BFT activities, operations, initiatives and impacts occur outside of standard business model parameters and CSR-ESG frameworks and sectoral policy and regulatory boundaries.
- In particular, platforms/marketplaces that sell third-party goods or services, such as Amazon, have environmental, social and governance impacts (human rights, gender, waste, energy, climate, etc.) that cannot be identified, let alone assessed, because dynamic multifaceted business models are not compatible with parameters of reporting.
- The points above illustrate that the potential for entire aspects of BFT business models such as marketplace for third-party sellers and even core operational elements and activities cannot be 'identified, measured nor addressed' using standard CSR-ESG and sustainability frameworks.
- Similarly, the corporate climate commitments related to emissions reductions (sustainable planning—future facing) focus within the limited parameters of direct operations, facilities, offices, data centres and transport, and along largely self-identified targets and voluntary evaluation methodologies. For example, the Amazon commitments (net zero carbon by 2040, 100 per cent renewable energy by 2025, shipment zero, and electric delivery vehicles) are Scope 1 and 2.¹⁸ Hence, the front operations are being cleaned up while the door is left

¹⁷ 'Percentage of Paid Units Sold by Third-Party Sellers on Amazon Platform as of 4th Quarter 2020', Statista, <www.statista.com/statistics/259782/third-party-seller-share-of-amazon-platform/>.

¹⁸ For example, on emissions, reporting (and planning) focuses on Scope 1 (direct emissions from owned or controlled sources) and to a large extent Scope 2 (generation of purchased electricity, steam, heating and cooling consumed by the

open to increasingly negative impacts. It is noted that Amazon has a potentially high level of environmental and social impacts (on labour, waste, energy, climate, etc.).

- The focus of most climate goals and solutions in sustainability planning and commitments is technological.
- There is no robust means to identify, let alone categorize, these impacts because of parameters around business model definitions and activities.
- The suppliers category and material sourcing related to e-marketplaces are a behemoth of a challenge in terms of capturing related issues of gender, human rights, environmental impacts from opaque supply chains and third-party vendors or users.
- In addition, reports were notably not available for many BFTs such as Ethereum and cryptocurrency exchanges like Binance.

Positive and negative impacts

A brief overview of the CSR-ESG-SDG lens examination indicates levels of impacts that can be positive or negative (although a full understanding of the positive and negative implications is not yet viable and requires further data and examination) as well as intended and unintended.

- **Payments platforms:** while the BFT payments platforms demonstrate **high** impacts on SDG 1 (no poverty), SDG 8 (decent work and economic growth) and SDG 10 (reduced inequalities), their impacts are **low** on SDG 3 (good health and well-being), SDG 4 (quality education), SDG 12 (responsible consumption and production), SDG 13 (climate action) and SDG 17 (partnerships).
- They have **medium** impacts on SDG 5 (gender equality), SDG 7 (affordable and clean energy), SDG 9 (industry, innovation and infrastructure),¹⁹ SDG 14 (life below water), SDG 15 (life on land) and SDG 16 (strong institutions).
- BFT payment platforms demonstrate **little to no** impacts on SDG 2 (zero hunger), SDG 4 (quality education), SDG 6 (clean water and sanitation) and SDG 11 (sustainable cities and communities).

e-commerce and marketplace platforms

- BFT e-commerce and marketplace platforms demonstrate **high** impacts on SDG 8 (decent work and economic growth), SDG 9 (industry, innovation and infrastructure) and SDG 10 (reduced inequalities), with **low** impacts on SDG 3 (good health and well-being), SDG 6 (clean water and sanitation), SDG 11 (sustainable cities and communities) and SDG 14 (life below water).
- The e-commerce platforms have **medium** impacts on SDG 1 (no poverty), SDG 12 (responsible consumption and production) and SDG 13 (climate action).
- The data shows **little to no** impacts on SDG 3 (good health and well-being), SDG 6 (clean water and sanitation), SDG 11 (sustainable cities and communities), SDG 15 (life on land) and SDG 17 (partnerships).

Social media platforms

- BFT social media platform observational data shows **high** impacts on SDG 1 (no poverty), SDG 8 (decent work and economic growth), SDG 9 (industry, innovation and infrastructure) and SDG 10 (reduced inequalities).

reporting company in its facilities and operations). There is also some degree of reporting and planning on Scope 3 (other indirect emissions that occur in a company's value chain).

¹⁹ Often, payments platforms build partnerships with local Fintechs and export their technology or technical know-how. They do not contribute to building new infrastructure or providing innovative financial services.

- Social media platforms tend to have **low** impacts on SDG 5 (gender equality), SDG 2 (zero hunger), SDG 3 (good health and well-being), SDG 4 (quality education), SDG 6 (clean water and sanitation), SDG 7 (affordable and clean energy), SDG 11 (sustainable cities and communities), SDG 12 (responsible consumption and production), SDG 13 (climate action), SDG 14 (life below water), SDG 15 (life on land) and SDG 17 (partnerships).²⁰
- Platforms are also used for crowdfunding or fundraising for charitable purposes which serves a community (serving SDGs) but also draws in new customers and their data.
- Social media platforms show **medium** impacts on SDG 16 (strong institutions) in our observational data in LDCs, but this carries a caveat with respect to issues raised about elections in the USA and UK.

BigTech cloud service platforms

- BigTech cloud service platforms show **high** impacts on SDG 9 (industry, innovation and infrastructure), SDG 13 (climate action), SDG 14 (life below water) and SDG 15 (life on land).
- From our observational tabulations, cloud service platforms show **no** impacts on SDG 1 (no poverty), SDG 2 (zero hunger), SDG 3 (good health and well-being), SDG 4 (quality education), SDG 5 (gender equality), SDG 6 (clean water and sanitation), SDG 7 (affordable and clean energy), SDG 8 (decent work and economic growth), SDG 10 (reduced inequalities), SDG 11 (sustainable cities and communities), SDG 12 (responsible consumption and production), SDG 16 (strong institutions) and SDG 17 (partnerships). However, this may be a result of current data availability and the manner in which this first analysis was conducted.

²⁰ The visible case with impact is Ant Financial's Ant Forest app but this was the sole count across this BFT category in our landscape analysis (hence low).

Annex 4: Literature overview analysis and findings

Literature analysis key findings

A brief overview analysis of literature from 2017 to date was conducted (which has mainly focused on adoption by finance, NGO and impact sectors—in our scope—to ‘service’ SDGs and even ESG, but is limited in terms of impact analysis of BFTs on SDG (positive and negative).

- The literature overview illustrated both the diversity and limitations of the sectors/subjects—policy and governance, SDG, economic, etc., that currently cover BFT and emerging tech and SDGs as well as the little means to bridge the two approaches, taxonomies, tools and cases, i.e. vision of potential positive impact of technology, vision base services of BFT and little to no deep analysis of risks to SDGs and LDCs.
- Literature remains in three main tracks/sectors (Fintech4Good—purported ‘positive’ impacts and offerings around SDGs/Fintech regulations/emerging tech from SDGs space (again positive).
- Analysis of impacts to date has focused largely on understanding the increasing BFT impacts and implications for financial stability, money laundering and their potential to drive financial inclusion.
- Little comprehensive literature on impact of BFTs (positive and negative) on climate, decent work, economic growth, poverty, gender, etc., as well as negative unintended (i.e. ride-hailing services create more pollution than trips they displace, or e-commerce platform issues re. labour and SMEs inclusion/exclusion in global online market, etc.).
- Other frameworks may be useful going forward (i.e. ethics literature and elements of macroeconomics including highlighting where there are gaps in literature).
- The ‘digital economy’ narrative looks beyond the initial financial inclusion and access parameters but focuses on the positive SDG advancement and services that Fintech is bringing—or could potentially bring—to developing countries. While we found that this narrative has not matured to a full consideration of impact (positive and negative) and to a fuller realm of SDGs, it was nonetheless a necessary step to better cover the full catchment of BFTs’ activities, footprints and therefore their SDG impacts.
- The Fourth Industrial Revolution and the digital economy narratives have created an implicit assumption of positive impacts with a focus specifically on how the diffusion of digital technologies, services, products, techniques and skills across economies are resulting in inclusion, economic opportunities and banking the unbanked.
- This ‘positive narrative’ has influenced the focus of academic research, policy reports of think tanks and international organizations, as well as these latter’s practical initiatives and work programmes.
- The narrative has also crossed over into sectoral and start-up programmes and initiatives which are now holding up the SDG gaps as a ‘market opportunity’, which in turn, has brought Silicon Valley culture into the international institutional sphere and dialogue. White papers and vision-based theoretical reports are infiltrating into academic and regulatory research.
- Most of the discourse in this area addresses issues regarding Fintech regulation, governance and supervision, so far largely relating to implications of harnessing emerging technology in delivering financial services, including the promotion of financial inclusion as well as issues of privacy, security, money laundering, taxonomy and benchmarks, and Fintech’s impact on overall market and monetary system integrity.
- While Fintechs are often studied as a means to ‘service’ SDGs and even ESGs, the impact analysis (positive and negative) of BFTs is limited. Further, the existing literature in this space delineates the lack of policy discussion regarding BFT and emerging tech and their potential impacts on SDGs with a specific focus on LDCs. Also, the current tools available for BFT impact analysis are not adequate to demonstrate the potential risks to LDCs of the rise of BFTs across various sectors in the financial system.
- Blurring of lines between academic research, institutional reports, whitepapers and online media reports per overall understanding of SDG impacts.

Literature overview

A core focus of literature surrounds the technological transformation arising from advances in telecommunications, information technology and financial practice and the dramatic shift this has brought to financial intermediation and to how financial services are operated.²¹ While technology has always played a key role in the financial sector, the past few decades have been a period of continued innovation, with technology like high frequency trading dominating markets by the last decade, and the evolution of Fintech start-ups. Using automation, artificial intelligence and big data, big tech companies and Fintech start-ups contributed to creating a so called 'digital economy' via mobile wallets, payment apps, trading applications, digital insurance, personal finance solutions, equity crowdfunding platforms and digital lending platforms.

Incumbents like banks and large card companies, which traditionally developed proprietary systems, started to embrace solutions first from early Fintech providers creating core banking and payments solutions, and then from start-ups providing more consumer-focused solutions, recognizing the opportunities that these agile organizations could bring to attract or retain customers.²²

The large card companies have taken different approaches to embracing Fintech compared with the banks, with higher investment in internal innovation. Banks are now starting to see the 'challenger' banks such as N26, Starling and Revolut, providing alternative services, as serious competitors, but the more worrying trend for the sector is that the Fintechs providing customer-facing services such as payments, increasingly own the customer, while the bank provides core services like lending. Some of these Fintechs have already crossed the divide to get special licences (M-Pesa, Ant Financial) enabling them to offer additional services.

The digital economy and Fourth Industrial Revolution narratives have come to have various meanings, but the overall narrative has become focused on the benefits of technological innovation including the acceleration of economic growth, job creation, financial inclusion and efficiencies across all industries and sectors.

The digital economy as well as the Fourth Industrial Revolution lenses have created an implicit narrative of positive impacts for the global economy and for sustainable development overall. In the past few years, the discussion has "focused more on the way digital technologies, services, products, techniques and skills are diffusing across economies", with an emphasis on value creation, inclusion, banking the unbanked, job creation, etc.

The Fourth Industrial Revolution, finally, will change not only what we do but also who we are. It will affect our identity and all the issues associated with it: our sense of privacy, our notions of ownership, our consumption patterns, the time we devote to work and leisure, and how we develop our careers, cultivate our skills, meet people, and nurture relationships. —Klaus Schwab, The Fourth Industrial Revolution

The Digital Economy lens focuses on the benefits of technological innovation including the acceleration of economic growth, job creation, financial inclusion and efficiencies across all industries and sectors.

Yet the economic benefits of the 'Fourth Industrial Revolution' are becoming more concentrated among a small group—World Economic Forum Global Risks Report 2017

These narratives address impacts of technology, including any potentially negative implications, along three main tracks:

²¹ Frame SW, Wall LD, White LJ, 'Technological Change and Financial Innovation in Banking: Some Implications for Fintech', *Working Paper No. 2018-11*, Federal Reserve Bank of Atlanta, 2018, <doi:10.29338/wp2018-11>.

²² 'Using Fintech to Democratize Financial Services', McKinsey & Company, 2017 <www.mckinsey.com/industries/financial-services/our-insights/using-fintech-to-democratize-financial-services>.

- jobs and wealth distribution—potential for disrupting the workforce, dislocating people from jobs, exacerbating the divide of wealth distribution and the resulting power (im)balance and the interests served
- ethical issues—surveillance, the relationship between humans and machines
- regulatory issues—dialogues around cybercrime, financial regulations, data, crime, manipulation and misuse, privacy, etc.

While the Fintech narrative so far as the developing countries are concerned, is a positive one, its rapid growth and more BFT platforms being active in this space, has spurred growing concerns—such as yielding to greater inequality, creating more digital divide, disrupting labour markets as in segregating the labour market to ‘low-skill/low-pay’ and ‘high-skill/high-pay’ segments ²³ and rising wealth gap as the largest beneficiaries of innovation tend to be the providers of intellectual and physical capital—the innovators, shareholders and investors.

²³ Schwab K, ‘The Fourth Industrial Revolution: What It Means, How to Respond’, World Economic Forum, 14 January 2016, <www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>.

Annex 5: BigFintech case studies

Cloud data services

Examples: Amazon Web Services (AWS), Google Cloud, Alibaba Cloud, Microsoft Azure, IBM Cloud, Apple iCloud.

Business model

- Remote hosting, pricing based on usage, used by millions of businesses including the largest technology platforms
- Business and productivity services, sold as SaaS (Software as a Service) such as analytics, advertising software, application hosting

SDG impact

SDG 13: Use enormous amounts of electricity for computation and cooling

SDG 7: Are building renewable energy farms; however, much of their offset is purchased through, for example, carbon markets

SDG 13: More efficient model than locally hosted or proprietary servers/data centres

SDG 9: Gives access to cheap technology to people all over the world, including those in LDCs

SDG 8: Allows developers in LDCs to innovate without the need for high upfront costs

Commentary

Cloud services build huge data centres and sell hosting to technology platforms and individual customers. They make hosting accessible to small-scale enterprises without the need to buy a dedicated server or build a data centre. All the large technology platforms use cloud hosting, and even traditionally risk-averse businesses like banks are now starting to use external cloud hosting for some applications.

While the volume of data hosted on cloud services is extremely high leading to the services consuming 1 per cent of all global electricity use, cloud computing operators are incentivized to optimize the cost of operation and therefore energy usage, making cloud hosting the most efficient data centre model²⁴. However, making services more accessible may also increase demand for those services, leading to businesses using more computing power than they would have otherwise, or failing to optimize their applications.

²⁴ Sverdlik Y, 'Study: Data Centers Responsible for 1 Per cent of World's Energy Use', Data Center, February 2020,

Large providers of cloud are publicly stating that they are using clean energy or making commitments to move towards it; although they are building renewable energy farms, they are still consuming more brown energy, based on their usage of national grids, and offsetting this with alternatives.

Payments platforms

Examples: PayPal, Mastercard, Visa, Alipay/Ant Financial, M-Pesa, MTN, Apple Pay, TenCent (WeChat Pay), Paytm, Revolut, TransferWise

Business model

- Charges to merchants on transactions based on value of transaction
- May also charge customers transaction fees (e.g. M-Pesa, MTN)
- Charges on introduced services such as lending, insurance offered by third-parties
- Syndication/whitelabelling (Mastercard, Visa) to banks and other payments providers

SDG impact

SDG 1, SDG 9: Can provide infrastructure to increase financial inclusion (MTN, M-Pesa, TenCent, Alipay)

SDG 8: Can enable micropayments to SMEs and facilitate remote payment of workers

SDG 10: Can increase impact of digital divide

SDG 5, SDG 10: Can give women and excluded populations access to financial services

SDG 3, SDG 12, SDG 13, SDG 15, SDG 17: Through additional interfaces or apps, Good Health and Well Being, responsible consumption, reforestation, climate mitigation and partnerships can be positively impacted (ex. Ant Forest)

Commentary

Most payments platforms rely on underlying financial services, usually banks, to support and guarantee payments. Traditional platforms like Visa and Mastercard have been disrupted by PayPal and TransferWise, but require customers to have a bank account or credit card, so exclude unbanked customers. Various schemes such as prepaid cards can support unbanked customers, and are popular in developing countries. Digital solutions like M-Pesa, which are not dependent on having a bank account, have transformed unbanked Africans' and

<www.datacenterknowledge.com/energy/study-data-centers-responsible-1-per-cent-all-electricity-consumed-worldwide>.

Afghans'²⁵ access to financial services; however, they can be expensive. Online-only solutions like PayPal and TransferWise enable peer-to-peer payments with lower international charges than banks, and PayPal is a well-used payments option for international freelancing platforms like UpWork or Fiverr, as well as auction site eBay and many more services. However, PayPal has blacklisted some countries, excluding people in those countries from receiving payments through the platform, which can exclude them from selling their services.

Amazon

About: 2019 revenue: 280 billion \$. Market capitalization: >1.5 trillion \$ (higher than Australia GDP). Employees c. 840,000

Subsidiaries: Amazon Web Services (AWS), Amazon International with 102 acquisitions including Whole Foods Market, Kindle Direct Publishing, Audible, Goodreads, the Book Depository, Prime Video (previously LoveFilm), Zappos, Amazon Robotics, Amazon Pay

Business model elements:

1. Direct sales of its own products and services via its websites including AWS cloud hosting, consumer electronics including Kindle, Echo Dot, Kindle Fire; groceries, video content, a wide range of own-label consumer goods and personal file storage
2. Global marketplace for the sale of goods and services from other retailers, including millions of small businesses, via its websites, for a commission, subscription fee and charges for postage and packaging
3. Sale of services from sole traders and microbusinesses through its Mechanical Turk feature
4. Sale of goods through physical retail outlets
5. Sale of advertising to retailers
6. Avoids federal taxation in the US through a series of legal loopholes²⁶
7. Holds US Money Transmitter licence

²⁵ Currently the only country outside of Africa in which M-Pesa is operating. See Fildes N, Wilson T, 'Vodafone Targets Africa's Unbanked with Ambitious Plans for M-Pesa' *The Financial Times*, London & Nairobi, 17 December 2019, <www.ft.com/content/c2bd2a8e-e07d-11e9-9743-db5a370481bc>.

²⁶ Huddleston Jr. T, 'Amazon will pay \$0 in federal taxes this year — and it's partially thanks to Trump', CNBC, February 2019, <www.cnbc.com/2019/02/15/amazon-will-pay-0-in-federal-taxes-this-year.html>.

BFT categories:

- Bigtech cloud services platform (B4)
- E-commerce and marketplace platforms (B2)

SDG impacts:

- **High:** SDG 9 (industry, innovation and infrastructure), SDG 13 (climate action)
- **Medium or low:** SDG 1 (no poverty), SDG 7 (affordable and clean energy), SDG 8 (decent work and economic growth), SDG 10 (reduced inequalities), SDG 12 (responsible consumption and production), SDG 14 (life below water), and SDG 15 (life on land), SDG 16 (strong institutions)
- **None:** SDG 2 (zero hunger), SDG 3 (good health and well-being), SDG 4 (quality education), SDG 5 (gender equality), SDG 16 (strong institutions), SDG 17 (partnerships)

SDG impacts analysis

SDG 7 (affordable and clean energy), SDG 13 (climate action): Amazon's public commitment to environmental issues has increased in recent years, and it has signed up to The Climate Pledge to be carbon neutral by 2040. However, it is responsible for more emissions than any of the other big platforms: It emitted 44 million metric tons of CO₂ equivalent in 2018, including indirect sources, more than United Parcel Service and FedEx. Amazon also refused to report fully on its climate emissions.²⁷ *SDG 8 (decent work and economic growth):* Amazon has both a positive and negative impact on small businesses in developed markets, enabling them to reach a broader market but prioritizing its own products,²⁸ while taking a margin of up to 30 per cent (up to 25 per cent commission plus other fees) and driving down prices.²⁹ In developing economies, where people are more price-sensitive, it has outcompeted 'bricks and mortar' outlets³⁰ and its potential to disrupt traditional businesses in LDCs, where microbusinesses and sole traders

²⁷ Beslik S, 'How Sustainable Is Amazon? An ESG Analysis of the Retail Giant', Medium, May 2020, <<https://sajabeslik.medium.com/how-sustainable-is-amazon-an-esg-analysis-of-the-retail-giant-e8b07cc8a8eb>>.

²⁸ Smith N, 'Amazon's Winner-Take-All Approach to Small Business', Bloomberg, February 2019, <www.bloomberg.com/opinion/articles/2019-02-19/amazon-uses-search-to-undercut-small-businesses-on-its-site>.

²⁹ DePillis L, 'It's Amazon's World. We Just Live In It', CNN Business, October 2018, <<https://edition.cnn.com/2018/10/03/tech/amazon-effect-us-economy/index.html>>.

³⁰ Ibid., note 15.

make up to 80 per cent of employment, is also huge. Amazon also has programmes to lend to SMEs, although not on the scale of Ant Financial.

SDG 8 (decent work and economic growth): Amazon Mechanical Turk offers employment opportunities for workers to sell their services remotely, which can benefit individuals and small traders, but again has the potential to drive down prices.

SDG 10 (reduced inequality): Amazon Cash enables unbanked customers to purchase on Amazon with a preloaded debit card. It could roll this out to unbanked people in developing countries and LDCs, as well as the developed economies, capturing a 1.7bn strong market.

SDG 12 (responsible consumption and production): Amazon's excessive use of packaging is impacting the environment and its low prices are probably encouraging overconsumption.³¹

SDG 8 (decent work and economic growth): While Amazon has bowed to public and shareholder pressure to increase its lowest paid workers' pay to 'living wage' levels in developed countries, it has potential as an employer to drive down wages, which is greater where fewer wage controls exist. At scale, this could impact employee well-being and national income inequality, while Amazon is also known for structuring operations to avoid corporate taxes,³² which is a recipe to asset strip an economy, impacting the most vulnerable workers. *SDG 9 (Industry, innovation, and infrastructure):* Will offer wider access to digital financial services to excluded populations, potentially including affordable credit.

LDCs impacted:

Amazon Turk workers can in theory be anywhere in the world, although they would be excluded if in a country with limited access to the Internet. Amazon's operations are not yet in any LDCs, although many of the goods they offer are manufactured in LDCs or with LDC supply chains

Commentary:

Amazon has also launched several experiments in the payments space, eventually partnering with FiServ, FIS and Worldpay to offer in-app payments

to merchants—Amazon Pay has 300 million customers.³³ Earlier experiments were hampered by merchants not wanting to share financial details with Amazon, reflecting existing tensions resulting from a lack of direct connection with their customers when selling on Amazon.³⁴ Recent developments also include the introduction of Amazon Cash, so that unbanked customers can set up a wallet topped up with cash, and Amazon Go, which uses biometrics and digital tracking of goods, so that customers can buy goods in physical stores without having to check out.³⁵ Both of these forays into the physical world could feasibly be expanded to developing economies and LDCs, further cementing Amazon's dominance and its impact on populations in those countries.

Note issues in CSR/sustainability plans and marketplace analysis

- CSR and sustainability reporting is focused (as all do) on core operations, facilities, products and activities, in terms of its online marketplace (reporting and innovating its own operations, brands and suppliers), but none of this addresses the third-party vendors (for example over 50 per cent of Amazon marketplace sales³⁶).
- Highly ranked SDGs for gender, human rights, environmental impacts and sustainable products and materials, but these are all focused on Amazon's own-brand label.

Apple

2019 revenue \$260.2 billion. Market capitalization \$1.95 trillion (higher than Russia, Canada and Brazil GDP). Employees 137,000 (does not include outsourced)

Business model elements:

1. Sale of consumer electronics (iPhone, iPad, Apple Watch, Apple TV, MacBook) software and services—App Store, Apple Arcade, Apple Card, Apple Music Beats 1, Apple News+, Apple Pay Cash, Apple Store, Genius Bar,

³¹ Pratt MK, 'Amazon's Environmental Impact Delivers Climate Change Concerns', *Supply Chain Transportation and Logistics*, February 2020, <<https://depts.washington.edu/sctctr/news-events/in-the-news/amazons-environmental-impact-delivers-climate-change-concerns>>.

³² Staron L, 'Amazon: Income Inequality Worsens', March 2019, <www.equities.com/news/amazon-income-inequality-worsens>.

³³ Shelvin R, 'Amazon's Impending Invasion of Banking', *Forbes*, July 2019, <www.forbes.com/sites/ronshelvin/2019/07/08/amazon-invasion/#10ea5d037921>.

³⁴ Rosenberg JM, 'Want to Sell on Amazon? Businesses Must Weigh Pros, Cons', *The Associated Press*, New York, January 2020, <<https://apnews.com/article/d6eb30fe034dc4e643130d554ab2d019>>.

³⁵ 'Everything You Need to Know About What Amazon Is Doing in Financial Services', *CB Insights*, <www.cbinsights.com/research/report/amazon-across-financial-services-fintech/>.

³⁶ 'Global Net Revenue of Amazon from 2014 to 2020, by Product Group', *statista*, <www.statista.com/statistics/672747/amazons-consolidated-net-revenue-by-segment/>.

Apple TV+, Apple Books, iCloud, iMessage, iTunes Store, Mac App Store

2. Margin on introduced services offered via the App Store, where software providers are charged 30 per cent for any payment made to them, plus a hosting fee
3. Avoids many international taxes through an organizational structure manipulating tax legislation
4. Holds Money Transmitter licence (US) but does not require an EU e-Money licence because Apple Pay does not hold funds

BFT categories

- Payment platforms (B1)
- BigTech cloud services (B4)

SDG impacts

- **High:** SDG 8 (decent work and economic growth)
- **Medium to low:** SDG 10 (reduced inequalities), SDG 12 (responsible consumption and production), SDG 16 (strong institutions)
- **None:** SDG 1 (no poverty), SDG 2 (zero hunger), SDG 3 (good health and well-being), SDG 4 (quality education), SDG 5 (gender equality), SDG 6 (clean water and sanitation), SDG 7 (affordable and clean energy), SDG 9 (industry, innovation and infrastructure), SDG 11 (responsible consumption and production), SDG 13 (climate change), SDG 14 (life below water), SDG 15 (life on land), SDG 17 (partnerships)

SDG impacts analysis:

SDG 8 (decent work and economic growth): Foxconn, Apple's Chinese assembly plant (>800,000 employees) has been involved in several controversies related to working conditions and low wages, following employee suicides and complaints.³⁷ Apple has also been linked to child labour/slavery in cobalt mining in the Democratic Republic of the Congo (DRC) along with Google, Dell, Microsoft and Tesla.³⁸

SDG 7 (affordable and clean energy), SDG 13 (climate action): While Apple's "100 per cent renewable energy" claim is impressive, part of this

is made up of offsets. And the claim applies only to core operations (including iCloud), whereas it is reasonable to assume that much of Apple's energy use is in its supply chain,³⁹ including in the Chinese operation, where most power is produced from coal-fired power plants.

SDG 12 (responsible consumption and production): Apple's regular release of new versions of its flagship products, alongside emotional marketing and celebrity product placement, results in many consumers regularly upgrading their equipment. The company also encourages upgrading by limiting backwards compatibility of key applications, while 'locking in' consumers by storing their credentials, libraries and wallets on Apple's systems. The regular production of new versions results in additional extractive sourcing of minerals, much of which occurs in LDCs and contributes to the global e-waste problem. While Apple has a recycling scheme in place, it diverts only a fraction of the company's contribution to a global total of more than 50 million Mt of e-waste per year (a total that will reach 74 Mt by 2030).⁴⁰

LDCs impacted

Apple's impact on LDCs is mainly as an employer.

Commentary:

Apple, teaming up with Goldman Sachs, is offering a new credit card (Apple Card) which is "designed to work with the Apple Wallet app on iPhones to help customers to set spending goals, track their rewards and manage their balances" (Issues of Gender Bias AI issue with Apple Card⁴¹). Apple's Apple Pay product enables consumers to pay in person, in iOS apps and on the web. Many online retailers accept Apple Pay as a means of payment and it is accepted in a wide range of richer countries, including China.

Apple's primary market is rich consumers in the Global North; however, its supply chain for physical goods is in around 50 countries. Apple purchases components and materials from various suppliers, which are shipped to the Foxconn assembling plant in China. Hence, although Apple's employees are well rewarded in their Global North markets, their supply chain exploits people, many of whom are

³⁷ Foreman W, 'Apple Supplier Foxconn Suffers 10th Death This Year, Asks Workers to Sign Anti-Suicide Pledge', *The HuffPost*, 26 May 2010, <[huffpost.com/entry/foxconn-suffers-10th-deat_n_588524](https://www.huffpost.com/entry/foxconn-suffers-10th-deat_n_588524)>.

³⁸ Kelly A, 'Apple and Google named in US lawsuit over Congolese child cobalt mining deaths' *The Guardian*, 16 December 2019, <www.theguardian.com/global-development/2019/dec/16/apple-and-google-named-in-us-lawsuit-over-congolese-child-cobalt-mining-deaths>

³⁹ 'Apple Buys More Renewable Energy in Europe', *Windfair*, April 2020, <<https://w3.windfair.net/wind-energy/news/35417-apple-turbine-data-center-esbjerg-viborg-denmark-onshore-wind-turbine-ppa-europe-power-electricity-grid-supply-chain>>.

<[center-esbjerg-viborg-denmark-onshore-wind-turbine-ppa-europe-power-electricity-grid-supply-chain](https://w3.windfair.net/wind-energy/news/35417-apple-turbine-data-center-esbjerg-viborg-denmark-onshore-wind-turbine-ppa-europe-power-electricity-grid-supply-chain)>.

⁴⁰ Potuck M, 'As Apple Aims to Stop Mining the Earth, Electronics Are Now 'the Fastest-Growing Waste Stream'', *9to5Mac*, January 2019, <<https://9to5mac.com/2019/01/29/electronics-waste-apple/>>.

⁴¹ Natarajan S, Nasiripour S, 'Viral Tweet About Apple Card Leads to Goldman Sachs Probe', *Bloomberg*, November 2019, <www.bloomberg.com/news/articles/2019-11-09/viral-tweet-about-apple-card-leads-to-probe-into-goldman-sachs>.

highly skilled, in countries with poor employee protection.

Facebook

2019 Revenue: \$70.7 billion. Market capitalization: \$725.9 billion. Employees: 45,000. Members: 2.7 billion (more than the combined population of Africa and China and 35 per cent of the world's population)

Subsidiaries: WhatsApp, Instagram, Messenger

Business model:

1. Sale of advertising
2. Commission on selling through Facebook Shop, Instagram Shop
3. Avoids many international taxes through an organizational structure manipulating tax legislation
4. Obtained e-Money licence in Ireland (passportable to EU) in 2016

BFT categories

- Payment platforms (B1)
- E-commerce and marketplace platforms (B2)
- Social media platforms (B3)

SDG impacts:

- **High:** SDG 8 (decent work and economic growth), SDG 9 (industry, innovation and infrastructure), SDG 16 (strong institutions)
- **Medium to low:** SDG 1 (no poverty), SDG 10 (reduced inequalities)
- **None:** SDG 2 (zero hunger), SDG 3 (good health and well-being), SDG 4 (quality education), SDG 5 (gender equality), SDG 6 (clean water and sanitation), SDG 7 (affordable and clean energy), SDG 11 (sustainable cities and communities), SDG 12 (responsible consumption and production), SDG 13 (climate change), SDG 14 (life below water), SDG 15 (life on land), SDG 17 (partnerships)

SDG impacts analysis:

SDG 16 (strong institutions): Facebook has been the subject of many controversies, including allowing the spread of misleading information influencing elections in several countries, as well as conspiracy theories,⁴² climate change denial and other misinformation campaigns, amplified by Facebook's algorithms, which have a tendency to

⁴² Timberg C, Dwoskin E, 'As QAnon Grew, Facebook and Twitter Missed Years of Warning Signs About the Conspiracy Theory's Violent Nature' *The Washington Post*, 3 October 2020,

create 'information bubbles' where people see multiple sources reinforcing a currently held opinion.

SDG 1 (no poverty): Diem could offer broader financial inclusion to people without access to the formal financial system.

SDG 5 (gender equality), SDG 10 (reduced inequalities): Diem could further exacerbate the digital divide, especially for women and rural populations.

SDG 9 (industry, innovation, and infrastructure): Will offer wider access to digital financial services to excluded populations, potentially including affordable credit.

SDG 16 (strong institutions): The combination of Facebook's global reach and penetration, with the potential to be the world's largest digital wallet provider and with a key stake in Diem, could destabilize monetary systems in LDCs.

We note key overlaps on SDGs with both positive and negative implications:

SDG 1.4: By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.

Financial inclusion is also related to SDG 8

8.10 From the plus/minus interesting to look into "Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all" (SDG 8 otherwise would generally be negative across the board given the domestic leaning).

8.3 "Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services."

The Facebook CSR report presents 'financial services' only with a positive angle.

Commentary:

Facebook is the world's largest social media platform, with access to more customers than any other organization, state or economic bloc. Facebook uses sophisticated analytics to allow

<www.washingtonpost.com/technology/2020/10/01/facebook-qanon-conspiracies-trump/>.

advertisers to target interested users, based on the information they provide to the platform through their profile, behaviour such as views, likes and clicks, and their network connections.

Facebook has recently started to offer online shopping for small retailers through the Facebook Shop, available on Facebook and Instagram. It also offers Facebook Pay, an in-app payments service, in 10 countries including Brazil and Thailand, clearly assessing the appetite in these developing markets. WhatsApp has launched its peer-to-peer payment service in India. For WhatsApp Pay, the instant messaging platform has partnered with some major banks in India.

Facebook is also aggressively acquiring customers in developing economies and LDCs through its Free Basics programme, which offers access to a limited number of websites free of data charges. This approach, banned in India in 2016, is presented as philanthropic, although there is a clear customer acquisition angle,⁴³ and, in the light of Facebook Pay and Diem, can be viewed as a land grab for developing economies and particularly Africa, where familiarity with mobile money and dependency on mobile devices both present low barriers to entry for digital money alternatives. Risks associated with the programme include concerns about data collection, fake news and digital equality, but the introduction of payments capability has even greater potential for damage. It has been extremely successful in Africa, especially East Africa.

Kakao in Republic of Korea has already demonstrated how a messaging platform can dominate financial services, capturing 45 per cent of the digital lending market within a quarter of launching their first financial services offering.⁴⁴

Diem, Facebook's DLT-based currency, was set to launch in 2020, escrowed by stable currencies and possibly other assets, and governed by an Association formed of mostly large corporates with a couple of NGOs. It will be offered on Facebook, Messenger and WhatsApp through Facebook's Calibra wallet. It presents several potential risks to existing currencies, including a flight from illiquid currencies to more stable currencies, and eventually to Facebook's own Diem, exacerbated by the likely high cost of exchange to fiat.⁴⁵

Combined with Facebook's aggressive customer acquisition and low barriers to entry, this presents a significant risk across Africa and in other developing economies. While it has scaled back on

its original plans to satisfy the SEC, it still presents a risk for less stable monetary systems. There is further potential for a global currency, as originally proposed by Facebook, with the scale and access of Facebook, to eventually replace the US dollar as the world's reserve currency. Facebook has confirmed it is still committed to a global Diem.

M-Pesa

2019/2020 revenue: \$778 million. Market capitalization: N/A (partnership). Customers: 42 million in Kenya, Tanzania, South Africa, Afghanistan, Lesotho, DRC, Ghana, Mozambique and Egypt.

Products: M-Pesa mobile payments/deposits/withdrawals, bill payment, M-Shwari, Fuliza and KCB M-Pesa (Savings and Lending), International Money Transfers, Fuliza (mini overdraft).

Business model: M-Pesa is currently operated by Telco operators Safaricom (Kenya), Vodacom (other African countries) and Roshan (Afghanistan), although it is currently being spun out as a separate venture. It offers financial services from partner banks like Equity Bank (Kenya) and Millennium BIM (Mozambique).

1. Margin on transfers and on withdrawals, which can be high, especially for unregistered users. International transfers is a rapidly growing product line
2. Service charges on introduced products such as bank lending
3. Fees on overdrafts,⁴⁶ a daily charge of 0.5 per cent
4. Operates under a 'special licence' in Kenya; Mobile Money or e-Money licence in other countries

BFT categories:

- Payments platform (B1)

SDG impacts:

- **High:** SGD 9 (industry, innovation and infrastructure)
- **Medium or low:** SDG 7 (affordable and clean Energy), SDG 13 (climate action), SDG 8 (decent work and economic growth), SDG 10 (reduced inequality)

⁴³ Nothias T, 'Access granted: Facebook's Free Basics in Africa', *Media, Culture & Society* 42(3), 329, 2020, <<https://journals.sagepub.com/doi/pdf/10.1177/0163443719890530>>.

⁴⁴ Sander P, 'Facebook-coin Libra: Benefits Vs. Risks-- Opinions from German Economists', *Medium*, September 2019, <<https://philippsandner.medium.com/facebook-coin-libra-benefits-vs-risks-insights-from-german-economists-2707b2c316fb>>.

⁴⁵ Ibid. See also Blakstad S, 'Libra: Economic Implications of Global Cryptocurrency', *Altcoin Magazine*, 19 July 2019, <<https://medium.com/the-capital/libra-economic-implications-of-global-cryptocurrency-8a5eef8bc9b7>>.

⁴⁶ Ibid., note 11.

- **None:** SDG 1 (no poverty), SDG 2 (zero hunger), SDG 3 (good health and well-being), SDG 4 (quality education), SDG 5 (gender equality), SDG 6 (clean water and sanitation), SDG 11 (sustainable cities and communities), SDG 12 (responsible consumption and production), SDG 13 (climate change), SDG 14 (life below water), SDG 15 (life on land), SDG 17 (partnerships)

SDG impacts analysis:

SDG 7 (affordable and clean energy), SDG 13 (climate action): M-Pesa has been instrumental in enabling distribution of several PAYG clean energy and water services, for example M-Kopa, the popular solar power PAYG supplier, and a solar water project by Danish pump company Grundfos in Kenya.

SDG 5 (gender equality), SDG 10 (reduced inequality): Reports have shown that it empowers women in particular, who are disproportionately excluded from the formal financial system,⁴⁷ and has indirectly led to a larger percentage of the population having access to formal banking.

SDG 9 (industry, innovation and infrastructure): Will offer wider access to digital financial services to excluded populations, potentially including affordable credit.

SDG 10 (reduced inequalities): M-Pesa partners with local banks to offer services, providing the banks with M-Pesa's KYC score, leading to many people not having access to the services.

Commentary:

M-Pesa developed a mobile-based money transfer product following research that showed people in Kenya were sending each other mobile phone credits as a way to pay or transfer money. Since its launch in 2007, it has reached nearly 100 per cent saturation in Kenya, with lower adoption in other countries where there is more competition. It has also had some unsuccessful attempts at launching in India and Eastern Europe. Recently, M-Pesa has offered a range of new services such as lending, saving, group savings and international money transfer.

While M-Pesa has enabled many more people to use electronic money to pay bills and access savings without a bank account, and in some places is commonly used for many minor transactions

⁴⁷ Suri T, Jack W, 'The Long-Run Poverty and Gender Impacts of Mobile Money', *Science* 254(6317), 1288, 2016, <<https://science.sciencemag.org/content/354/6317/1288.full>>.

⁴⁸ Mohapatra S, 'Are Mobile Money Transfer Costs Too High?', *World Bank Blogs*, 9 February 2011, <<https://blogs.worldbank.org/peoplemove/are-mobile-money-transfer-costs-too-high>>.

(especially urban Kenya), it has been criticized for applying high charges to the poorest people.⁴⁸ Its latest product offers overdrafts for customers making payments, who have insufficient funds, with high charges. This is proving extremely popular but could compromise the most vulnerable users. It has developed integration tools to make it easy to partner with, resulting in a wide range of partnership integrations. Even the Google store is now taking M-Pesa payments for apps.⁴⁹

Ethereum

Miners generated \$935.7 million revenue in 2019. Market capitalization: \$40 billion. Employees: 324. Nodes: c. 9,000

Ethereum is a community-built open source blockchain technology with smart contract functionality.⁵⁰ It is also the technology behind the cryptocurrency Ether (ETH) and other decentralized applications—meaning not run by a centralized authority. Ethereum is also currently the chain behind many humanitarian, social and environmental impact use cases, although many are now migrating to other, less environmentally damaging alternatives.

Business model:

1. 'Gas' fees for transactions paid by transaction owners to the miner (or in upcoming Eth2 validator node) in ETH. Gas fees are based on guidelines, but ultimately a combination of the amount of computational energy used and a scarcity premium at busy times (surge pricing) which can be very high (1 September 2020 it was \$12.5).
2. Network stakeholders, including the founding/foundation organization, make money trading Eth or other tokens such as DAI which are built on sidechains of Ethereum.
3. The platform is fully distributed and maintained by the community; however, the Ethereum Foundation, funded by a stockpile of cryptocurrency, manages prioritization of upgrades and changes, various governance forums, communication and education.

BFT categories:

- TechFin and cryptocurrency platform (B5)

⁴⁹ Staff Reporter, 'Google Starts Taking Payments for Apps Via Kenya's M-Pesa Service', Reuters, February 2018, <www.reuters.com/article/us-kenya-safaricom-google/google-starts-taking-payments-for-apps-via-kenyas-m-pesa-service-idUSKCN1G714P>.

⁵⁰ 'What is Ethereum' <<https://ethereum.org/en/what-is-ethereum/>>.

- Payments platform (B1)
- BigTech cloud services (B4)

SDG impacts summary:

- **High:** SDG 9 (industry, innovation and infrastructure), SDG 13 (climate action). A high indirect impact on enabling emerging technology for environment, climate and other SDGs
- **Medium or low:** SDG 14 (life below water), SDG 15 (life on land)
- **None:** SDG 1 (no poverty), SDG 2 (zero hunger), SDG 3 (good health and well-being), SDG 4 (quality education), SDG 5 (gender equality), SDG 6 (clean water and sanitation), SDG 7 (affordable and clean energy), SDG 8 (decent work and economic growth), SDG 10 (reduced inequalities), SDG 11 (sustainable cities and communities), SDG 12 (responsible consumption and production), SDG 17 (partnerships)

SDG impacts analysis:

SDG 13 (*climate action*): As a Proof of Work blockchain, Ethereum uses a lot of energy—the yearly consumption is on par with the entire country of Panama—although it has committed to upgrading to a different, less energy-intensive protocol (Eth2). Unlike a centrally controlled platform, it has *no ability* to force its network of hosts (nodes) to migrate to clean energy.

SDG 9 (*industry, innovation and infrastructure*) Ethereum-developed ‘smart contract’ functionality underpins a wide spectrum of use cases including Dapps and the DeFi movement.

SDG 16 (*strong institutions*): Can be used to combat corruption by creating traceability in supply chains. All: can be used to increase transparency in investments, to allow for wider pool of investment, more confidence in use of proceeds and reporting of proof of impact.

Commentary:

Ethereum is a second generation blockchain that supports Smart Contracts—mini programmes that enable it to be used for a wide variety of business applications. As it was the first mover in this space, it has become the blockchain of choice for many organizations in the private sector and beyond. It was the platform underneath many of the ICO issuances of 2017–2018,⁵¹ and is used for security

⁵¹ Foster K, Macdonald D, Johnson M, ‘Blockchain and Sustainable Development Goals’ in Wendt, K (ed.) *Theories of Change: Change Leadership Tools, Models and Applications for Investing in Sustainable Development*, Springer 2021.

offerings, supply chain management, certification, identity and a host of other use cases⁵² globally in the SDG impact space including an ongoing partnership with ConSensus. Recently the rise of the DeFi (Decentralized Finance) movement has seen the creation of many banking-style services operated on dApps (decentralized applications) built over Ethereum, which has driven transaction prices up dramatically.

High gas fees, together with the slow throughput of Proof of Work blockchains and concerns about security of the programming language for smart contracts, have led developers to move to more modern, secure, faster and cheaper solutions, although many are still choosing Ethereum because of its easy to use tools. However, there are many other blockchain and distributed ledger platforms which have a very minor energy usage, so this problem is only applicable to Proof of Work blockchains like Ethereum and Bitcoin. Although blockchain is still a relatively niche technology, it is appearing in more and more business uses so it can be assumed that it will continue to grow in usage.

Alibaba—Ant Financial (combined)

Market capitalization: \$738.83 billion as of September 2020.

Subsidiaries: AliExpress, 1688, Alimama, Alibaba Cloud, Ant Financial, and Cainiao Network

Business model:

- One of the biggest companies worldwide, Alibaba’s business model includes consumer-to-consumer, business-to-consumer and business-to-business sales and other services through e-commerce platforms as well as offline portals.
- Alibaba’s major revenue comes from its electronic payment services (Alipay operated by its subsidiary Ant Financial), marketplace, and data-centric cloud computing (Alibaba Cloud).
- Taobao, Alibaba’s other business model, facilitates small business to consumers and consumer trade by allowing small businesses and individual entrepreneurs to list their products on their website for sale.
- Tmall (Taobao Mall) is the marketplace platform for the middle-income consumers which offers a wide range of branded products.⁵³

⁵²‘Case Studies’ <www.newamerica.org/digital-impact-governance-initiative/blockchain-trust-accelerator/reports/blueprint-blockchain-and-social-innovation/case-studies>.

⁵³ The difference between Taobao and Tmall is that Taobao is more focused on small sellers and individual entrepreneurs, whereas Tmall offers branded products from larger companies, such as Nike, Apple, etc.

BFT categories:

- E-commerce and marketplace (B2)
- Payments platform (B1)
- BigTech cloud services (B4)

SDG impacts analysis:

- **High:** SDG 1 (no poverty), SDG 8 (decent work and economic growth), SDG 9 (industry, innovation and infrastructure)
- **Medium to low:** SDG 2 (zero hunger), SDG 3 (good health and well-being), SDG 4 (good health and well-being), SDG 5 (gender equality), SDG 6 (clean water and sanitation), SDG 10 (reduced inequalities), SDG 13 (climate action), SDG 14 (life below water), SDG 15 (life on land), SDG 16 (strong institutions), SDG 17 (partnerships)
- **None:** SDG 7 (affordable and clean energy), SDG 11 (sustainable cities and communities), SDG 12 (responsible consumption and production)

SDG impacts:

SDG 1 (no poverty), SDG 5 (gender equality), SDG 10 (reduced inequality): Alibaba's 'Taobao Village' is an e-commerce platform for rural entrepreneurs who opened shops on Taobao Marketplace to make furniture and sell finished goods online. As of August 2019, there are a total of 4,310 Taobao Villages in China.⁵⁴ Alibaba exported a similar business model in some of the rural areas, known as 'Taobao Towns' in China as well to target the bigger clusters of rural e-retailers. Ant Financial which operates Alibaba's payment platform, Alipay, allows the consumers and SMEs to access financial services without requiring to have a traditional bank account, which ensures more women and marginalized groups of people are included in the financial system.

SDG 4 (quality education), SDG 8 (decent work and economic growth), SDG 10 (reduced inequality), SDG 16 (strong institutions): Alibaba's business practice e-WTP facilitates sustainable and resilient infrastructure to help developing and underdeveloped nations, SMEs, and young people participate in the global trade.⁵⁵ Their 'Global e-commerce talents-teaching training programme' in

Rwanda helps students master e-commerce knowledge, and thus promotes innovation and creates new job opportunities. Ant Financial's strategic partnership with LDCs enables those countries to take the advantage of advanced technology and technical know-how in creating faster, cheaper, and more secure payments platforms.

SDG 3 (health and well-being), SDG 9 (industry, innovation and infrastructure), SDG 12 (responsible consumption), SDG 13 (climate action), SDG 15 (life on land), SDG 17 (partnerships for the goals): Ant Forest is a tree-planting initiative launched in 2016 by Ant Financial. It is a mobile app that analyses the users' actions and reward for their green behaviour with points proportional to the carbon footprints avoided by low-carbon activities.⁵⁶ The app involves an innovative strategy where Ant Financial converts the intangible green points accumulated by the users into tangible incentive, such as planting trees. As of 2019, Ant Financial planted 122 million trees with Ant Forest. As with e-commerce and marketplace platforms, there are issues of opaque supply chains, labour, waste, impact on local business and SDG 12 responsible production and consumption.

Platform and cloud: energy and climate change impact note

Environment, energy and climate are impacted by the Technical infrastructure platforms such as cloud hosting and blockchain offering both challenges and opportunities for clean energy uses. Cloud services consume tremendous amounts of electricity,⁵⁷ but by centralizing processing in huge data centres and optimizing how energy is consumed, hosting companies have realized very significant savings in energy usage. They are also building green energy farms, although they are still consuming brown energy, and offsetting the energy, rather than using 100 per cent green energy, as Microsoft and Google Cloud have claimed.

While cloud services providers are notionally in control of their energy uses, they still rely on national grids, so actual energy use is largely dependent on host nations.

Blockchain platforms based on Proof of Work consensus are designed to use large amounts of

⁵⁴ Wang J, 'Taobao Villages Driving 'Inclusive Growth' in Rural China', Alizilla, November 2019, <www.alizila.com/taobao-villages-driving-inclusive-growth-rural-china/#:~:text=After%2010%20years%2C%20the%20Taobao%20Village%20model%20has,rural%20villagers%20reside%2C%20according%20to%20data%20from%20AliResearch>.

⁵⁵ 'Alibaba's Jack Ma Promotes Free Trade for Small/Medium-Sized Businesses at G20', Business Wire, September 2016

<www.businesswire.com/news/home/20160906005774/en/Alibaba%E2%80%99s-Jack-Ma-Promotes-Free-Trade-SmallMedium-Sized>.

⁵⁶ Holland Fintech and Sustainable Digital Finance Alliance, 'A Green and Sustainable Digital Finance Landscape: Market Analysis for the Netherlands', Report, 2019, <<https://greendigitalfinancealliance.org/wp-content/uploads/2019/11/Green-and-Sustainable-Landscape.pdf>>.

⁵⁷ Xu N, 'The Internet Cloud Has a Dirty Secret', *Fortune*, 18 September 2018, <<https://fortune.com/2019/09/18/internet-cloud-server-data-center-energy-consumption-renewable-coal/>>.

electricity, so anonymous actors act in the best interests of the network. As blockchain platforms are hosted with no central control, the 'miners' who perform these computationally expensive calculations tend towards places with cheap electricity, often where most energy is coal-powered, like China.

For example, Ethereum, a Proof of Work blockchain, is employed by many social impact businesses, and NGOs, for a wide variety of use cases including provenance of supply chains, distribution of aid, issuance of green bonds and certification of green assets. However, different blockchains can provide significant efficiency gains over both Proof of Work and traditional database systems, reducing the overall energy burden, while delivering the same benefits of traceability and efficiency for these use cases.

An additional consideration is the market hold and amplifying influence of Ethereum in the Blockchain (and emerging technology) for SDGs and impact through its partnerships with ConsenSys. The block, Ethereum's foothold and ConsenSys' global influence have raised concerns, including about solutions bypassing considerations of ethics⁵⁸ and a narrow definition of impact to the potential detriment of other SDG impacts. For example, apps focused on whistleblowing to address corruption that are not vetted for security issues, or designs that do not take into consideration data readiness or cultural appropriateness.⁵⁹

⁵⁸ Lapointe C, Fishbane L, 'The Blockchain: Ethical Design Framework', Beeck Center, <<https://beeckcenter.georgetown.edu/wp->

[content/uploads/2018/06/The-Blockchain-Ethical-Design-Framework.pdf](https://beeckcenter.georgetown.edu/wp-content/uploads/2018/06/The-Blockchain-Ethical-Design-Framework.pdf).

⁵⁹ Ibid., note 48.

Annex 6: Analysis of the CSR and ESG landscape

Katherine Foster with Artem Sergeev

Corporate Social Responsibility (**CSR**) generally represents a company's efforts to fulfil its responsibility to its employees, consumers, the environment and wider community. It is a form of self-regulation to **govern legal as well as moral responsibilities** towards stakeholders that most large companies report on annually. CSR reporting is **largely voluntary**, other than for the European directive which obliges CSR reporting for larger firms but does not mandate how or what to report.

Environmental, social and governance (**ESG**) is a relatively **new and evolving** reporting practice. It looks inter alia at how businesses:

- respond to climate change
- treat their workers
- build trust and foster innovation
- manage their supply chains.

And while many of these elements relate to Sustainable Development Goals (**SDGs**), the focus is on the ways in which investors consider these dimensions in selecting assets for their portfolios (e.g. stocks, bonds, real estate).

Overall CSR and ESG cover a diverse range of indicators, focus on positive or negative contributions towards the triple bottom line (environment, social, economic) and are largely seen as a private sector domain, meaning they target stakeholders specific to the corporate entity and its performance. As these reports are generally focused on material topics specific to each company, few elements bridge across private and public realms into broader SDGs. However, the variety of CSR management and reporting indicators as well as ESG rating and reporting frameworks impedes comprehensive assessment and comparability of sustainability performance and impact.

Materiality

The definition or parameters of materiality is a key challenge of integrating ESG, CSR and SDGs to determine and direct 'impact' in that there are no universally applied norms, standards, metrics and methods for measuring and reporting. The focus of debate and research around this complex landscape is on materiality.

The approach to applying, improving and integrating CSR and ESG metrics reporting has been focused on outcomes that are, from a risk perspective, 'material' for a company. Materiality has been largely defined by reporting companies in terms of what it considers to be central to its immediate facilities, operations and supply chains regarding the economic, social, environmental and governance risks for these and for its identified stakeholders.

The SDGs have strongly influenced this debate as they call for social impact instead of risk metrics. In fact, within the political framework of the new EU Action Plan for Sustainable Finance, the Commission has introduced the concept of 'double materiality', which extends the risk focused understanding of materiality (how is the company affected by the outside world) with a focus on impact (how is the company affecting the outside world).

Legacy sectoral and regulatory structure

The CSR and ESG landscape evolved out of conventional parameters of industry and sectoral categories, whereas the operations, reach and activities of BFTs reach far beyond these parameters.

- The SDGs may broaden the capacity to identify impact in the currently defined 'public realm' outside the 'material definitions' of CSR and ESG.

- But the SDGs are viewed largely as a compass pointing to self-defined targets across the goals and the means to measure impact on these.

CSR and other governance and reporting tools were drawn up along the public–private lines, but also in a period when **international trade agreements and their related governance structures** were just being signed (i.e. NAFTA) and the digital world was in its embryonic stage.

Governance dialogues and even international trade agreement models that emerged in the 1990s and 2000s that included consideration of some elements of the current SDGs (such as the NAFTA side agreements on labour and environment) could not have conceived of the emerging and scaling business models, reach and unforeseen challenges and impacts.

Conclusions/recommendations on CSR

- The SDGs, as a global institutional framework, have opened up new opportunities for companies and organizations to “broaden their value chains and deepen the impacts of Corporate Social Responsibility (CSR) initiatives”⁶⁰, as well new challenges related to new and evolving business models.
- The issue goes beyond the lack of connectivity between the SDGs (public domain) and these frameworks (private domain), pointing to a broader emerging issue for governance at all levels.
- BFT business models and activities **cross multiple categorizations in the regulatory landscape yet are usually** categorized as ‘finance or information industry’, including in CSR and ESG reporting. As such they are in principle excluded from examination and reporting on environmental impacts as they “generate direct environmental pollution and emissions” because of the legacy definition of these categories.
- The SDGs have opened a discussion as to how firms become increasingly involved in the provision of public global goods and in the shaping of (global) regulations. Given the complexity of BFT business models, this is a challenge.⁶¹
- As a result, the perspective shifts from the question of how the wider world affects business and financial activities to the question of how business and financial activities affect the wider world.
- However, the integration of the SDGs in CSR and ESG reporting is still at an early stage and depends on various conditions, obstacles and friction points.⁶²
- Rather than trying to continue addressing the issue within the public–private parameters of the existing reporting/ESG models (private) and bridging it to the SDGs (public), we need to explore ways to incorporate the new and emerging business models with their multiple platforms, international reach and “degrees of activities” (i.e. marketplaces such as Amazon can report on its immediate activities and supply chains but not those of its users).

⁶⁰ ElAlfy A, et al., ‘Scoping the Evolution of Corporate Social Responsibility (CSR) Research in the Sustainable Development Goals (SDGs) Era’, *Sustainability* 12(14), 5544, 2020, <www.mdpi.com/2071-1050/12/14/5544>.

⁶¹ Ibid., note 16.

⁶² Consolandi C, Eccles RG, ‘Supporting Sustainable Development Goals is Easier Than You Might Think’ *The MIT Sloan Management Review*, 15 February 2018, <<https://sloanreview.mit.edu/article/supporting-sustainable-development-goals-is-easier-than-you-might-think/>>.