FINANCIAL SERVICES

NEW BANKING, A PLATFORM SERVING YOUR FINANCIAL WELLNESS

2017 Banking Strategy Video-Report

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DO YOU WANT TO LEARN ABOUT DANIEL'S EXPERIENCE WITH NEW BANKING?

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"You need to get to the future, ahead of you customers, and be ready to greet them when they arrive."

Marc Benioff, CEO Salesforce

01 FALL DOWN SEVEN TIMES, GET UP EIGHT (CHINESE PROVERB)

Reading time
14´

The Return on Equity (RoE) of listed European banking in 2007 was ≈19%, which compared with a profitability called for by its shareholders (*Cost of Equity – CoE*) of ≈7.5%.

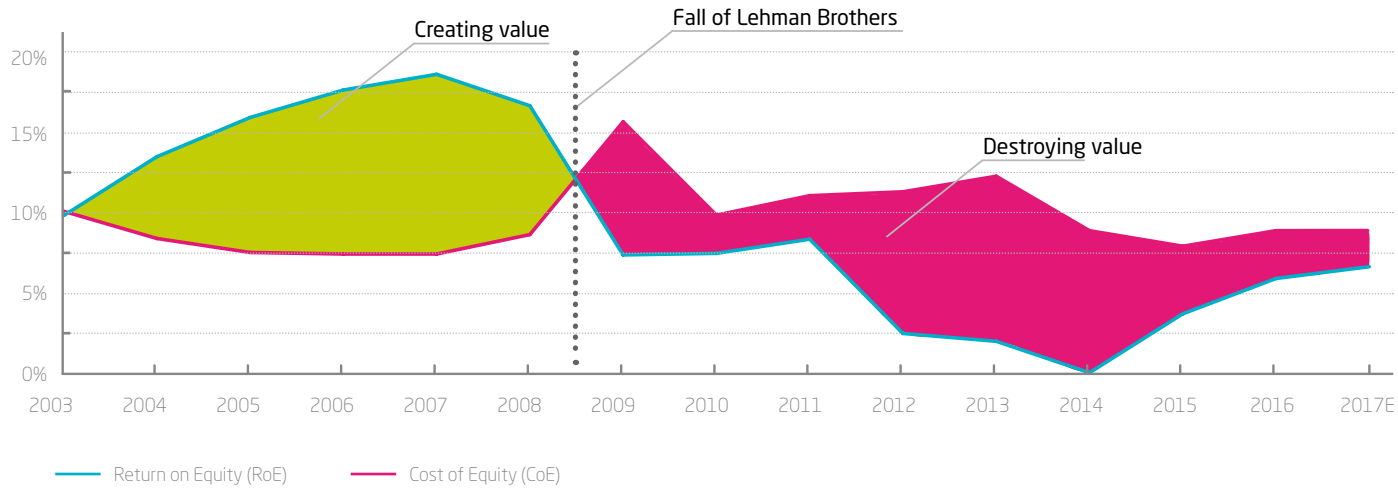
This difference of 11.5% (pp)[1] measures banking's creation of value for its shareholders in that year. 2007 was no exception, but rather the norm that consolidated after recovery of the burst ".com bubble". However, after the fall of Lehman Brothers (2008), the RoE of the region remained under the CoE, i.e., destroying value for shareholders, a problem from which the sector has yet to recover.

2016 was an eighth consecutive albeit failed attempt to revert this situation.

In particular, European banking closed with a *gap* insofar as destruction of value of ≈3% (pp) (RoE ≈6% vs. CoE ≈9%).

When the value destruction gap in a sector shifts from occasional to structural, the alternatives are disappearance or industrial reconversion.

Return on Equity vs. Cost of Equity (listed European banks)*



Source: European Central Bank (*) The situation in the USA and Japan is similar.

[1] Percentage points

While this problem is new for banking, it is common in other more industrial sectors such as steel, coal and shipbuilding. Asian manufacturers and their lighter cost structures are steamrolling Western industry, which has undergone a profound reconstruction process.

In recent years traditional banking, primarily rooted in the West, has proven incapable of any growth and any detachment from the heavy burden of its fixed cost structure seems to be all but inconceivable.

In the new context already encompassing the sector, many entities will be unable to revert the value destruction gap, not even in a scenario of rising interest rates, which in the best of cases would increase their *RoE* by an insufficient 2-3% (pp)[2].

This situation is an incentive that reinforces the position of executives with a vision of how traditional banking must evolve, committed to a complete digital transformation of the sector and already taking the steps to rebuild it.

How is digital transformation affecting banking profitability?

Despite its threat to the established order, the digital transformation process is not a problem but a great opportunity (one which the coal, steel and shipbuilding industries did not have) to recover a long-term sustainable balance (*RoE* > *CoE*) and thus exit the "industrial reconversion" process with strength.

Identifying and engaging new sources of business growth (increase in ***RoE***):

- Current technologies favor the creation of new and better products and services that were inconceivable in an "analog" world.
- It lets us reach more customers through digital media with an offering that was until now only available for certain segments.
- Consumer relations are strengthened through the use of advanced digital finance management solutions and the deployment of a more precise and effective commercial activity, benefiting customers and the bank alike.

Lowering business risk (reduction in ***CoE***).

- Current technology is capable of bringing business risks to another dimension, increasing, for example, the predictive capabilities of credit admission analysis and the real-time execution of asset transactions.

Transforming, *ceteris paribus*, the operating cost structure with an impact on the efficiency ratio of over 20 percentage points (which per se would equate to ***RoE > CoE***).

- State-of-the-art technology allows us to substantially modify the current distribution structure with a greater weighting on digital channels (offices currently represent 60% of the operating costs), and streamline processes from the *front* (contracts, servicing and customer support) and *back* by automating and robotizing tasks.

	Traditional bank	Digital bank
Gross Margin	100	110
Operating Costs	(50)	(33)
Efficiency Ratio	*50,0 %*	*30,0 %*
Other Costs (provisions, taxes, etc.)	(35)	(43)
Net Profit	15	34
Return on Equity	7-8 %	16 %
Cost of Equity	9 %	8 %

Source: Financial Stability report issued by the Bank of Spain (November 2016) and in-house research.

Approximately 30% (pp) of operating costs are associated with the network of branch offices.

Digital transformation should reduce the current size of the branch network by 10-20% in 10 years.

Even when considering a certain loss of income in this process, the impact on efficiency ratio would be at least 20% (pp).

This impact is significant and in some cases entails less capital consumption when dropping the credit risk (e.g., real-time transactions).

[2] Some rating agencies were clearly skeptical regarding whether an interest rate hike would have an effect as positive as hoped for. Their reasoning rests upon low interest rates yielding significant surpluses in sovereign bond portfolios and a containment in arrears and provisions.

> *Banks have the option of hiding behind regulatory barriers in hopes of surviving or leading the transformation.*
>
> Ana P. Botín, Chairman at Banco Santander (2016)

It is clear that in terms of technology, new banking in the long term will differ substantially from its current embodiment, with a greater orientation toward consumers and competitiveness. However, the sector cannot refer to a simple roadmap for a future return onto the path of value creation for shareholders, customers and the company unless it has a distinct strategic vision and action plan.

This document was drawn up as an aid to understanding the context of the challenges which banking will face in the coming years and, on the basis of this "boundary condition", building a strategic vision, which will require:

- "Picking and choosing" assertively. What to become for stakeholders in the future and what to leave behind, regarding who we are today and how the transition will be financed.

- Identifying the company's key resources/ assets (material and human resources) that will serve as the foundation for this transformation and guarantee its sustainability in the future.

The next chapters will explain how the banking context is being reconfigured by 3 main forces: i) banking's partnership with *Fintech*; ii) the emergence of technologies that are transformational for banking; and iii) the *Fintech* boom originating from China.

- **Chapter 2** will address platformization of business, a long standing strategy to drive new banking so that sector transformation occurs serving the financial wellness of its customers, which certainly calls for the sector to work with a more *customer centric approach.*

- **Chapter 3** will address *distributed ledgers (blockchain)* and how this technology will assume a leading role in the transformation of this sector and others.

  While in the short term new technologies such as big data, artificial intelligence or predictive algorithms may only appear as an additional cost to legacy (because of the need to understand and experiment with them), their medium- and long-term potential to shake up the very foundation of operating costs and shape new digital relationship models with customers and therefore new businesses with a broader breadth of possibilities for growth and profitability.

- **Chapter 4** will summarize how the financial sector is changing on the other side of the planet. Modern day China is one of the world's two largest Fintech innovation hubs that no doubt merits more attention than it is actually getting from companies. Jamie Dimon, CEO at JP Morgan, coined a phrase of historical relevance in the 2015 version of his annual letter to shareholders, stating that "*Silicon Valley is coming*". Perhaps the next phrase for history will be *"China is also coming"*.

  This chapter should be framed within the Fintech phenomenon, which is either a threat because it is absorbing what little growth there is in the sector while squeezing down on margins; or an opportunity if Fintech and banking are able to articulate a symbiotic model of collaboration. The former has swiftness and creativity while the second scale and investment capabilities.

  As a result of the aforementioned context, we will share our opinion of the **strategic vision that banking should adopt over the following chapters.** This vision contemplates a comprehensive transformation of the organization into a **platform serving the financial wellness of customers.**

  While magical potions fit better in medieval mythology, there are nevertheless useful formulas out there to accelerate the transformation process, and we can help banking readers use them wisely:

- **Chapter 5** presents some new distribution models for financial products and customer interaction to enable the creation of a new digital customer relationship model that will challenge not only traditional distribution channels (branches) but also legacy systems.

  Building this new digital relationship model, which will no longer depend on the branch network, is one of banking's most daunting challenges yet also an enormous opportunity to revamp the weighty structure of fixed costs and inaugurate a new era of bringing value to customers, one which will be rewarded with loyal and enduring relationships.

- **Chapter 6** can be interpreted as a sort of conclusion on the previous chapters in which we explain our view of the standard value proposition that new banking should offer its customers.

  In short, this is essentially a return to banking's raison d'être, namely, aspiring to help customers move forward, and while traditional banking could only partially fulfill such an aspiration, new advances in technology enable banking to take it even further beyond conceivable limits.

  Lastly, certain questions that will not be addressed in depth here nevertheless merit inclusion in these reflections, namely:

- The **new regulation.** While clearly more stringent with banking and intended to boost competition and value added services for customers (e.g., PSD2 and its extension to *open banking architecture* or the reduction in *interchange fees*), it could nevertheless become an opportunity. The traditional players should capitalize on their long-standing relationship with the regulator to navigate the troubled waters of reinventing the business.

- The new **corporate culture.** While the phrase coined by Peter Druker that *"culture eats strategy for breakfast"* seems to fit right in with 2017, he actually said it 15 years ago.

  While the cultural change that should necessarily accompany digital transformation is a daunting challenge to many internal processes and questions the suitability of the professional profile of a broad segment of banking employees, it is also an opportunity to redesign entities from within and foster the meritocracy of a staff having an enormous yet still untrained potential (given the lack of tolerance to mistakes, no remuneration linked to improvements made in processes, etc.) to transform the business.

- The prospects of creating new vehicles for services shared at a sector-wide level.

  It is therefore necessary that the banking sector works together as it did during the second half of the twentieth century, when it demonstrated its capability to tackle the major technological challenges that would ultimately transform the business. This collaboration resulted in the credit card processing networks in the sixties as a solution to society's demand for new payment methods; or the SWIFT network in the seventies in response to the unstoppable growth of international payments.

  The bonanza at the outset of the twenty-first century coupled with significantly fierce competition put an end to this spirit and contributed to cultivating mistrust among banks.

Banking's control and ownership of the rails on which the payment business traveled did little to win the battle of *online and offline payments*.

In this regard, Paypal, Alipay or Apple Pay are now the incumbents capable of eroding the margins of the sector (all banks in the USA have reduced their commissions so as not to be ousted by Apple Pay) and cutting the invaluable access to their customers' payment data (which is the case of wallets or PayPal).

Before the crack in 2008, with RoEs of ≈19% and a *Cost of Equity* hovering around ≈7.5%, none of the banks would have budged an inch to work together to cut down on costs. The situation in 2016 however differed:

- RoE failed to cover *Cost of Equity* and banks flipped the script to reduce costs. All of them have essentially the same approach (closing branches and reducing staff), though each one is waging its own little war.

- While the threat of competition from the digital giants was virtually imperceptible in 2008, today it is a reality.

> *"Online banking's main competitors are Google, Amazon and Facebook, but not traditional entities."*
>
> Francisco González, Executive Chairman at BBVA (2014)

> *"The tech giants (Google, Amazon, Facebook, Apple, etc.) are staying for the moment on the fringes of the financial industry, but in time will make profound inroads on it."*
>
> Francisco González, Executive Chairman at BBVA, (Singapore Summit 2016)

Fortunately, the advent of open source, architectures based on standard interfaces or Application Programming Interfaces (API) and cloud services, has enabled us to share 90% of technology with the remaining 10% as core, since software development is very expensive.

Today banks have the possibility of sharing resources that let them create excellent and differential products and services at a sector-specific level that contrast with the products and services of the digital giants. For example:

- A property appraisal platform. Sharing the sale prices of these assets is useful for creating real-time appraisal platforms with utilities such as:

✓ In the risk area (provisions in balance) – economizing the costs of periodic appraisals (new regulations).

✓ In the retail area (admission) – providing a differential advantage in the form of swift customer response.

- An identity platform. The traditional concept of identity based on geographical frontiers began to dissolve during the initial days of the Internet, when nobody knew who was on the other side (*"On the Internet, nobody knows you are a dog"*, The New Yorker, 1993). It has become clear that the way identity works in the virtual world differs from how it works in the real world.

Banking should have a leading role in reengineering the concept of identity. No other sector in the economy has a comparable "*digital trust*" that can establish opportunities to venture into new business models that previously made no sense with a traditional identity concept.

In order to continue its progress, society needs a new identity infrastructure, one that is capable of admitting different identity types, some more solid (fixed) and others more liquid (changing), capable of providing security and privacy at the same time (without having to rule out one or the other), while also being cost efficient. Technology already has solutions for this.

This infrastructure is a "public service" with standards defined but not necessarily provided by the government. Banking is in an optimum position to provide this service after so many years of verifying identities with license and under strict compliance with the law. They are also the entities that enjoy the best reputation with customers for providing services of this sort, from which banking can benefit by retrieving data.

In the absence of a government digital identity framework, technology giants such as Google, Facebook or Linkedin already offer it for accessing millions of websites.

> *Widespread 2FA[3] access to online services really should have become a business for banks already (...) but it just hasn't happened.*

Identity is the New Money,
David Birch, Director of Consult Hyperion

The following should be borne in mind regarding the collaboration of banking:

a. Digital banking will increasingly revolve around two key axes, namely client identity and data. In the digital world, it's hard to tell where one begins and the other one ends. In this regard, digital banking must take steps to *master* both disciplines.

b. With the disappearance of cash and technology advances, digital money custody alternatives are becoming more common. In the near future, the complicated part will entail the management and custodianship of the identities of their owners and how access is gained thereto.

   As David Birch states, it is likely that banks will have the role as custodians of identities but not money, since money could be stored in many digital forms.

   This represents an opportunity for banking to capitalize on its knowledge and long-standing relationship with regulators, yet always abiding by the rules and norms of free competition.

[3] *Two Factor Autentication.*

02 PLATFORMIZATION OF BANKING, AN OLD STRATEGY FOR A NEW BUSINESS

Reading time
30´

A platform is a business model sponsored by a (financial) entity that is capable of attracting and linking many product or service creators with their consumers via *plug & play* so that their interaction generates an exchange which creates value for both.

The meaning of some of these terms merits further distinction to fully understand the implications:

- a "business model" does not merely entail setting up a technology or infrastructure for use with the rest snapping automatically into place. There is a need to build the value proposition that the platform will bear as its signature, beyond being a mere "meeting point", and to design a consistent model for income, costs, investments and promotion. The central value proposition in banking should be:

  a. For customers, becoming their adviser to assure their sustainable financial wellness. Nobody has a better vantage point with a 360º perspective of their finances than a bank.

  b. For vendors, having a support layer (technology, regulatory, etc.) available to build new products and get a tour of the current ones.

- In terms of "sponsored by a (financial) entity", the entity has a key role in the value chain, spanning from the selection of the products and services that will be offered (filtered by different criteria: fulfillment in terms of regulatory compliance, etc.) to the identification of its most likely consumers (through data).

- By "capable of attracting", we refer to the *Harvard Business Review*, which concluded that the power of attraction is one of the key elements in a successful platform strategy. To do so, the platform should provide incentives, which is why its value proposition is so important.

  The goal is to attract an elevated number of qualified participants that optimize the fit between the most popular products and services with the right consumers.

- Insofar as "linking (...) via *plug & play* (...)", under the preliminary condition of being a platform only accessible under prior authorization (*permissioned*) and after passing the *enrollment* filters, connecting to or disconnecting from it should entail breaking no major technology barrier.

  This is the reason for which APIs are so critical in companies that seek to follow platform strategies.

- "So that their interaction generates an exchange which creates value for both", connected producers should create value *on top of the platform*. For example:

  ✓ Based on the transactional records provided by a banking platform, a creator can build a credit scoring model based on the financial behaviors to provide greater precision and consequently less rejections insofar as financing good customers (who will never have overdue payments).

  ✓ A producer can use data on trade finance processes to create a tokenization model of Spanish wheat exports so that the logistics service provider can ascertain and trace the different items into which an Asian importer can divide cargo before it reaches port.

Promoting the interaction between the most suitable producers and consumers requires a mechanism that fits perfectly for both sides. The most basic version would be a search engine, which could range in complexity to a level that supports wise data management and provides a level of surgical precision.

Aren't traditional banks platforms, albeit somewhat antiquated platforms?

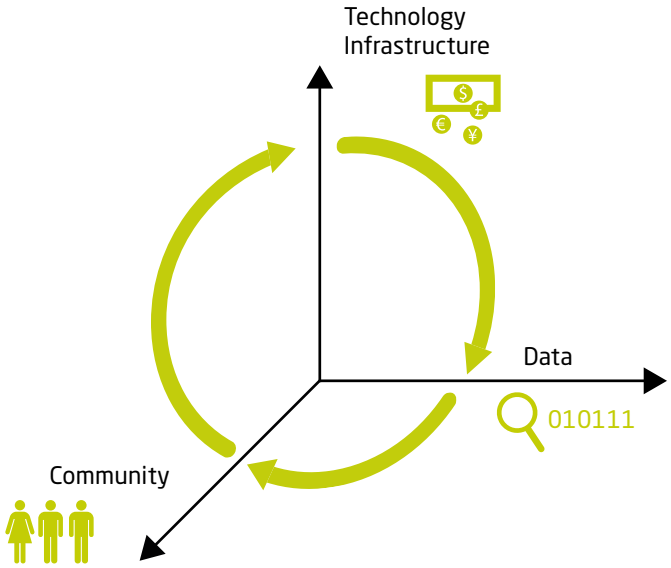
No. While a few of them are currently becoming platforms, most fail to satisfy the minimum criteria:

a. While they do a good job, which in itself is a magnet for consumers, they nevertheless employ little effort in attracting producers beyond occasional partnership agreements.

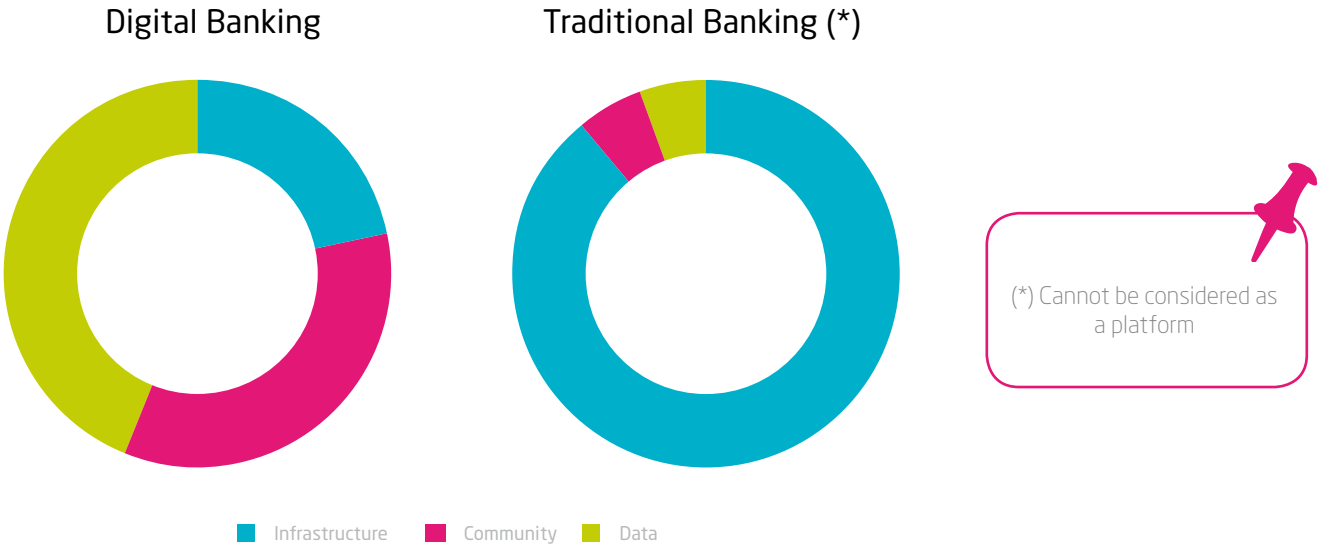
b. After attracting the consumer, they only offer their own products and services, regardless of whether there is a perfect fit with consumers.

c. Even if they wanted to connect to producers, they do not have an open architecture that would let them do so through a toolkit without technological barriers to transform this process into business as usual.

A platform can be represented graphically in 3 axes or layers with a certain balance between each one:



...capable of discriminating between traditional and digital banking models...



Platformization is not a new strategy in the corporate panorama. Google, Apple, Facebook, Amazon, Alibaba –all these admired companies whose services we use every day– are platforms.

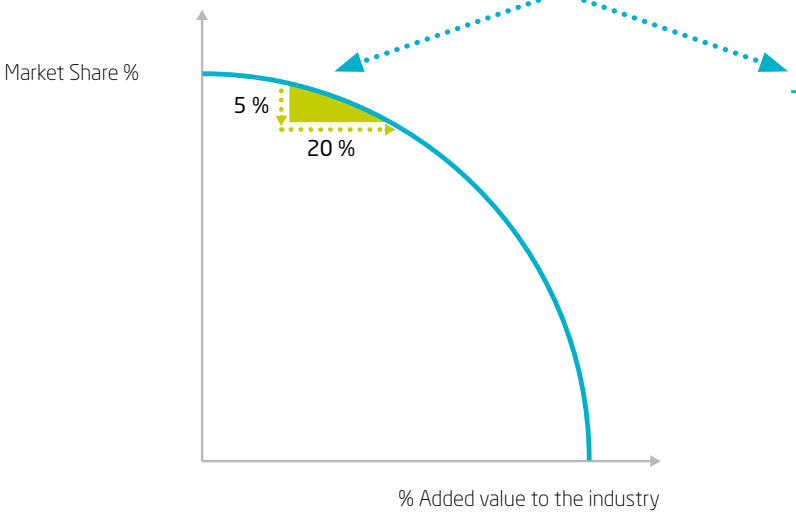
They were the triumphant champions of the "dot com" stage, digitizing and taking things that nobody had thought could be converted into "ones and zeros", and making a business with them. Google digitized libraries, videos, maps; Apple digitized music; Amazon digitized retail sales; Facebook digitized personal relationships, etc.

However, their vision was much more ambitious. They knew that the rules of physics differed substantially between the virtual and tangible worlds, and also understood that they should relinquish some of their control to best protect their own products, since a new market needed to be built and for which they also leveraged on new competitive dynamics such as the *network effect*[4].

Maximizing they value called for embracing open innovation and being surrounded by a community of developers for providing the construction of products on their systems. The platforms of the new digital era were born.

Opening vs. Control

A 5% reduction in market share yields a 20% market growth, hence the value captured by the company increases by 400.



	Initial Situation	Final Situation	Difference
Market Share	50 %	45 %	-5 %
Market Size	10.000	12.000	20 %
Captured Value	5.000	5.400	**400**

Source: *Information Rules, a Strategic Guide to the Network Economy*. Shapiro & Varian, Harvard Business School, 1999.

Maximum Control ≠ Maximum Profit

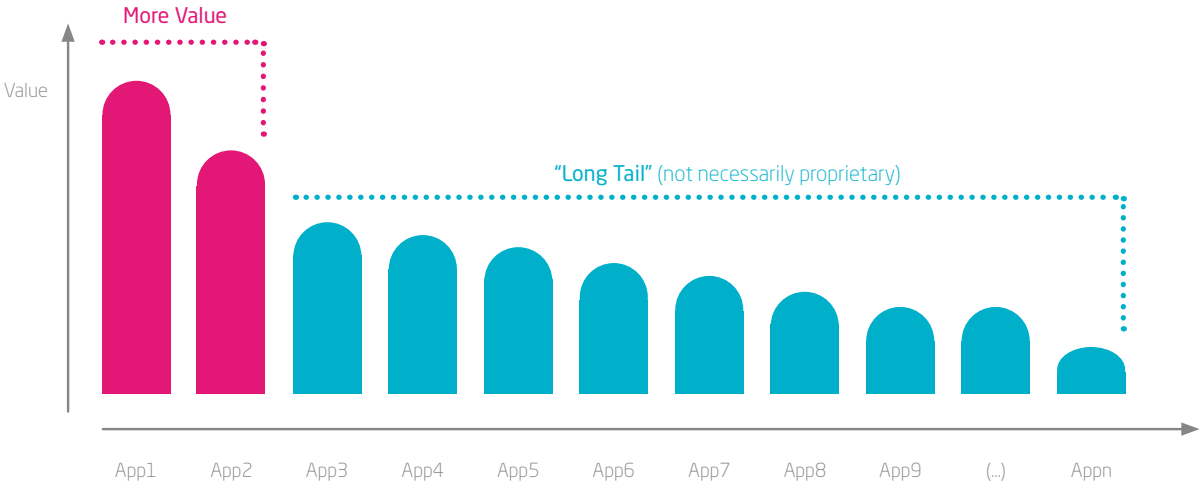
[4] The *network effect* was popularized by Robert Metcalfe, co-founder of the company 3Com and inventor of the Ethernet. This effect is known as Metcalfe's law, which states that while the cost of deploying a network grows proportionally with the number of users (unit cost x number of users), its value undergoes an exponential quadratic increase (number of users ^2).

The new platforms maintained an iron grip on 2 or 3 of the most valuable products (e.g., iOS, Windows, Android), developing them until achieving excellence.

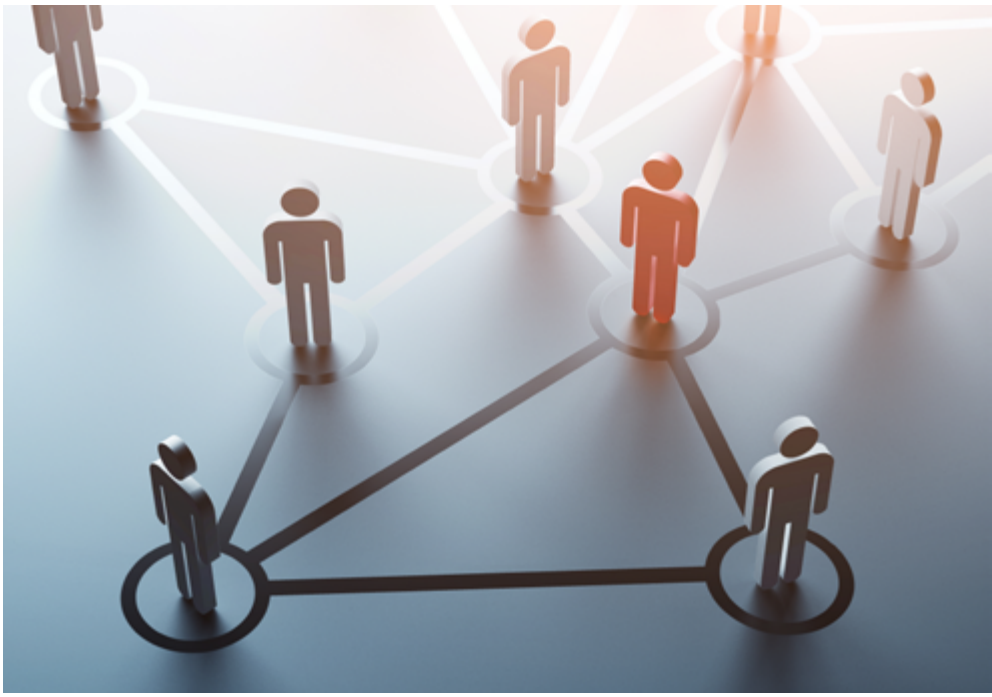
The rest of the products in the "*long tail*" were entrusted to external developers, which added substantial value to the platform.

The App Store currently houses 2 million apps and generates annual revenue of $20 billion[5], of which 30% go directly to Apple. Purchased by Google in 2005 for $50 million, Android today is the operating system present in 88%[6] of mobile devices worldwide.

This strategy helped them to triumph over all their competitors. For example, while Facebook focused on creating a robust platform to let external developers build new on top applications, MySpace adopted a strategy of greater control. Today Facebook has 1,600 million users while MySpace has 50 million.



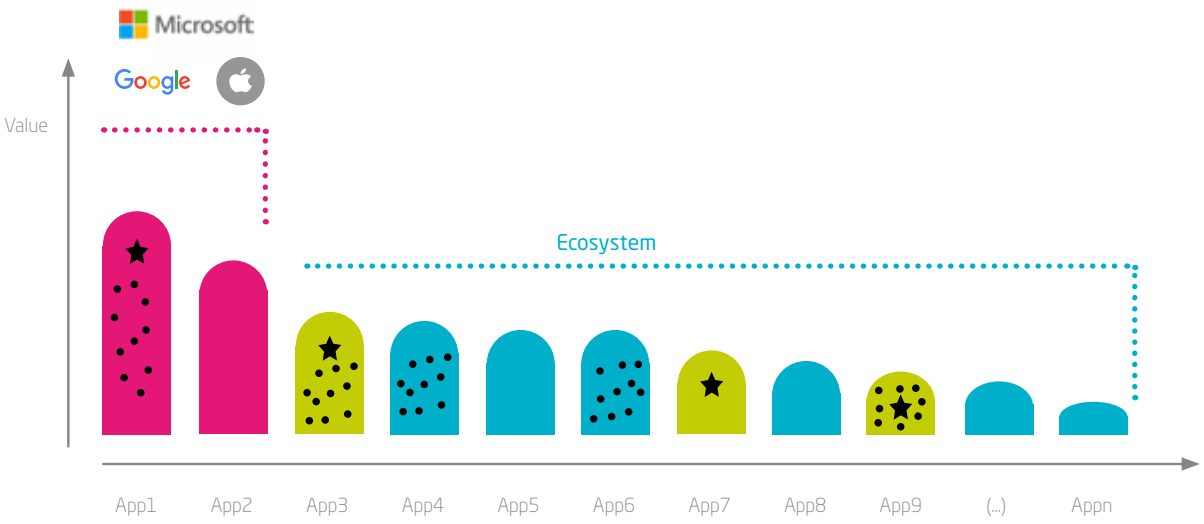
> *"We tried to create every feature in the world and said, 'ok, we can do it, why should we let a third party do it?' but we should have picked 5 to 10 key features that we totally focused on and let other people innovate on everything else."*
>
> Chris DeWolfe, MySpace (co-founder)



[5] The following terms will be used throughout this video-report: "M" stands for millions, thus US$80 M shall be construed as eighty million US dollars and "bn" stands for US billions (1,000 million), e.g., €2 bn shall be construed as two thousand million euros.

[6] Source: IDC. Smartphone OS, Market Share, August 2016.

What strategies did the platforms follow to accomplish their consolidation? Primarily two:



Rule 1: Absorb the highest value applications from the ecosystem. This adds value while eliminating the risk of disintermediation. iPad absorbed e-books, Windows absorbed Internet Explorer, Google created Gdrive as a copy of Dropbox.

★ **Rule 2**: Absorb features that repeat in the applications of the ecosystem (spell check, cut and paste, pdf, etc.). Doing so increases the efficiency, compatibility and power of other applications in the ecosystem.

Amazon is the epitome of digitization and platformization of retail commerce with the following stages:

- Amazon spent its first 10 years (1996-2006) attempting to reach critical mass, becoming a magnet through B2C business (mass consumer goods, books, music, etc.).
- Amazon Web Services was launched in 2006 as a B2B business to provide an infrastructure to shops who were using its B2C channel. This thus laid the technological foundation for its platform and a toolkit enabling them to connect with no technology barriers, which also reinforced its power of attraction.
- In recent years, Amazon has been expanding its role in society as a whole and providing new services (home delivery supermarkets, home repair technicians, *streaming* music, etc.), and thus becoming a central benchmark in the lives of millions of clients.

Digital platforms are business created *from scratch* as far back as 2000. The market value of the 15 largest[7] is ≈US$2,600 bn[8], which is comparable to ≈US$2,000 bn[9] of the world's 15 largest banks.

Amazon has a market capitalization of ≈US$390 bn[10]. But when was the last time you saw a commercial for Amazon? How many physical shops does it have? What is your regular attendant's name? How does it get such high recurrence with its customers? These are interesting questions that banking and other sectors should consider.

This business model, so successful in creating value for shareholders, clients and society, has not been explored by traditional banking, though it nevertheless is the model adopted by nascent digital banks (Atom Bank, Tandem, Monzo Bank, Starling, Fidor, Moven, Number 26, etc.) who are unburdened by the inertias of a traditional business. Their strategy is clearly summarized in the words of one of the CEOs of these banks:

[7] Primarily: Alibaba, Alphabet (Google), Amazon, Apple, eBay, Baidu, Facebook, Linkedin, Salesforce, Tencent, Yahoo.

[8] Source: Bloomberg.

[9] Source: Bloomberg.

[10] Source: Bloomberg, 31 October 2016.

> *I came to the conclusion that banking is broken, it needs fixing, and the only way to fix it is to start from scratch.*
>
> *What is different about Starling is that we only do current accounts, nothing else, but we are going to give the best current account in the world, and when they want the best mortgage in the world we are going to offer it, but through somebody else, not us.*
>
> *We will become the app store of financial services, providing the infrastructure, providing lots of tools around your current account.*
>
> Anne Boden, CEO Starling

In other words, the so-called "*challenger banks*" are attempting to platformize the banking business by taking the same first steps that entities such as Google, Apple, Facebook and Amazon took so many years ago.

- Excellence in 2 or 3 products, simple but a solid anchor: i) Current account/savings account; ii) Debit/credit cards; iii) Loans; iv) eWallet.
- Creating conditions so that third parties can build on their platform. The *building blocks* of a banking platform are: i) Banking *core* built from scratch; ii) API manager for connecting with third parties; iii) Processes, technology and infrastructure insofar as *compliance*, AML and KYC[11]; iv) Banking license that exempts them from being subject to the incumbents; v) CRM for managing their customer base.

The core of a banking business should increasingly be the abundance and quality of data and, in light of how banking systems have been built over the years, achieving this is clearly a herculean task. If this challenge is not met however, these *neobanks*, which are laying out a systems architecture catering to data, will soon have more value than incumbent banks.

Why is the topic of platforms in banking so important now? For two main reasons:

1. Three years after the end of the financial crisis, banking is still unable to resolve its profitability problem and the puzzle regarding the new management model with clients:
   a. Profitability. It is essential to recover the balance of ***RoE > Coste de Capital***. The new regulation, which duplicates the regulatory capital, this can only be accomplished by rebuilding the business so that a 15-25 point (%) reduction in the efficiency ratio is included in the results. Digital transformation is not a banking problem, it is its solution.
   b. Client 3.0. The Smartphone has changed their lives and banking can now take care of their needs. It will be essential to provide them with a new digital relationship model not based on offices but with greater value placed on managing their personal finances to thus recover a central position in their lives. Otherwise clients will be lost gradually with no possibility of recovering them.
2. The planets are aligned, so to speak, making this moment particularly auspicious:
   a. Technology. New technologies allow businesses to be reinvented in platforms:
      ✓ *Back office*: The cloud makes products/services available anywhere and in any situation. Big data provides surgical precision to ensure that these product/service offerings are relevant. This is how Amazon works.
      ✓ *Middle office*: APIs make a *real-time* connection between *front* and *back* (operational excellence). For both proprietary as well as third-party products. This is how Amazon works.
      ✓ *Front office*: *Mobile-Social* eliminates the friction in the consumption of the financial product and enables *excellent delivery*. Amazon, even though it has no proprietary product per se, works this way.
   b. Regulation. Especially in the UK, the concession of banking licenses to *challenger banks* has accelerated. The PSD2 directive is a clear boost to the economy based on open innovation through APIs.

Google created an extraordinary advertising business based on simple browsing data. The new technology lets banks mine customer transactional data, which are more valuable than data from mere browsing.

Google

[11] *Anti Money Laundering / Know Your Customer.*

c. Fintech opportunity. Now is the right time to join forces with Fintech and the platform model is the best way to put this into practice.

   While some said back in 2015 that this was going to annihilate banking, it now would appear that Fintech is in need of the scale and investment capacity that banks have. Banks in turn have not evolved their business sufficiently outside of *front* office initiatives to optimize revenue (*cross-selling, upselling*) or reduce costs (layoffs, branch closings), applying new concepts (digital banking, mobile, APIs, etc.) yet only on traditional business models!

99% of Fintech complements banking, not a business with a life of its own:

- ✓ Prosper and Lending Club (leaders in P2P loans in the USA) work with banks so that their clients can deposit their money, and the banks are investors in their capital, purchasing their loans or redirecting clients with a risk that they themselves cannot assume or even using them as a channel for holdings.
- ✓ The bank is a trampoline for the internationalization of Fintech in terms of scale and regulatory understanding. Also given its historical rapport with the regulator, the bank can render a controlled legislative change more dynamic.

Banking has the opportunity to become platforms, connecting, supervising and increasing the new services created *on top*.

52% of the Fortune 500 companies in 2000 no longer exist. The explanation is simple, they failed insofar as digital transformation.

Why the platform strategy is consistent with the reinvention of banking

Banks were designed before the digital era as fully vertical entities that controlled the entire business value chain: the design of products, marketing, distribution, contracts and processing. Similar to the automotive industry, other industries arose with the same approach but evolved differently.

The automobile became a mass consumer product in 1908, with Ford Motors' Model T. The company handled the entire process, from vehicle design to distribution. All the vehicles in fact were identical, which goes the same for current banking products.

> *"Any customer can have a car painted any color that he wants so long as it is black."*
>
> Henry Ford (1922)

The car industry has grown and changed substantially over the last 100 years. OEM manufacturers have abandoned the vertical structure and become platforms that, through efficient supply chains, integrate components from suppliers worldwide. This has generated an extraordinary improvement in the product, reduced costs and increased the satisfaction of customers, who surprisingly still want to buy a Mercedes, Ford or Toyota regardless of the name of the manufacturer.

Vertical banks are good at retailing impulse *commodity* products through their channels and moving paperwork between *front* and *back offices*. Their differentiation was based on the proximity of their branches. This model, together with its inorganic growth, created an enormous value for shareholders up to ≈2008. In 2007 the RoE of listed European banking was ≈19% vs. a cost of capital of ≈7.5%.

Indeed, in recent years they have made insufficient investments, neither in improving their products – contrasting with virtually all other sectors, particular the digital sectors – nor in transferring technology developments to the experience of their users. This has caused them to lose the central position that they had in the lives of their clients and now requires the deployment of a strategy that will enable them to recover this position.

This mainly calls for:

- Having a clear vision of the value proposition. This clearly calls for accompanying customers for the long haul to ensure their sustainable financial wellness.
- Adopting the most consistent strategy. It is impossible to always be the best at designing and furnishing all the products. It is essential to open the production architecture of the bank to external communities that create value and share with them. By this, we are referring to a platform strategy.

A platform strategy is appropriate for a traditional bank because it helps manage many of the limitations in its business model.

Traditional Bank		Platform Strategy
Obsolete technology. It is impossible to win the next war using tactics and weapons that helped win the last war. Only 10% of the banks say that they are making fundamental changes in their systems (75% of the IT budget devoted to maintaining the *legacy*). Frankenstein systems (coming from acquisitions) obstruct a 360º vantage point of customers.	G	Community specializing in applying new technologies to use cases. They work with light and flexible systems (cloud), reutilizing third-party components. Their lack of knowledge of the legacy problem affords them audacity in their approaches, which, while often oversimplifying the problems, provide solutions of value.
Individualism. While seasoned in working with numerous suppliers, banks have only exceptionally understood how to work with partners to provide their clients with greater value propositions.	G	The platform is not a *partnership*. Selling products on Amazon does not make us partners; there is no contractual relationship, and the risks and returns go unshared. The sole partnership that exists is with the client.
No culture of innovation. After years of technological stagnation, digital talent has not been cultivated sufficiently. The organization creaks at any attempt to transfer innovation generated internally to operations.	G	The ecosystem comprises innovation specialists. Their size and knowledge of technologies let them move with a swiftness that banks just do not have. Innovation separates itself (at least initially) from business as usual.
Mercantilist Perspective[12]. The goal is to create wealth for shareholders without prioritizing the value for the customer (not customer centric), since doing so would consume many resources.	G	Customer centric models, influence of GAFAnomics. They do not seek short-term profitability, since they consider that this will come naturally when there is real added value.

Building a digital bank is not merely a question of having the best app, quickest banking or lowest risk and cost business. The changes must be ingrained in the systems and architecture of the banks, and the ones who fail to seize the opportunity to reinvent themselves as platforms will be on the wrong side of the tendencies.

The most advanced banking has begun a race to provide a catalog full of excellent services that are convenient and low-cost under a single brand, though not necessarily created but rather supervised by them.

The winner will be the one who can best use them as leverage to deliver their value proposal, i.e., the sustainable financial wellness of their customers.

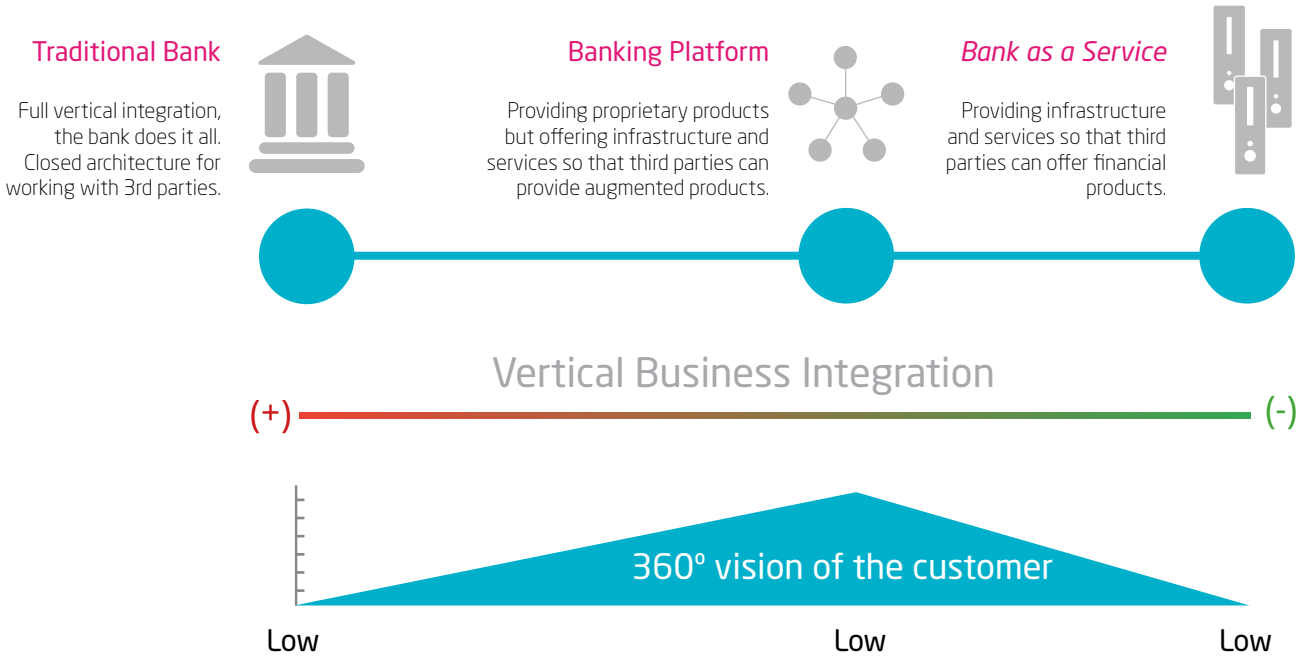
Adopting a platform strategy calls for the bank to de-verticalize, since it no longer needs to handle the entire business with its own means.

The degree of de-verticalization should be elevated, albeit without losing sight of the 360º vision of the customer, which is the key variable for providing valuable advice and thus avoiding becoming a mere technology provider that sells its services for a straight price.

> *"Technology has gone from being another tool to a difference maker at the center of a company's capability to compete."*
>
> Fernando Abril-Martorell, Indra Chairman (2017)

[12] Mercantilism is the economic doctrine dating before the Industrial Revolution. This doctrine considers that the creation of value is a zero-sum game, the customer's gain is not a gain for the shareholder. Therefore, mercantilism promotes the creation of value for the shareholder at a cost to other stakeholders.

In a banking platform model, smart data management affords an SEM (*Search Engine Marketing*) business model, one with which Google generates ≈US$70 bn (85% of its total income).



Google and Facebook are no longer alone in this regard as the most successful digital business models are following the very same design. Uber uses Braintree, a superspecialist in payment services; the world's top online travel agency Expedia uses Amadeus, a superspecialist in reservations, etc. Aware that if their payment or reservation systems could not be the best, they could afford to lose a percentage in turnover to ensure that the platform can gain more value and thus assure the survival of the current incumbents.

The revenue model will also change and banking must prepare itself for other models:

- The technology enables services, increasingly more valuable and cost-effective, to be marketed as "pseudo-free", in other words, with no need for the customer to make any express payment. Monetization is attained by building a symbiotic relationship between supplier and customer:

a. *Login* through Facebook is an API that lets users identify themselves on other websites. Facebook monetizes this service through advertising revenue, since this increases its social media traffic.

b. Google provides a search engine that gleans the browsing data of its users, monetizing them by auctioning off access to its users among its advertisers (SEM business model).

   Google knew how to create a business of ≈US$70 bn in advertising from smartly processing basic browsing data that do not even entail any transactions. A bank with a proper dominium of the data could build a similar business model and, similar to Google, auction access to their customers off to suppliers and service providers connected to its platform.

- Revenue sharing models are flourishing compared with advance investment arrangements or fixed payment systems. For example, Google transfers 85% of the revenue generated by Google Play to its developers, Apple 30%, BBVA Compass and JP Morgan redirect loans of up to US$250,000 to OnDeck in exchange for a commission, etc.

However, not all banks can transform their business models into a platform. Some, such as industry-specific or regional specialists who seek to be specialists rather than universal banks, can become part of the ecosystem of a platform sponsored by an incumbent bank.

> *Which ecosystem do I want to be part of?*
> *And what are the implications for my organization?*
>
> Brett King, Breaking Banks Radio Show

Priority work lines in the platformization process

Platformization requires working on the construction of three essential layers:

Technology layer.

To date, most banks have individually tackled "cosmetic" digitization on their own by modernizing the front end of the value chain with products such as mobile payments or self-service, though such steps are not enough.

It is essential to prepare the architecture of systems for connecting whatever from wherever as the only way to sustain income and contain costs (related to the RoE), and to have the flexibility that innovation requires (related to Cost of Capital).

The fundamental aims of this layer are twofold:

1. Eliminating technology barriers to promote:
    a. The entry of product suppliers who have the raw materials with which to build value (user data, infrastructure as a service, etc.).
    b. The development by internal bank teams of fresh value features for customers. To do so, banks must begin working on their API platforms, creating *sandboxes*. The competitive advantage over other banks increases as the system becomes more refined.
2. Providing excellent *delivery* to customers by:
    a. Rendering services with a user experience only comparable with the digital giants.
    b. Providing surgical precision to offers (the right service at the right time), which is only possible from the intelligence gleaned from data.

The prevailing mindset at many banks is still that CTOs are there to manage technology, which is not exactly the case. This may be the old way of looking at them, but it is not their job in the future. The CTOs of the future will be agents of change whose tasks will entail changing systems toward open structures based on the cloud, analytics, APIs, blockchain and Artificial Intelligence.

Governance layer.

The good old days when a company in any sector could claim with any certainty that "this customer is mine" are gone. Now customers are becoming less inclined to be loyal to brands and rather prioritize their convenience and scrutinize costs.

The smartphone caused this change and vertical banking has begun to be incompatible with this tendency. New regulations such as the PSD2, which requires banks to grant access to their customers' transactional records, are also siding with customers, who will in the long run benefit significantly from an expected reaction from banks in the form of greater added value and better prices.

How does the platform economy deal with that? By attempting to group a select group of proprietary and new product suppliers created on the basis of the interaction with the community and then incorporating a consulting layer. Doing so transforms the platform into a *one-stop-shop* that reduces a customer's incentives to choose a rival.

This approach, however, if brought to the extreme, could result in some problems:

- For customers, the model would require a greater effort from them to identify the most appropriate product.

  Most customers will prefer to have this task handled for them by someone they trust either because they don't have enough understanding or because they don't have the necessary time.

  This is a way for the bank to highlight one of its most important assets, *trust*.

- For banks,

  a. More producers make it difficult to provide customers with a comprehensive experience (e.g., after completing the KYC process on the platform, there should be no need to repeat it, the collection system through the different services should have a consistent template).

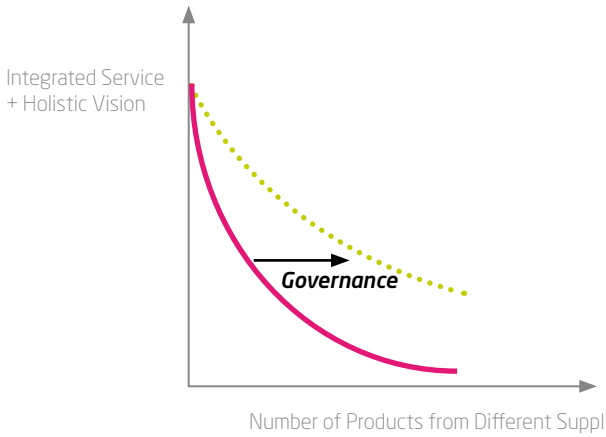
     Amazon does not sell its own products but rather the products of thousands of third-party suppliers. Despite its expansive breadth of its catalog, Amazon nevertheless provides a integrated experience. Banking should be easier, since the catalog is not as extensive.

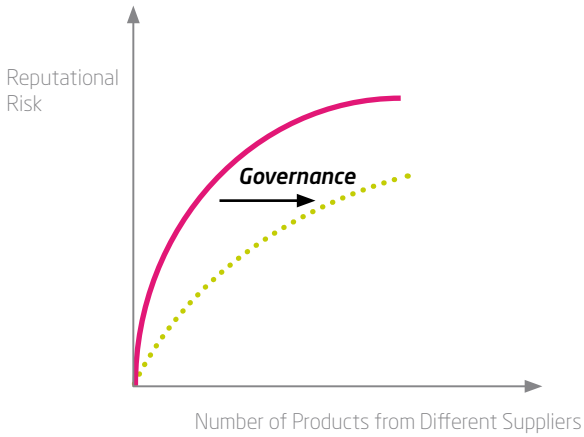
  b. The bank's holistic vision (360º) of the customer could be easily lost as the number of producers grows, thus diluting the strength of value advising, which should be the greatest contribution of the bank.

  c. As the number of producers grow, so will the potential reputational risk that some supplier fails to fulfill the quality standards or regulatory requirements.

  d. Etcetera.

Banking has acquired a new governance/ supervisory role that requires the definition of technical and business standards to be able to connect to and form part of the brand's ecosystem.





This approach differs from vertical banking in that it starts from the premise that the customer is no longer "ours" and needs to be attracted, and that merely managing the efficiency ratio no longer suffices to ensure the sustainable profitability of the bank.

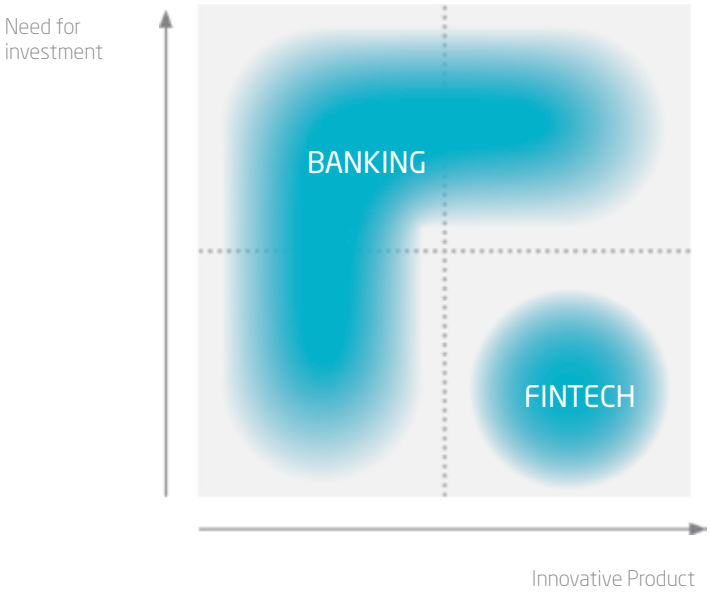
Customers will be able to select the most suitable products and services from an extensive range of products and services not necessarily created by the bank. This would be impossible to carry out with the current closed architectures, since the incorporation of new products at a bank could take months because of the need to modify the legacy for each product.

What sort of products should be promoted by Fintech and by the bank?

The answer lies within the limitations and virtues of each one insofar as Fintech has creativity and boldness yet lacks the investment wherewithal, and a bank has a greater investment capacity yet is more conservative.

The frontiers in this regard are not all sharply defined in every case yet hybrid models are possible, e.g., user experience led by Fintech without a risk analysis, which is conducted by the bank.

For example, the Swedish company Klarna turned offline purchasing (in an actual shop) through online payments (card) into online purchasing (payment method for electronic commerce) with offline payments (payment occurs after the product is received and checked). This eliminates the risk for buyers and sellers alike, provides a smooth *checkout* (only the tax identification number is provided) and precludes the disclosure of sensitive personal data. Klarna runs an online risk analysis whose level of complexity depends on the country; which is where a bank could provide its data and knowledge.



> *A tarnished reputation is incompatible with business sustainability.*
>
> Gonzalo Gortázar, CEO CaixaBank (2016)

Consulting layer.

Some refer to platformization as the "death of the banking business because it loses its relationship with customers".

We think that this loss of relationship is already occurring, anchored in the physical office model or with products such as Apple Pay or PayPal, which do not allow the bank that issued the card to view the transaction data after having spent millions of euros in promotion so that their customers use it. So would this situation be exacerbated if Apple were to opt for the disintermediation of Visa and MasterCard networks and connect directly with the bank?

Among the so many other benefits, platform strategy will let banks focus on the most differential task with greatest added value, i.e., advice, in which regard banks have no rival and are thus primed to assume leadership. If successful, banks can build a lasting relationship with their customers.

How did some of the benchmark platforms accomplish this?

Average annual revenue growth of Amazon

Amazon has developed a certain proficiency in profiling its customers and understanding their habits. Using advanced analytics, Amazon remains one step ahead of its customers and can suggest useful purchases that often the customers themselves had not even thought of.

Customers are consequently more willing to pay a higher price for a product and their loyalty is thus reinforced, since they will see the use of their data as a value more than intrusion. In contrast, a bank provides financing for a car or house after the customer has already done the searching. Amazon is a service company, the products are from third parties and are often hardly differential, can be found in other shops and are a simple reason for which to run a business, virtually 100% digital for the convenience of and at the optimized price for the customer.

Banking is also a retail business, albeit for financial products, differing fundamentally in that payments for financial products are made over time, which is not the case with Amazon. In this regard, it is essential for banks to not only attract customers but also look after their solvency following the sale to forestall any problems with payments. Moreover, becoming an advisor for customers will yield new data and enable entry into a virtuous circle that will, over the medium term, let banks form an integral part of their customers' lifestyles, permanently assisting them to accomplish the goals that are relevant to them.

This is the best formula to broaden margins (related to RoE) and achieve recurrence (related to Cost of Capital).

Difficulties in progressing toward a platform

Amazon needed 20 years to build a platform that not only is the current benchmark in retail but also has an increasing role in society as a whole.

The starting point for banking differs in that it is an already functioning business but it also has burdens of a business that will no longer be useful in the future. Which is heavier, the advantages of a running business or its burdens? In any case, banking will need 10 years to reach a similar level of maturity.

Some of the challenges that will need to be resolved include:

1. **Leadership.** A different business calls for a change in direction with no resistance to the change but with the same long-term vision held by Jeff Bezos (Amazon), Larry Page and Sergey Brin (Google), Mark Zukerberg (Facebook), Steve Jobs (Apple) or Jack Ma (Alibaba), who were the strategy leaders, and their equity depended on the long-term value of their companies.

   It is an error to think that the current model will last another 10 years; the traditional safeguards are now no longer effective (banking licensing, regulation) and the margins will continue eroding with very low interest rates and Fintech pressure in the most profitable areas of the business (payments, etc.).

The needs will include:

a. Vis-à-vis shareholders, taking on and defending a short-term deterioration in the Efficiency Ratio and RoE (because of technology renovation expenses) to benefit the sustainability of market capitalization.

∇ RoE$_n$ $\neq$ ∇ *Total Shareholder Return* [13]

b. Vis-à-vis the executive team, taking on and defending the irreversible end of the traditional business and the start of a new stage, one in which the digital business will cannibalize their revenues. This matter, which always generates friction within the organization and senior management, must be managed by, for instance, modifying the management KPIs.

2. **Technology and Talent.** Today banking is not the most attractive workplace for the talent pool currently transforming the other industries who will be called upon to resolve the critical problems for the future of banking such as security, which has jumped into a new dimension through open architectures.

3. ***Legacy.*** Banking will necessarily have to disinvest in the old business. This entails a continuous closing of branches, staff adjustments, termination of commercial agreements that are inconsistent with the new strategy, etc. These steps will all entail a reputational impact that will not be easily managed.

4. **Regulation**: The regulator must understand the complexities of the new strategy and adapt (data property, liability in consumer protection, compliance with AML legislation, etc.). This is an opportunity for banking to capitalize on its historic rapport with the regulator, which is a clear advantage over the *challenger banks*.

   New types of banking license models will continue appearing, depending on the business model and its corresponding risks, but a full banking license will not always be necessary. Some of the Fintechs that only provide services in some of these layers will not require the same licenses as vertical banks.

It is essential for banking to assume a posture of very strong leadership in this business model (which is how the GAFAs did it) or run the risk of disintermediation, thus compelled to become a utility.

> *"You must have strong technology expertise within the leadership team of the bank. If you do not, you are going to fail."*
>
> Chris Skinner, *ValueWeb*

The RoI of the innovation is that your business will still exist in 5 years.

[13] An investment or expense that could undermine the RoE of banks for one or multiple periods yet boost the market capitalization after proving to be the right decision, resulting in greater returns for shareholders.

According to Ovum consulting, the revenues lost by Telcos compared with VoIP providers and instant messaging networks (such as WhatsApp) in 2016 at a global level is estimated to have topped US$100 bn.

Revenue lost by the Telecom sector compared with OTT (*Over The Top*) operators, 2016E

Source: Ovum TMT Intelligence, 2015

What is the relation between the new European Payment Directive (PSD2) and banking platformization?

PSD2 will force banks to open their systems to external providers, most likely through APIs, so they can furnish two types of services:

1. Account Information Services (XS2A). Under mandate and express authorization of the customers, suppliers can access transactional information on their accounts.

   From the analysis of these data, the provider can furnish added-value services (aggregated vantage point of the position in various entities, analysis of the composition of expenses and presentation of more suitable alternatives, etc.).

2. Payment Initiation Services. Under mandate and express authorization of the customers, service providers can use online retail, social media or a messaging app to offer payment services by accessing the buyer's bank account and transferring money. This is done via software, creating a bridge between the business and the bank.

PSD2 is a *de facto* conversion of banks into platforms and sets them on their way to connectable architectures with two possible options:

- The bad. Swimming against the current. In other words, complying with the regulator and doing the essential minimum to avoid fines and penalties. Continue pushing traditional banking and maintaining the APIs as an additional regulatory obligation. Missed opportunity, since legacy systems do not easily support XS2A with sufficient flexibility to generate new business opportunities.

- The good. Harnessing the regulatory resolve to develop a firm API strategy, a "building block" for capitalizing on new external business opportunities, invigorating the innovative capabilities of in-house staff and preparing the organization to take on any disruptive initiatives with ease.

An API strategy is transformation and therefore requires cooperation among the different departments in the organization, business and technology.

03 BLOCKCHAIN, A KEY TECHNOLOGY REINVENTING BANKING

Reading time
50´

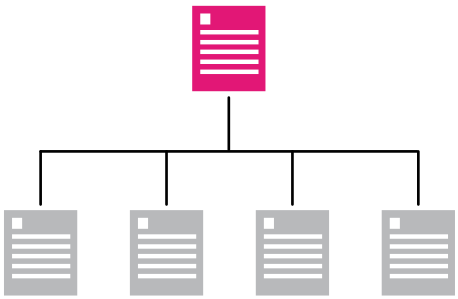
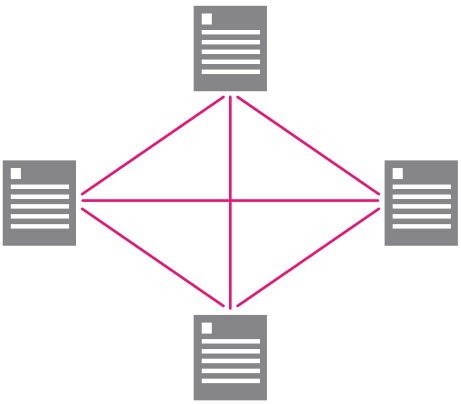
Blockchain is a massive database for collecting transactions made by the agents connected to it.

Yet not every transaction; once one is made, the participants must first go through a verification process before a record of it is registered and consensually decide whether or not to validate the transaction.

When validated, the transaction will become part of the database forever and with the guarantee that it can never be altered.

The transaction database that will be built is read-accessible to all its participants. Becoming a participant will depend on whether the blockchain is designed for free access (*permissionless ledger*) or access by invitation (*permissioned ledger*).

Unlike the classic model, there is no need for a central entity to manage operations or the database throughout this process.

Current Centralized Records	Distributed Records
	

- Traditional systems trust a central authority to generate trust and transfer value.
- Money moves among the participants and the central authority records transfers to preclude any sort of scams or tricks.
- The participants then carry out expensive conciliations with their own systems.

- The system per se provides the trust and not the authority that the participants granted to a central entity.
- The participants collectively validate the changes, which are updated throughout the network, virtually in real time.
- The system has a huge potential to accelerate transactions, improve transparency and reduce costs.

Source: "Distributed Ledger Technology: Beyond Block Chain" UK Government Chief Scientific Adviser 2016.

Why are there such big expectations surrounding this technology?

Because under this simple explanation lies the first camouflaged yet nevertheless serious attempt of the technology to resolve one of the biggest problems facing the economy since the beginning of economy itself, namely providing the parties to a transaction with the confidence necessary to make an exchange of value without the intervention of intermediaries.

Blockchain is the creation of the first irrevocable and unalterable public record with end-to-end traceability capable of programming the money before fulfilling a predefined condition.

Blockchain or Distributed Ledger Technology?

Distributed Ledger Technology (DLT) is a more appropriate term than blockchain, since the technology entails four key pillars, of which only one is blockchain:

1. **Blockchain**. As explained above, it is a database that registers the records of transactions made by the connected participants. The transactions are grouped into blocks and organized (linked in chains) in chronological order. The registration of these transactions are replicated and synchronized in the systems of all the participants.

2. **Digital Signatures**. A system of public-private keys used to identify the parties, authorize and verify transactions, and guarantee their integrity and inviolability.

3. **Consensus mechanisms**. A set of technical rules designed for ensuring that the participants who register and process transactions reach an agreement to identify valid transactions, which are thus stamped into the blockchain.

4. **Cryptocurrency**. Encrypted token that either: i) represents a certain value (e.g., Bitcoin), or ii) is used instrumentally to digitally convert an asset (share, bond, etc.) for transaction, i.e., change its ownership.

The appearance of DLT technology is the result of a logical and natural process, which favors medium-term consolidation.

Similar to so many other transformational technologies of the past, this one per se represents neither a threat nor an opportunity. While the book has yet to be written, the first step will entail, as always, getting the strategic analysis right and then taking consistent steps forward with full resolve.

> *(...) strategy is **pain** and if your strategy is not profoundly painful to you and uncomfortable, you're not very strategic. Really, strategy is a list of all the things you're not doing.*
>
> Reed Hastings (2016), CEO Netflix

DLT, the missing link in the evolution of digital technology

Since the beginning of time, the universe worked in a four-dimensional space — three dimensions of space, and one of time.

1995

Technology began to appear around 1995 that would allow us to, in only 15 years, digitize and share almost everything in the world around us at a minimum cost. Digitizing something changes its operating rules forever.

During the first 10 years, Internet 1.0 was technology's darling[14], since it allowed us to transfer digitized information easily and at an unknown cost. The flow of this information was generally one directional (press websites, portals, etc.). The digital phenomenon grew following three basic rules:

1. In direct proportion to Moore's Law, which was acceptably albeit rigorously followed:

> *"Equal to the cost, the power of the chips duplicated every 24 months."*
>
> Gordon Moore, cofounder of Intel (1975)

2. In direct proportion to the generation of new, diverse and quality contents (the useful "copy-paste" generates no value), which took some time to appear, since there was a need for a minimum number of users to adopt it.

3. Inversely proportional to the lack of trust among the participants, a problem that has yet to be completely eradicated.

> *"On the Internet, nobody knows you're a dog."*
>
> The New Yorker (1993)

[14] Cell phones were also developed, though they represented more a technology of convenience in the first years (being always reachable). The real leap occurred with smartphones (2007), which opened a new path for developing new business models.

2000

The Internet bubble burst in 2000 because of a combination of factors, including:

a. Immature technology. Bandwidth was still insufficient and infrastructure was very expensive;

b. "Intellectual" immaturity. Content was low quality and not easily accessed (smartphones did not exist at that time).

Even though most business models went belly up, Internet became the universal connection protocol and gave birth to a new dimension in the universe, i.e., the digital dimension, referred to by some authors[15] as the fifth dimension, with characteristics that clearly differ from the other four: i) eliminating geographic barriers, ii) regulatory obligations not easily enforced, iii) no distinction among nationalities, iv) questioning concepts that had previously been considered to be clear such as "identity" or the meaning of feeling "secure", etc.

2005

Around 2005, Internet had reconfigured most of the economy and personal relationships. Exchanging digital text, voice and video became the norm for communications. There was a multitude of flourishing business creating extraordinary value. Internet 2.0 forever changed the way we relate with one another, giving a voice to anyone with a connection and affording omnidirectional communication through social media. Appearing in 2008, smartphones were capable of expressing the potential of mobile internet networks as a final push for communications and business models.
The digital dimension adjusted its operating rules to the latest developments:

1. The incorporation of Metcalfe's Law, a key principle that popularized the *network effect* theory:

> *"The value of a network is proportional to the square of the number of users."*
>
> Robert Metcalfe,
> 3Com cofounder (1976)

This law evinces the importance of speed as a key competitive variable that enables positioning in emerging categories, since it produces an effect referred to as *winner-take-all* and, in any case, the need for digital businesses to reach a minimum critical mass to be able to make economic sense.

2. The emerging models providing cloud infrastructures downplay the relevance of Moore's Law as it becomes increasingly cheaper, scalable and flexible.

[15] The Fifth Dimension: Digital (José María Fuster), Instituto Español de Estudios Estratégicos (Spanish Institute for Strategic Studies), November 2016.

2010

A radical change occurred in 2010 regarding the way society interacts and in the production of goods and services. However, despite the new technologies enabling connections to economic agents and data exchange, economic transactions still follow a pattern that has remained unchanged for centuries, though absolutely gaining all the speed that the laws of Moore and Metcalfe would seem to indicate. These economic transactions always run into the same bottlenecks:

a. Payments, particularly international payments, are too slow and expensive. This is the norm, however, since payment systems were created before the Internet, built country by country as closed networks.

b. It is therefore difficult to make transactions, especially at a distance, since we normally do not know or fully trust our counterpart. This inconvenience is usually an **added** detraction to the foregoing.

These situations call for a third party, normally banking, as a bearer of trust and confidence, channeling and guaranteeing the payment after the terms of the agreement are fulfilled. This role of trust and confidence is braced by such ethereal concepts as Fiat currencies[16], trademarks and corporation names.

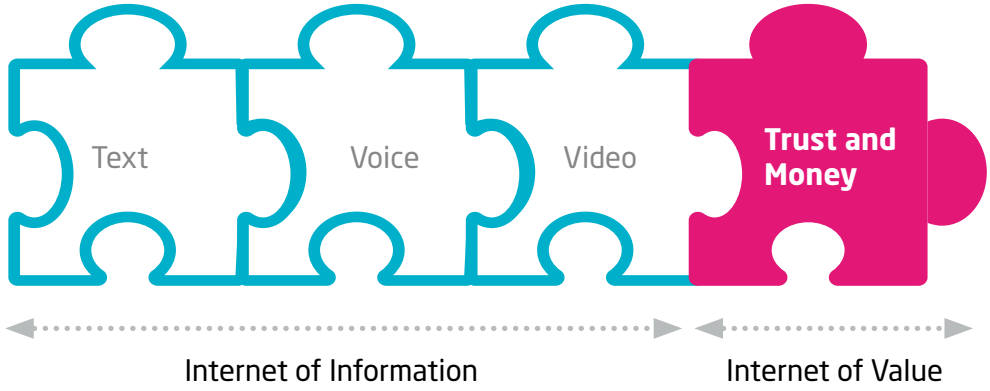
Elements of an economic transaction	
New, more agile and cheaper ways of connecting parties.	Resolved before 2010
New, more agile and cheaper ways of exchanging information on the intended business.	Resolved before 2010
Securing trust between two or more unknown parties.	Not resolved before 2010
Facilitating agile and cheap payments between two or more unknown parties	Not resolved before 2010

16 Since US President Nixon ruptured the gold standard in 1971, currency has been Fiduciario or Fiat, and its value is based on the trust that the community has in the issuing entity (Federal Reserva, European Central Bank, etc.).

Throughout history, a revolution in finance has gone lockstep with progress in technology and commerce. The Chinese invented paper money to trade over greater distances without having to physically carry gold. Checks or credit cards also arose as new ways of economic exchanges.

New times and globalization call for a new, universally accessible, neutral, free and real-time infrastructure for completing digital transactions. Otherwise, a full digital transformation cannot exist.

DLT appears to be the piece to complete the 5th dimension puzzle and will be truly transformational if it can solve a problem that has been unsolvable since the beginning of time, i.e., parties who share a common interest to undertake a transaction yet lack trust in one another.



DLT, together with the mobile internet network (smartphones) is creating Internet 3.0, also referred to as the **Internet of Value**, which could initiate a transformational stage superior to both Internet 1.0 and 2.0.

Why DLT is a threat to traditional banking

Only 50 years ago, calling from London to São Paulo was very expensive and required the intervention of an intermediary (operator). Making that same call today is not only free (VoIP) but also automated. Voice digitization has generated extraordinary advances in terms of service and costs for users.

However, sending a payment from London to São Paulo via the SWIFT network[17] is expense and takes several days. This is the price we pay to have the peace of mind that the money will arrive and be rigorously accounted for.

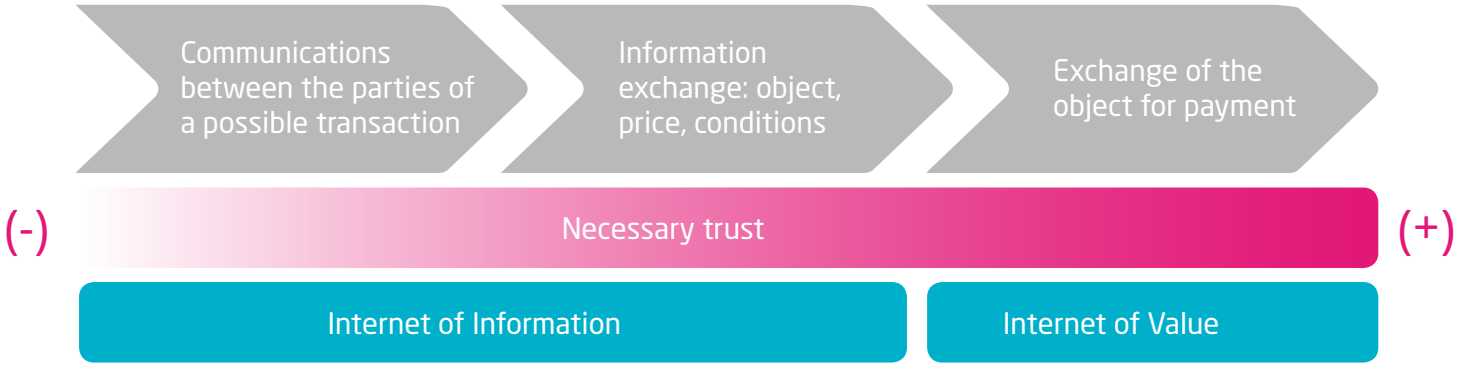
Having banking provide the trust and infrastructures necessary to move money became unquestionable over time and because it was economically and technological infeasible to set up an alternative infrastructure outside the "official" system. Banking never felt the pressure to transform this, but the reality is that this type of consolidated yet nevertheless inefficient infrastructures is part of banking's legacy.

Internet, which has been transforming and disintermediating multiple industries since 1995, has not had a significant impact on payments. The sole "innovation" was PayPal, which is really a layer on the infrastructure of traditional cards. Nonetheless, two new technologies appeared in 2008-2009, albeit with different degrees of maturity, that when combined together, could result in an unprecedented transformation:

- Smartphones (mobile data connectivity). Their extraordinary capillarity enables virtually the entire world's population to exchange data via peer to peer (P2P). Moreover, each device can immediately become a collection or payment terminal for commercial operations at no charge.
- DLT. This technology affords the potential to rigorously record and account for digital economic transactions, providing the essential magic ingredient to make an agreement and render the trust in the value exchange. It is also a *value store* technology.

The conjunction of both technologies enables the creation of a free and fully capillary universal infrastructure to complete transactions. Being free will ensure that it is globally adopted, which is its true value in the long term according to Metcalfe's Law (*network effect*).

If Internet 1.0 and 2.0 (**Internet of Information**) enable the exchange of information and relationships with each other, necessary (yet not sufficient) for doing business, Internet 3.0 (**Internet of Value**) enables the exchange of economic value and now the completion of a transaction in real time:



A SWIFT message costs US$0.04 USD but the price of an international transfer for a customer is US$5.50. It is clear as day that "something inefficient" is happening at some point in the process. Blockchain is capable of making transfers of US$80 million for the same cost (US$0.04) in real time and 24x7x365.

The key for future payments is to enable the exchange of P2P through the mobile network. With this space, specialists step in to simplify the process such as Venmo or Klarna, and incumbent banks can hardly compete because their systems and structures are too rigid and outdated.

[17] This network pertains to the banks and was founded in 1973, many years before the birth of the Internet, though its technology has been updated. Its security has nevertheless is being put to the test after receiving several attacks entailing robberies worth millions.

So far it would appear that DLT is not as transformational as it is a twist of the screw to tighten up the efficiency of the payment systems, making them more cost-effective and convenient (mobile + real time). However, this conclusion is not wholly correct:

1. **Firstly**, for the underdeveloped world, having a trustworthy infrastructure for making payments and safeguard value is transformational for the 2,000 million *unbanked*, more so than Internet 1.0 and 2.0 could have been. This is a giant leap that will give them access to trading goods and services, savings and, ultimately, progress.

   The condition of *unbanked* occurs because either the traditional banking infrastructure is lacking or billions of people fail to meet the minimum requirements such as the need to have a credit history or other conditions like KYC that are in fact imposed in the developed world. DLT clearly has potential to solve these problems.

   Underdeveloped nations will eventually become developed and get financial services, though they will never know how banking was in the West toward the beginning of the 21st century. They will skip this phase and go directly to the next, i.e., digital banking.

   What is currently at stake is ascertaining whether this "free space" will be occupied by incumbent banks, GAFAs, BATs (as we are beginning to see in India with the PayTM payment system) or another, unexpected actor leveraged by some new technology.

2. **Secondly**, and perhaps more relevant for the developed world, DLT is a technology whose potential functionality is much broader than the media-polarized Bitcoin or simple value transfer. *Smart Contracts*[18] enable execution of an action in the blockchain (e.g., a payment) linked to the completion of a specific event such as the reception of a good, purchase of a share on the stock market or the accrual of interests on a bond.

   Currently, many of these processes (e.g., *clearing & settlement* of shares) are within the orbit of the banking business and form part of the added value of its business.

   Similar to payments, these processes suffer from obsolete technology and entail manual processes that can clearly be improved. DLT as an alternative could have a twofold value proposition: i) database shared by the stakeholders "by invitation" (vs. databases built in silos); ii) able to automate part of the manual processes.

3. **Thirdly**, the new technology enables the development of a large amount of value services whose natural provider is banking. For example:

   a. **Identity gateway services**. For use by society in general when accessing all sorts of services, whether banking or not.

      While the identity problem is clearly complex and cannot be fully resolved with DLT, this technology is part of the solution the problem and banking is the best positioned sector to lead the new concept of identity arising with the digital revolution.

   b. **Credit history construction services**. For use by population pools that have had a relationship with banking (e.g., because they are working in the shadow economy – some 15-20% of the economy of the European Union[19] or simply a young person who is beginning to have a relationship with banking).

      Technology is an inviolable record of historical transactions, which constitutes the very essence of a credit history. Banking is also the best positioned to take the reins on this project.

   c. Etcetera.

How would the banking sector be affected if the system incorporated 2,000 million *unbanked*?

DLT has the potential to radically redefine the cost structure of many processes associated with the banking business from the ground up.

18 They are neither contracts nor smart, but simply applications running on a DLT infrastructure.

19 Source: European Commission.

Why is Bitcoin DLT's most paradigmatic use case?

Etymologically, the word *Money* comes from the word "memory".

Money is a token with no intrinsic value for conserving the memory of a credit granted to its bearer and against an entity of trust (e.g., a central bank) because we believe that it has a predictable behavioral pattern[20], though this trust is not always honored in reality (e.g., currency devaluation).

Society has entrusted the banking system, because we are trustworthy, with handling the accounting, database, who-has-how-much and who-owes-whom (with the exception of cash, which remains outside its control). Notwithstanding the records and unlike DLT, they do not have an encrypted system capable of preventing malicious posting lines.

The existing similarity in the definitions of DLT and Money is therefore rather surprising in that even with different words they seem to be defining the same concept.

Bitcoin is a good DLT use case. There are nevertheless serious roadblocks to its widespread adoption due to circumstances unrelated to its technological robustness.

The beginnings of any technology are always difficult. In 2000 many considered cell phones to be pure snobbism and internet banking as insecure. There are still more arguments with DLT:

1. **It questions the established order.** For retail banking and central banks that could lose control over monetary policy. The Federal Reserve, Bank of England and Bank of China are already examining their implications and a scenario in which backed cryptocurrency would be issued.

2. **It deals with money.** This means that the regulator and users must handle its adoption with the utmost caution. This affords an opportunity to banking, since something lacking in transparency or regulatory guarantees cannot be used as a value store.

3. **It is an intellectual challenge.** It requires a minimum understanding of several technologies, some complex such as cryptography. It is also a way of thinking differently. Some say that DLT invents a new way of computing (similar to the cloud in its day), referred to as "consensual" computing.

4. **It is difficult to use.** Today it is not *user-friendly* technology, though it changes quickly (with companies such as Circle). But neither was Internet at the beginning until Sir Berners-Lee invented the World Wide Web[21].

5. **It suffers from a certain legal vacuum.** The actual legal and technological "wild west" back in 2010 has begun to civilize. Firstly, many legal concerns have begun to be clarified following intervention of the regulator and by the creation of sector-specific associations (R3). Turning to technology-specific issues, there is a need for some sort of Bitcoin Foundation with three objectives, i.e., standardize, promote and protect the infrastructure of the technology. Internet went through this same process.

[20] For example, gold was the perfect universal currency during centuries because the quantity of gold (and therefore its value) was likely not going to change substantially over the medium term. Bitcoin is often criticized for being "anarchist currency", interestingly equal to gold until European kings began printing their images on coins.

[21] British scientist, father of the World Wide Web. He established the first client-server communication through HTTP in 1989. In 1994 he founded the World Wide Web Consortium (W3C) to supervise and standardize the development of technologies upon which the web would be built so the Internet could work.

Despite these difficulties, the Fintech sector is attempting to reinvent the banking business, basically by simplifying processes. To do so, it is using technologies that are cost-effective and/or have superior features. DLT fulfills both these conditions. It is cheaper, works in real time and permits the transfer of digital assets (tokens) which need not necessarily be money (for instance, they could be "*likes*" or "*shares*" received by a Youtuber that could ultimately be converted into money as advertising revenue).

Banking cannot compete in terms of speed, which is a key competitive key (the *winner-take-all* effect). The strategy could therefore include not only internal developments but also cooperation with Fintech and the implementation of best practices, some of which are being created on the Internet of Value.

In short, the exclusivity of banking in handling payment networks will disappear, thus losing the capability for generating income.

The ancient strongholds of back-end transaction processing and data storage are also losing their value because new technologies are commoditizing these capacities and opening the door to other providers who can offer similar yet cheaper services because they are employing lighter structures.

The opportunity lies in developing services (proprietary or via third parties) on this infrastructure that bring value that is superior to simply moving money from one place to another.

While still in its infancy, DLT promises to democratize access to the elitist banking infrastructure (similar to what the cloud did with the technology infrastructure), since an open standard is capable of equipping networks with a functionality that is superior to their banking counterparts.

> *"If you are a Fintech player, you need to talk to a number of VCs, and all it takes is for one of them to say yes and you can launch your product. In contrast, at a big bank you probably need to talk to a large number of people before you can launch a product, and all you need is for one to say no and it doesn't happen."*
>
> Eduardo Vergara
> Head of Payments Services, Silicon Valley Bank

Why DLT should be an opportunity for digitally reinventing banking

The essence of digital transformation consists in changing processes and the technology implemented to move "paperwork" within a local branch network to other, different processes and technology whose architecture should be capable of moving data in highly-capillary global distribution networks that operate in real time.

We are at the threshold of the creation of Internet 3.0, the Internet of Value, and similar to what already happened with the Internet of Information, it will take years to consolidate, though when it occurs its impact will exceed all our current expectations. The first email was sent 1971 and Sixdegrees (1997) not Facebook (2004) was the first social network. The Venture Capital, which rarely misses on identifying tendencies and serves as a contrast test, since it invested nearly US$1.5 bn[22] searching for the fresh pearls that were once merely Amazon, Google, Twitter, Facebook, etc.

The most cutting edge incumbent banks and Fintech have already begun building the new financial system. They are doing it on this new central infrastructure, i.e., the Internet of Value, which will unavoidably replace the obsolete world of physical banks operating with physical money. The digital transformation in banking is not possible without dominating the operating standards of what will be the new value exchange market.

While the new paradigm presents threats that are reasonably identifiable and substantially concentrated in the financial sector, it also entails multiple opportunities to achieve: i) cost savings by applying the new technology to banking processes and ii) new income streams only restricted by the limits of the imagination in the creation of new business or service models.

Capitalizing opportunities requires leadership, knowledge and an economic analysis whenever reasonably needed:

1. **Leadership in Senior Management.** Transforming banking goes beyond doing things more quickly with less risk and a reduction in costs through automation. Such a view would be too simplistic. DLT enables the reinvention of exchange structures.

2. **Knowledge.** Technical knowledge of DLT and in-depth knowledge of current banking operations. This will enable the identification and re-imagination of potential use cases at least from a technological point of view.

3. ***Business Case.*** Necessary when attempting to render processes more efficient, since new technology is actually competing with, but not necessarily superior to, current technology (SQL databases, etc.). For example, real-time centralized payment systems existing in several countries are capable of handling large volumes with very low costs by harnessing economies of scale, which are not easily improved upon.

   When dealing with new services, innovation in its strictest meaning, creating a solid *business case* cannot be easily done, since it would entail entering unknown territory.

> *"The potential impact of the distributed ledger may be much broader than on payment systems alone. The majority of financial assets – such as loans, bonds, stocks and derivatives – now exist only in electronic form, meaning that the financial system itself is already simply a set of digital records."*
>
> Bank of England

[22] Investment accumulated up to 4Q 2016. Source: CB Insights and in-house research.

What are the keys for identifying use cases?

Cost Savings

- **Shared information**. DLT is a database that, by design, has become a "single source of truth" for a set of connected stakeholders with common interests. This ensures that each one need not have its own record[23] and then manually reconcile *peer-to-peer*.

  In general, banking is a network of stakeholders with mutual trust (if such trust does not exist, such as during moments in the Lehman crisis, loans are suspended), with the supervisor requiring the observance of common practices that must be conserved.

- **Elimination of intermediaries**. Similar to the previous case, differing in that, given the type of operation, investment was made in an entity as a trusted third party so that the record is made and the operation carried out. The "single source of truth" replaces the traditional *clearing house*.

- **Task automation**. 25% of the tasks carried out by the staff of a bank can (and should) be automated through *robotics*. 20% of these tasks consume 80% of the total processing cost.

DLT contributes to this profitability through Smart Contracts, which enables actions to be launched in the blockchain (e.g., a payment) in the case of a predefined condition. Automation reduces human handling (errors) and therefore reworks and operational risks.

✓ *Compliance*. Technology provides more transparent and traceable transactions, and is irrefutable proof of the existence of a non-editable record. This opens up considerable prospects to alleviate the regulatory burden and provide other processes such as auditing and corporate governance.

✓ Agility. DLT works in real time as a shared database. This avoids reconciliations while streamlining processes, thus mitigating credit risks and releasing liquidity.

India's largest private bank ICICI has robotized 20% of its back and middle office tasks, enhancing its efficiency ratio from 41% to 35%.

[23] Ownership of assets, balances receivable / payable, etc.

New income streams

Banking is up against a need to generate new income streams, since many of the traditional streams, including the renting infrastructures to channel value exchange, will continue dwindling until nonexistent.

The possibilities of accomplishing this by working on the new technology are extensive yet impossible to foresee; even on the consolidated Internet of Information, where new uses continue surprising us every day.

Some of the key leverages on which to build these services are:

- **Real-time functionality, which shortens timelines, enables instantaneous recalculation of positions and offers services at a lower price in batch mode, e.g., taking out theft insurance after the purchase in a jewelry shop.**
- The possibility of providing **identity and payment services in the IoT world**[24]. Neither identity nor payments, at least not as they are currently perceived, are ready to render service to the IoT. Connected objects require:
  - ✓ An identity that unequivocally and inviolably links them to their owner while permitting an authorization structure for certain operations (e.g., make an order).
  - ✓ The ability to make payments without express consent (through a preauthorization system), that are programmed or can handle quantities that are unusual nowadays such as micropayments (amounts < €1).

The IoT cannot be developed without a transactional layer enabled by a cost-effective, real-time technology that is easy to use and secure to exchange value and identify connected objects.

In banking that had never borne so much pressure to reduce costs and differentiate its offering, it is essential to begin working on both lines, cost savings and new income streams, though fully aware that investments will most likely be several years away from generating savings or revenue.

24 *Internet of Things.*

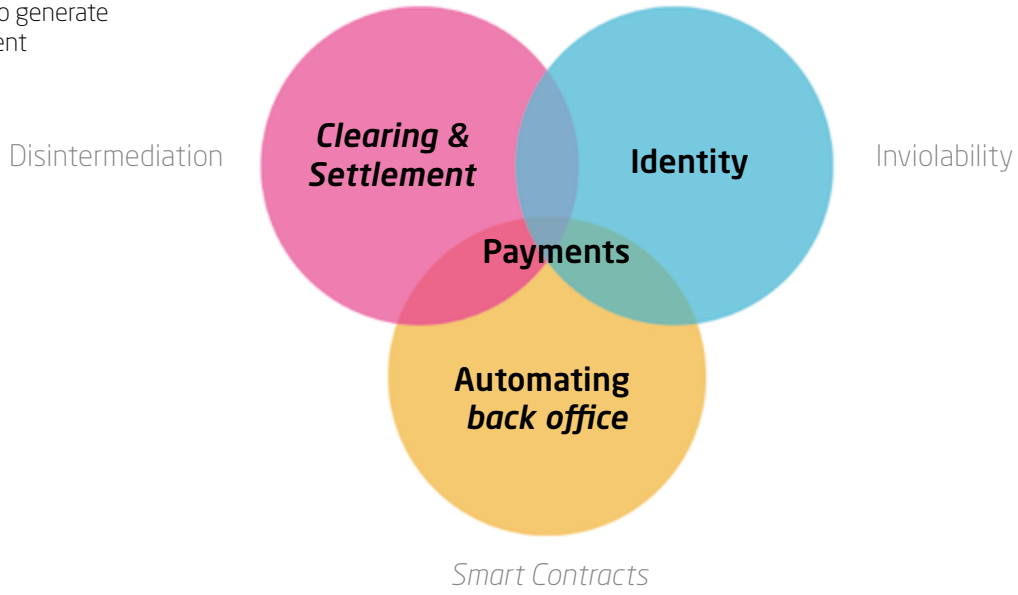
How will IoT work with DLT technology?

Daniel buys a refrigerator for his home. Once at home, Daniel uses MyHome from his mobile banking to digitize the invoice and his identity is associated with the identity of his household appliance. Daniel authorizes his refrigerator to make payments on his card up to a limit of 50 €/month.

One week later, the refrigerator detects the need to buy milk for Daniel and orders it from the supermarket, paying with a credit card or an associated bank account. When authorizing the transaction, Daniel's bank checks that the refrigerator belongs to Daniel, has an associated means of payment and that the limit has not been exceeded. The transaction is authorized and a merely informative message is sent to Daniel.

Tangible DLT use cases in the financial sector

Below we will delve into several use cases that in the long term could harness the qualities of the new technology to generate the long-awaited savings on current processes or new income models:



Use Case 1: DLT as a technology for the payment method business.

The size of the payment industry in 2016 is ≈US$1,300 bn and is expected to grow to US$2,200 bn in 2025 (annual increases of 7 - 8%).

The payment services provided by banks[25] generate commissions representing 10-20% of their total revenue and a larger profit figure, since it is a less intensive business in infrastructure and personnel than intermediation. This is a key business so that the current banking business can return to attaining a return on investment above cost of capital, the sole way to ensure its future in the sector.

Payments are the first use case for DLT technology and still the most widely known. The Bitcoin currency is facing a truly complex path to become a widely accepted means of payment, though in the worst case scenario it could represent a new technology with enormous potential.

> *(...) the important innovation in bitcoin isn't the alternative unit of account – it seems very unlikely that, to any significant extent, we'll ever be paying for things in bitcoins, rather than pounds, dollars or euros – but its settlement technology, the so-called 'distributed ledger'.*

Ben Broadbent, Deputy Governor for Monetary Policy, Bank of England (2016)

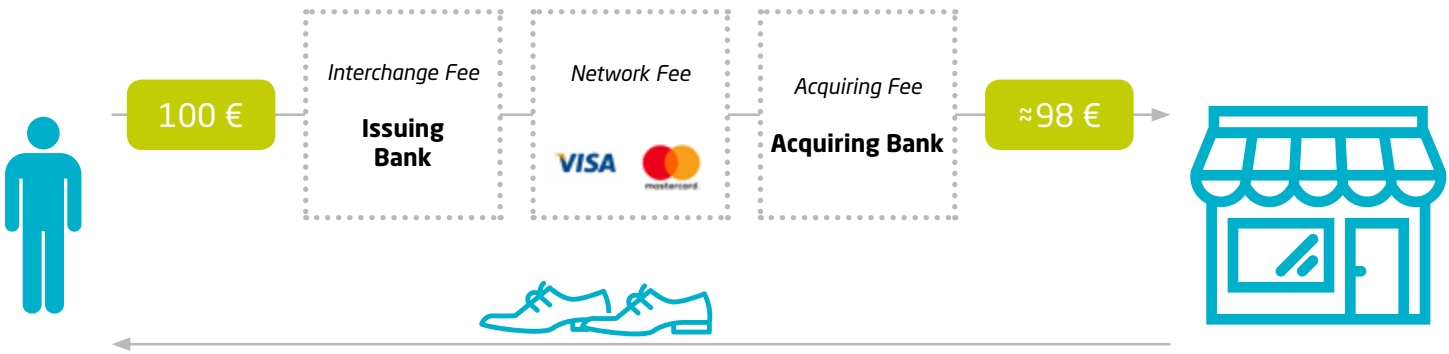
[25] Primarily comprising the commissions covered from the holders of bank accounts, cards (interchange commissions, payment acquirer business, foreign currency conversion, annual maintenance fees and financing interests).

Users view payments as processes with elevated friction because they are slow and expensive:

- **Cash**. Transactional system that is highly inefficient because of the associated costs (creation, distribution, custody, etc.), yet nevertheless very useful for storing the "memory" of who has the credit right (the bearer), enabling a transaction at any moment (immediacy) and even eliminating the counterparty risk.
- **Transfers**. The physical medium is digitized to eliminate most of the costs associated with cash, yet this does not work 24x7. It is slow and poorly stores the "memory", which can be easily modified in an uncontrolled manner, and thus requires a designated entity (bank) to hold the record.

  The foregoing entails costs, not as much when the money is moved through national payment networks as international payments, which requires connections to several networks, thus multiplying the number of intermediaries with the risk of credit and liquidity.
- **Cards**. Technology once again provides an alternative system that eliminates nearly all of the above problems, the 4-party card scheme: buyer, shop, bank issuing the card and acquiring bank.

  Working 24x7, it transfers the risks to specialized entities (Visa, MasterCard) and is capable of providing a user experience that resembles yet really is not a *real-time* payment. They are nevertheless very expensive:



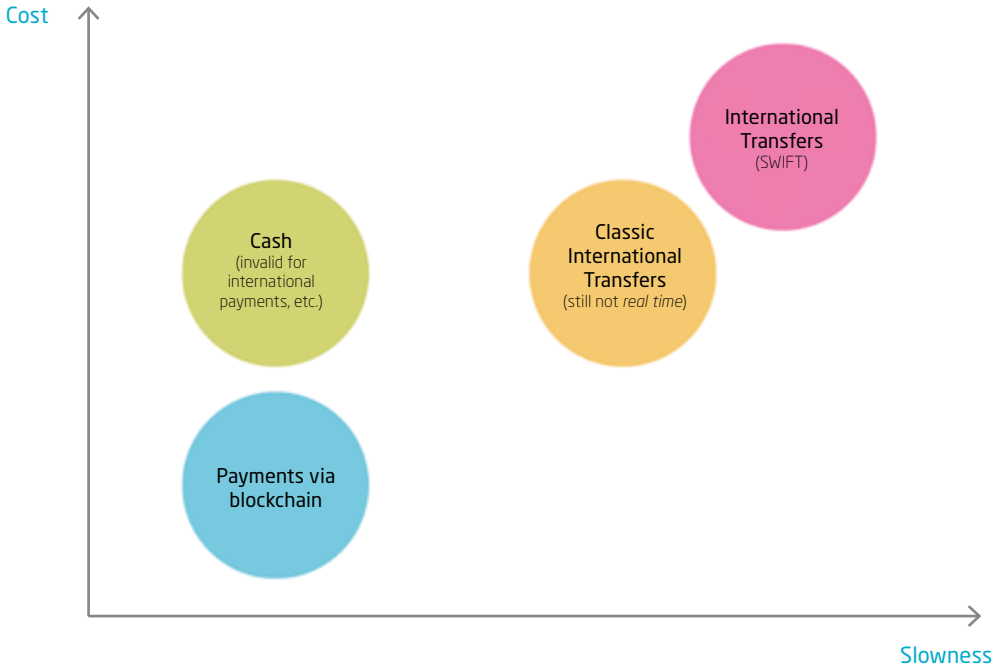
Changes rarely occur in complex payment systems, but when they do their consequences run deep. DLT has the potential to initiate this radical change, but nowadays payments via Bitcoin remain a sort of "wild west" and in need of a minimum essential amount of order.

A similar situation also occurred with the Internet of Information, where there were thousands of illegal networks for downloading content for which progress was made and now there is an appropriate system in place for accessing digital content (iTunes, Netflix, etc.).

Cryptocurrency is an essential step in the digitization phenomenon, though having money without a government such as Bitcoin is a unreachable utopian dream akin to a society that could work without law enforcement or supervisors.

We might not be that far away. Several central banks are studying the issue of cryptocurrency, which is also highly useful to prevent tax evasion and set a more effective monetary policy into practice.

The value proposition of Bitcoin / DLT is such that it i) threatens with desintermediating the card networks and ii) provides slower and more expensive international payments mainly made between large corporations:



- **Disintermediation of the card scheme**. Bitcoin provides very considerable value propositions:

  ✓ To merchants, the ability to receive payments in real time with no need a physical device (*pinpad*), from anyplace in the world and eliminating risks since the payments are irreversible.

  ✓ For consumers, the ability to make payments to anywhere in the world without having to disclose personal information with the payment and the impossibility that merchants can make unauthorized charges.

  Moreover, Bitcoin boasts that it is a free payment system, in other words, with no explicit payment even when operating costs are elevated in terms of consumption of energy and processing capacity.

Bitcoin is currently self-sustaining in costs (the system automatically pays the miners who validate the transactions for the work done) but there are concerns for the medium term (payment to miners will gradually decrease over the long term and a point will arrive at which the costs should be explained).

Contrariwise, the card networks created by banks in the sixties have been gradually optimized until achieving robust operation and a solid brand image, providing an essential security for making payments. User experience is good, since they provide the sensation of real-time payment (which is actually T+3) and the brands have a role as arbitrator, providing consumers with guarantees, e.g., claiming a refund if a good or service has not been received.

A change in the status quo that could rupture the card networks' incumbent position is unlikely, at least for the medium term. The recent steps taken by Apple (Apple Pay) and other similar wallets have committed to card networks as the underlying infrastructure for their own payment systems, also reinforcing their position.

In any case, it is well known that Visa is examining the possibilities of DLT through investments (China) or agreements (BTL) with the intention of "reducing the friction of national and international transfers between banks", a business that was to date not within Visa's sphere.

- **International operations between corporations**. Most large companies have significant international activities that entail either payments made to foreign countries, entailing multiplied costs and complexity when executed through national payment systems, or foreign trade operations (*trade finance*).

  This movement of funds is supported by a system of correspondent banks that, through the SWIFT messaging network, *peer-to-peer* signed pre-agreements and crossed bank accounts, move the funds, though slowly and at a considerable cost given the amount of manual processes involved.

  Various analysts argue that the savings from using DLT for international B2B payments could amount to US$50-60 bn per year insofar as less commissions, greater security and speed.

  ✓ **Foreign payments**. The inexistence of an intermediate coordinating the operation makes bilateral (or correspondent) pre-agreements and manual peer-to-peer conciliations necessary.

  When there is a common record considered as the "single source of truth", these conciliations are streamlined through Smart Contracts, capable of automating a part of the tasks, minimizing errors and gaining greater transparency in the costs of foreign exchange. Streamlining the process is vital, since it would optimize pre-funding of the crossed accounts.

  Though the theoretical benefits are clear, putting it into practice will be much more difficult. International payments business currently generates income of US$250 bn, and there must be a minimum level of adoption by the community (once again the network effect) for the new system to become profitable. Companies such as Ripple provide their solutions to the problems, though banks still cling to a concept testing approach.

  The reality is that 60% of the treasurers in large corporations[26] think that the current systems could be improved.

  While global banks are better positioned to adopt the technology, given their scale and relationships with regulatory agencies, they are also the most threatened, since once again DLT democratizes access to services that were previously only reserved for the banking elite.

  ✓ **Foreign Trade *(Trade Finance)***. Though this segment is relatively much smaller than the international payments segment, it is equally inefficient. In light of the requirements calling for handling documentation and verifying compliance with conditions, both error prone tasks, DLT shines with a very good value proposition that be seen from two angles:

  - The best traceability for documentation, currently in hardcopy (paper), and the restriction on access thereto through digital identity, which will help prevent fraud.
  - The automation of operations by automating actions that are detonated after fulfilling the pre-agreed conditions would improve pre-contractual agility (interpretation of contract clauses) and settlement (reception of goods ⇆ payment release).

  Similar to foreign payments, the reality will be much harder than theoretical analysis. The past attempts at working under standards cannot be considered as entirely successful.

  Here as well, global banks are the best positioned but the most threatened.

[26] Source: Association of Financial Professionals (2015).

The case with domestic payments differs, though there is a need to differentiate between:

- **Developed countries.** Most have systems that work effectively and efficiently in terms of costs. We are also in the middle of a phase in which real-time transfer systems are being put into operation (the latest case in Spain is Bizum, 4Q2016). In this regard, the new technology will not substantially transform the *status quo in the short term.*

  The central banks in countries including China, Russia and the United Kingdom are already seriously examining the possibility of issuing government-backed cryptocurrency, which could be useful to improve the implementation of monetary policies, improve payment supervision and automatically collect taxes. In an initial phase, this would only apply to interbanking (which is limited in effectiveness), followed by a second phase brought to the general public, which would have a greater impact on the financial system through the entrance of competition (disintermediating banks with P2P transfers, loss of deposits by banks – their cheapest means of funding, etc.).

- **Underdeveloped countries.** The inexistence of appropriate systems, whose rollout is very expensive using the traditional systems, could be resolved by directly implementing the new technology.

The future will nevertheless be in cryptocurrency, though unlike today's Bitcoin, it will be centralized and managed by an entity such as a central bank.

This is because we prefer to believe in a central bank, not because it has more credibility than a mathematical algorithm, in fact the central bank is less predictable but nevertheless has something differential compared to an algorithm: it has the flexibility and the knowledge to manage an economy.

The blockchain business case currently appears more attractive when building a new infrastructure where there is none than attempting to improve one that is already operating.

How do international transfers work today?

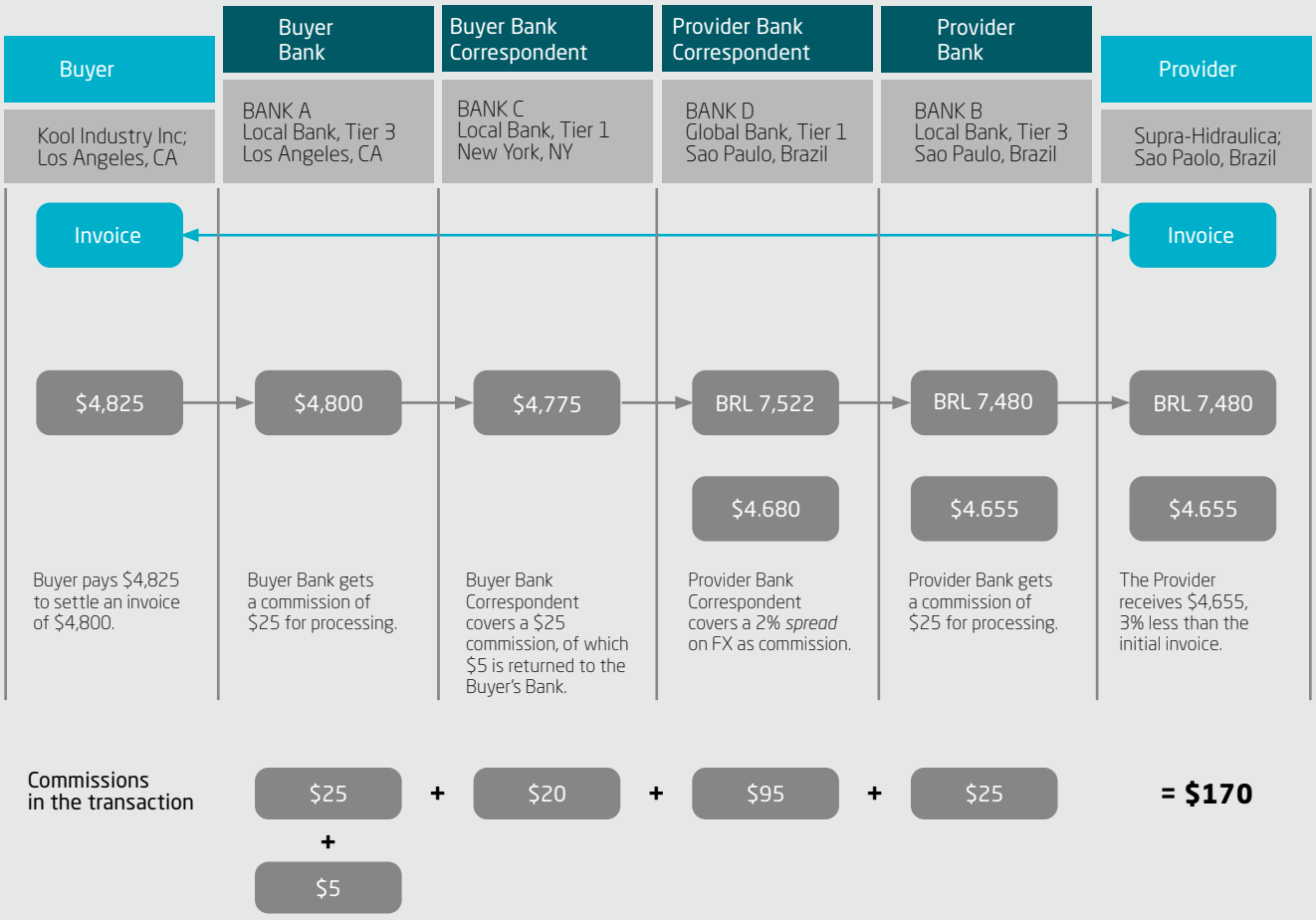
SWIFT (*Society for Worldwide Interbank Financial Telecommunication*) is a cooperative founded by banks in 1973 that provides a messaging system for international financial transactions.

SWIFT does not actually move money but payment orders between two affiliated members that have signed pre-agreements among the 9,000 affiliated banks in 210 countries.

Example:

The correspondent banking business comprises 3,700 banks in 200 countries and generates annual revenues amounting to US$590 bn with a limited capital consumption (commission based business).

It is now facing an erosion of margins, particularly because of the increase in regulatory obligations and competitions (newcomers such as PayPal, Asian operators, etc.).



Source: Glenbrook Analysis and in-house research.

Use Case 2: DLT as a technology for *clearing & settlement.*

In the last decade, technology has transformed the way people communicate and interact with each other. However, financial markets, which are highly dependent on communications, have not undergone the same transformation. Some stages in its value chain have been left anchored to legacy systems coming from domestic markets before the globalization of the financial markets, where each country framed its own rules on business and technical standards.

In securities trading for instance, technology developments in pre-trade and trade systems differ substantially from the ones in post-trade systems. In the former two, the market has transparent products whose competitiveness is measured in hundredths of a second and at a pure price. Contrariwise, in the post-trade phase the market is opaque and inefficient with terms in Europe at T+2 and the USA at T+3.

One of the historical barriers that hindered a more agile post-trade was the obligation during the settlement to physically transfer the certificates on securities between holders. Fortunately the current regulation promotes a gradual phase-out, which will become mandatory throughout Europe in 2025.

Even more complex to resolve is the existence of numerous intermediaries and the lack of standards, resulting in a multitude of proprietary databases that do not communication with each other, thus hindering end-to-end digital processes.

The lack of interoperability among the systems causes:

1. A multiplication of manual *back-office* tasks with a tremendous impact on costs.
2. The multiplication of operational risks arising because of human errors that are normally passed along the chain to subsequent stages and costly to correct.
3. The appearance of credit and liquidity risks in proportional to the duration of the post-trading phase.

In Europe, the efforts made[27] beginning in 2014 to streamline *settlement* from T+3 to T+2 have been bearing fruit. The market has become more attractive by reducing the time window of the counterparty risk (credit risk) and therefore investors can release and turn over capital more often.

> *"The shortened settlement cycle of T+2 will contribute to increased efficiency and reduced risk in post trade."*
>
> Association for Financial Markets in Europe (2014)

Unfortunately, achieving T+1 currently seems unviable.

Though current technology could in fact handle such operations from a theoretical point of view, an operation built on a multitude of manual processes and multiplicity of databases that are neither standardized nor interoperable and need to be reconciled[28], make doing so quite impossible in practice.

> *"T+1 would not work due to the high use of paper and low levels of straight-through processing in the industry."*
>
> Harmonization of Settlement Cycles Working Group (2014)

[27] Startup of the Target 2 – Securities (T2S) system for the purpose of providing a single pan-European platform for securities settlement in central bank money. T2S harnesses synergies with Europe's TARGET2 payment system and groups securities and cash accounts into a single platform, providing an integrated, neutral settlement service without frontiers and highly advanced in terms of functionality.

[28] According to the AITE Group, reconciliation costs will reach €1.2 bn in 2017.

Using DLT as the main technology or simply in support of the current operating system is a clear opportunity to render the post-trading stage more agile:

Pre-trade and Trade — *Post-trade*

- Buyers and sellers send orders to their *brokers*.
- *Brokers* send orders to the *trading* system to crunch trading orders.

Clearing

- Confirmation of the terms of the agreement.
- Notice of agreement to custodians.
- *Netting* of positions.

Settlement

- Seller receives the funds and delivers the securities. Trade is concluded.
- Transaction record for the issuer.

Servicing **on the Asset**

- Security ownership records on behalf of the investors.
- Payout of dividends, interests, etc.

While some of its most typical characteristics are clearly not useful in a financial environment subject to regulation (transactions cannot be pseudonyms, the ability to work without a supervisor has NO value, etc.), others could in fact bring differential value:

1. It could enable the sharing of a common record with the ownership of assets and track the execution of clearing and settlement outside the current legacy systems. Unlike today's situation, there would be no need for the existence of a central database (master) to manage the system and provide security, efficiency and regulatory compliance. With DLT, users become peers feeding a database that records transactions under certain validation rules.

2. The capability of programming money through Smart Contracts could be transformational in the servicing phase of the asset. These smart contracts enable the programming of actions in the blockchain to detonate before an internal or external chain event such as a dividend payout, coupon payments, call margin call or tax withholding. This functionality is a clear threat to custodians.

3. Though the most logical solution would be to work on a *permissioned network* operating on mutual trust, since only authorized entities could make updates and any illegal update could be considered to be a rupture of the contractual obligations, the existence of a consensus mechanism increases the system's resilience.

The technology could be adopted following different levels of depth:

- Mere solution for automating internal tasks of participants in the value chain. It would not bring a transformational change in the operation of financial markets but rather an improvement in the efficiencies of its intermediaries. Technological complexity: Medium, viable with state-of-the-art technology.

- Complete disintermediation from trading and post-trading operations. This would require the integration of securities trading systems (organized – "Stock Markets" or unorganized – "OTC") with DLT databases until achieving pure P2P operations. Technological complexity: Very high, currently not entirely viable with state-of-the-art technology.

- Any intermediate situation between the two above.

Theoretically, technology has the potential to shorten the post-trading cycle to T+0, which could erase many costly activities and eliminate liquidity and credit risks. There would be a pending analysis on the impact of the disappearance of netting, which delimits the statutory capital necessary to operate.

Regardless of the theoretical analysis, the implementation of a way to render the back office operations of financial markets more efficient is by no means quick and simple, since this goes beyond a technology challenge:

- Firstly, given the stringent existing regulation, at this time we cannot easily imagine a fully unassisted system without entities.

- Secondly, the adoption of the new technology should be preceded by the establishment of technical standards, common rules of business and governance agreements that historically have been difficult to adopt.

It is thus more likely that technology drives a gradual change in processes more than a genuine revolution.

Legal treatment of DLT and Bitcoin

DLT is a technology that permits a distributed database to remain active and freely accessible from any point on the globe. Its content can be written by anyone (public DLTs) or, alternatively, only by persons who have previously been accepted into the system (private DLTs). In the first of the cases, this content can be neither deleted nor edited.

While a technology cannot be legal or illegal per se, the actions taken with it nevertheless have legal consequences. DLT is a relatively new technology with a multiplicity of possibility, which creates a certain unease regarding the consequences that its use could entail. The problem, however, is not really a legal vacuum but rather one of interpreting already existing rules.

As a general principle, it can be said that "DLT does not set limits, but laws do".

To understand the legal particulars pertaining to DLT, let's focus on Bitcoin's blockchain because it has been examined the most and has a multitude of responses handed down from the courts and government agencies.

The movement of Bitcoins has tax-related effects.

The sale of a product or the rendering of services in exchange for Bitcoins is subject to the same invoicing and VAT obligations (VAT charge and income in Treasury) as if paid in a traditional currency (euros, pesos, dollars, etc.).

Moreover, the benefits and equity increases of such transactions are also subject to the provisions, rules and regulations of the general taxation system, and must therefore be declared in the personal income tax (individuals) and corporate income tax (companies) statements.

In 2014, an Abanlex employee received a donation in Bitcoins with a view to ascertaining the response of the Directorate General of Taxation of the Community of Madrid regarding the payment of the Tax on Inheritance and Donations. The employee had to pay the cited tax and the tax base had to be calculated based on the market value of the Bitcoins. If a company had received the amount, it would have had to make an entry into the accounts with this same method and the tax obligation would count as corporate tax.

Entries made in blockchain can be submitted as evidence in a court of law.

In 2014, an individual reported the theft of *Dogecoins*, a type of cryptocurrency. As evidence, the individual submitted the affected address and moment of the theft to the police.

The Judge examining the evidence contained in the blockchain found "sufficient evidence to consider that a crime could have been committed". However, the case had to conclude in a temporary dismissal and was archived, since blockchain was unable to "reveal the identity of the perpetrators".

Bitcoin could be used to provide the capital necessary to constitute a trading company.

In 2014, Coinffeine, S.L. was founded as the first limited liability company in history constituted with 100% of its share capital paid for in Bitcoins, which had an exchange value at the going market price of €3,000.

How could this operation be carried out in cryptocurrency?

The founding partners proved before a notary that they had the private key to manage the Bitcoins linked to the future company's Bitcoin address. The operation was accepted by the Madrid Companies Register and subsequently in similar operation by registers in other countries.

In addition to transactions, a Bitcoin blockchain can also contain brief texts.

In 2014, Abanlex apprised the Sub-commission on Social Media of the Spanish Parliament of the implications of this functionality. While the notes could be harmless data, they could also be confidential or personal information that would be stored in thousands of computers connected to the network, permanently and freely accessible on the Internet, and without any possibility of being edited or eliminated.

The ruling against Google concerning the "right to be forgotten" opened the possibility to prevent search engines from displaying a given block in the blockchain when searching for a specific content.

Nonetheless, text can be added in the blockchain as a reinforcement, yet not as a substitute for the traditional registers of intellectual property rights. Several law firms and notaries in Spain use the hash generated by the blockchain as additional support to the registration presented as evidence in court.

Some operations with Bitcoins are affected by the same rules as money.

In 2014, the Spanish Directorate General for the Regulation of Gambling (Treasury Ministry) responded to a question raised to the directorate, indicating that, insofar as gambling, the law that addresses money also addresses Bitcoins.

Additionally, the Treasury Ministry, through several binding queries, declared that exchanging bitcoins for euros is an operation subject to VAT but nevertheless exempt. This was upheld by the European Court of Justice in 2015, which stated that the Bitcoin should be considered to be a virtual currency for the purposes of VAT when exchanging for a traditional currency or legal tender.

Bitcoin is considered to be neither currency nor cash when crossing borders and thus need not be declared.

SEPBLAC[29] responded to another query in 2016 concerning the effects of crossing borders, in that Bitcoin is not considered to be a currency or cash, since the regulation governing such declarations was drawn up for elements with a physical medium.

However, for the purpose of preventing money laundering and terrorist financing, it should be controlled as a means of payment (according to a ruling of the Asturias Provincial Court in 2015) and, in accordance therewith, the Spanish Fraud Investigation Bureau is sending information requirements to parties who make use of bitcoins and other cryptocurrencies based on blockchain.

The mining activity and the Bitcoins received as a prize constitute an authentic economic activity.

The Treasury Ministry replied to a query with a binding statement that:

- The miner should register for the purpose of the business tax (in the "other financial services" section).
- Mining is an activity that is not charged VAT.
- Miners must declare income for the sale of bitcoins received in their Personal Income Tax or Company Tax (where pertinent) declaration.

The interpretation of existing legislation is not consolidated. A new, more specific regulation will appear in the future, and it is thus advisable to have a legal adviser with experience in the sector.

Pablo Fernández Burgueño

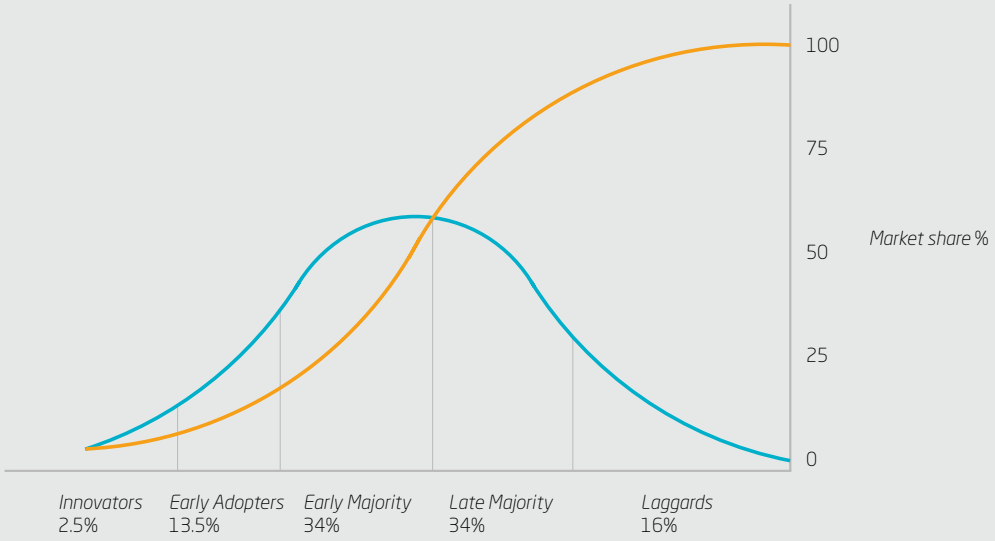
Partner at the law firm Abanlex (www.abanlex.com), legal investigator specialized in cybersecurity and business models based on the use of blockchains, smart contracts and Bitcoin.

[29] Executive Service of the Spanish Commission on the Prevention of Money Laundering and Infractions

What will DLT technology's adoption rate?

In 1962, the US sociologist Everett Rogers published *Diffusion of Innovations*, which outlined his theory on the stages and different social profiles appearing when adopting an innovation.

Based on this theory, DLT is expected to be adopted through the following stages:



	Roles	What's going on?
Innovators ≤ 2016	• Leading Banks • Fintech • Regulator	• Understanding of the technology. Identification of use cases. Internal concept testing. • Startup of experimental business models, not to scale. • Scarcely any intervention at all.
Early Adopters 2017-2020	• Leading Banks • Fintech • Regulator	• Value of the technology is confirmed. Uses as a piece to optimize current processes (environments for sharing information under authorization, etc.). • Generating good ideas. Lack of scale provokes difficulties or absorption by banks. • Providing certainty for external uses. Understanding the advantages of promoting it (auditing, etc.).
Early Majority 2021-2025	• Bank *Followers* • Financial Markets	• The rest of the sector begins hopping aboard when perceiving the benefits in the pioneers and increased regulatory clarity. There is a *network effect*. A multitude of use cases arises. • It becomes a key infrastructure for trading and paying for assets.
Late Majority & Laggards > 2025	• Entire sector • Regulator	• The technology becomes a standard to disintermediate the centralized infrastructures, replacing them with P2P transactions. • The legal and tax treatment fully supports operations.

04 CHINA, THE FINTECH REVOLUTION'S CENTRAL BENCHMARK

Reading time
15´

In 1820, China was the world's economic superpower. Its military conflict with the British empire during the second half of the 19th century ultimately led to its decline and inventions arising with the industrial revolution transferred economic and innovative leadership to the West.

Beginning in 1980 China gradually began to embrace capitalism with a resounding success. The digital revolution of 2000 however arrived to soon and the United States of America proved to be victorious with consolidated giants such as Google, Apple, Facebook and Amazon.

Nevertheless something is changing in recent years. The digital economy has democratized the new production factors (programmers and infrastructure), and after an initial period in which China was clearly a *follower* that copied the digital innovations created in the West (Facebook, Amazon, WhatsApp, etc.), today in some sectors such as Fintech, we can assert that the student has now surpassed the master.

The time has come for the West to slough digital self-complacency and contemplate further, with a view toward the East.

The development of the Fintech sector in China

In addition to the reasons that are common to other sectors such as the extraordinary economic growth of the country or the mobile internet development, the factors enabling China to win the race to reinvent the sector are:

1. A **regulation favoring** innovation, which contrasts with its strict banking regulation. This has at the same time caused 2,600 P2P lending platforms to flourish with their related scandals.

   After the Fintech startup, it will develop into a more harmonized and customer-protective regulation, contributing to cleaning and rationalizing the sector.

2. Extraordinarily thriving online **commerce**. *Online sales* now represent 15% of retail commerce (USA 11%, Europe 10%) and grow 33% annually (vs. 20% for the world). Alibaba is the world's largest online commerce company (twice the size of Amazon) and is the parent company of Alipay, a proprietary mobile payment system created as a response to the scarce market penetration of cards in the country.

3. A **latent demand** of financial services. The obsolete and fragmented traditional banking has always been focused on attending to large corporations, leaving 80% of the sector of individuals and SMEs unattended (75% of the GDP).

   We are dealing with an unsatisfied demand not only for payment methods but also for consumer loans and wealth management.

4. Elevated **profitability** of traditional banking. In the past decade, local banking has been able to keep its RoE at 15-20%, somewhat unreachable nowadays for western banking (USA ≈9%; Europe ≈5%).

   This has kindled the interest of other non-banking players to participate in the business while also letting traditional banking invest in innovation.

Competitive environment

The Fintech sector already has the same number of customers as the traditional banking system.

These are their main actors and products.

Main Actors

The Fintech development models differ in China and the West. In China, the actors are large corporations, while in the West the actors are traditional banks and *startups*.

There are three types of actors in China:

1. **Internet giants**. True benchmarks in the Fintech movement. They are platforms whose core business is not finance but online commerce or social media.

   The largest are referred to under the acronym BATs, namely:

   - Alibaba. The Chinese equivalent of Amazon. It groups its entire financial business into Ant Financial, the world's most valuable financial unicorn (€55 bn ≈ vastly superior to the capitalization of large banks such as BBVA, Barclays or LLoyds Bank[30]).

     Its most valuable piece, Alipay, is already processing three times as many payments as PayPal, and provides its integrated services in the daily activities of its customers (food payments, vacations, bills, P2P, etc.). It has started expanding its services to O2O payments[31], which has also begun cornering Union Pay, the monopoly of banking cards, and embracing internationalization (as shareholder of PayTM, the largest digital wallet in India).

     It also provides savings products, loans and credit scoring with a particular focus on individuals and SMEs, and cloud-based core banking infrastructure services for third parties.

   - Tencent. The Chinese equivalent of Facebook. Similar to Alibaba, it began its financial activities with payments for its online gambling business.

     Its most valuable piece is WeChat, similar to WhatsApp, with a user base of 550 million (higher than the main Chinese bank, the ICBC) and an estimated worth[32] of €70 bn[33]. WeChat is a super app that provides maximum convenience in paying and signing up for a collection of services (payments to retail shops, bills and invoices, taxi reservations, etc.), including wealth management products and even the opening of small online shops for its customers, where it of course also provides payment services. It has become a benchmark wallet capable of gleaning data by the million regarding the behavior of its users, which it monetizes through advertising and commissions.

     Tencent launched its mobile only bank WeBank (worth estimated at €5 bn) in 2015. WeBank does not have a website – dealing exclusively with customers of the future – from where it began providing microloans (banking license with restrictions – unable to open branches or take deposits).

   - Baidu. The Chinese equivalent of Google. Its stagnating core business provided the impetus to enter the financial business. Baidu has invested in US credit scoring companies and DLT technology for payments. It entered an alliance with the Chinese bank Citic and in 2016 launched a complete financial business (cards, online bank, etc.). It is clearly behind Alibaba and Tencent.

   These giants are basing their success on two main factors:

   a. Providing products that are truly innovative for their functionality and excellent delivery. The key to improving delivery was to embed them with the services offered by the platform's ecosystem and capitalize on big data on the behavior generated by customers on the platform (enabling improvements in personalized marketing, credit scoring, etc.).

   a. Understanding the need to swiftly acquire a huge chunk of market share with aggressive customer acquisition policies and thus capitalizing on the network effect. Once again, the platform enabled cooperation of the ecosystem to cover most of the needs of the customers (shopping, travel, transport, supermarket, etc.) from a central point.

[30] As of 31 December 2016.

[31] *Online-to-offline* payments, which are payments made via mobile by scanning QR codes.

[32] Source: HSBC.

[33] The annual revenue generated by WeChat is €1,600 M.

2. **Incumbent financial sector**. It uses its power of investment, acquired after a decade with RoE figures of 15-20%, in an attempt not to be left in the stands as a mere spectator. Most of them have established partnerships with internet companies (e.g., with Baidu) with a view to capturing an extensive customer base. Particularly salient:

   - The insurance group Ping An, which is resolved in its commitment to Fintech with companies such as Lufax, the world's largest P2P lending unicorn, which is worth €17 bn, or others centered on home loans.

   - Traditional commercial banks such as the Industrial and Commercial Bank of China (ICBC) and China Construction Bank (CCB), both ranked among the world's top 5 largest banks, have launched online commerce platforms for leveraging the sale of their portfolio of products and services.

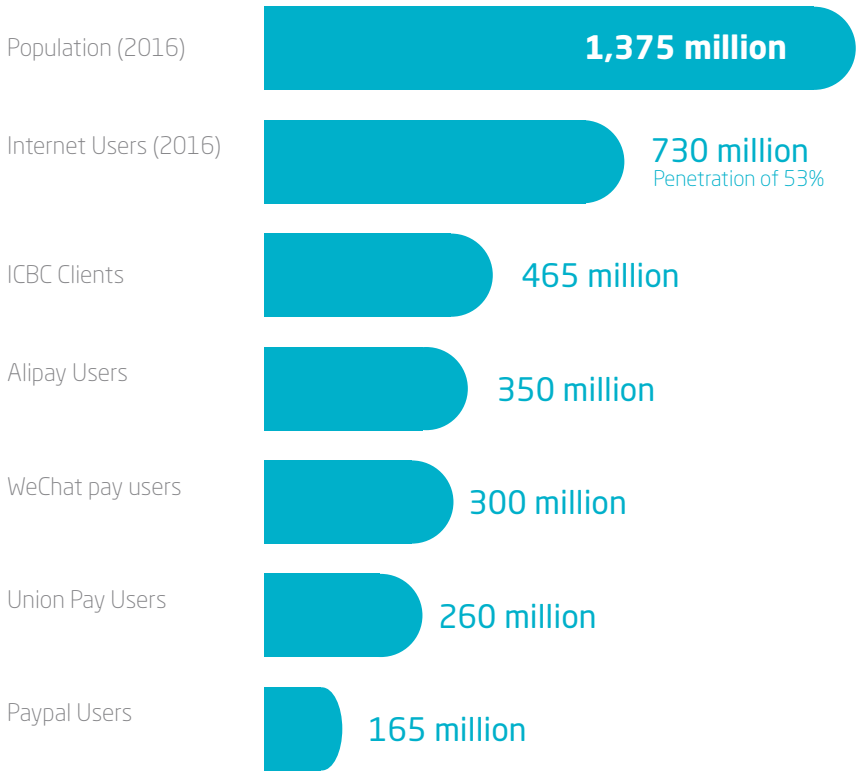
   Its main strength is based on:

   a. Being capable of providing the most sophisticated financial products for individuals (investment plans, tax management, inheritance, etc.) and SMEs (supply chain financing, international trade, etc.).

   b. Having a better understanding of the products to provide advice, the comfort of a physical presence through offices, and the brand image that standard customers still call for. For the entity, this is also a way of managing risk better.

   In any case, the strict regulation and relative conservatism has made them more followers than leaders in comparison with the Internet giants.

China



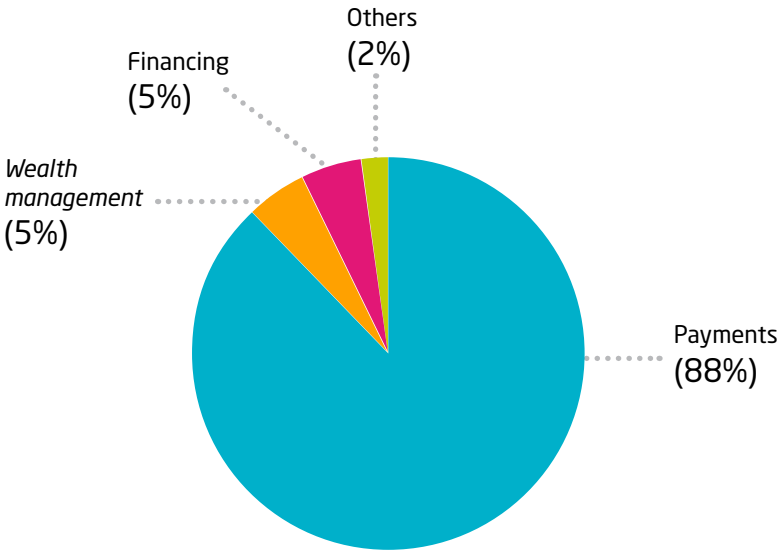
Source: China Internet Network Information Center, CIA World Factbook, Credit Suisse and in-house research.

3. **Others**. Normally large corporations developed in other sectors such as physical retail or real estate. They have a broad customer base of individuals and SMEs that they are attempting to monetize with the financial business. They primarily provide payment services to individuals and financing to SMEs in their ecosystem.

   Their primary strength lies in the massive amount of data of value that they hold, not only regarding the behavior of individuals but also in the financial solvency of SMEs, since the customer-provider relationship is normal.

Main Products

The Fintech market can be segmented into 4 product classes:



1. ***Third-Party Payments***. Payments that are not made through the card monopoly (Union Pay) or directly by the banks. Rather, they are made by companies operating with a specific license. In practice, it is a layer between traditional banking and consumer in which the bank loses all the data of the transaction.

   This is the pioneering segment of Fintech and the foundation for building other applications such as Alipay (75% of the market in mobile payments and 55% in online payments) and WeChat (15% and 20%).

2. ***Wealth management***. This is primarily the sale of funds on the money market. Its penetration is growing as Chinese consumers accumulate wealth and is particularly elevated among internet and mobile users.

   Greater returns and immediate liquidity constitute its differential value compared to similar products offered by banks. Alibaba (40% market share) and Tencent are segment leaders.

3. **Financing**. Consumer financing to individuals and supply chain financing to SMEs represents 40% of this segment:

    - The Chinese youth rapidly adopt innovations in personal finances and have an elevated propensity to spend with a deeper tolerance for risk.

    - SMEs are progressing from simple loans to more complex needs such as complex treasury management or supply chain financing.

    The remaining 60% is P2P lending (secured and unsecured, for individuals and companies). China is the largest P2P market in the world, much larger than the UK and USA together. Lufax is the benchmark company in this regard, and in practice a commissions business for retailing, i.e., it runs no credit risks, which are assumed by guarantee companies.

4. **Others**. This segment groups products that have just come about recently and are still not big enough such as insurance sales, *foreign exchange* or cloud-based infrastructure services specifically for the banking business[34].

[34] Technology companies such as Alibaba, Huawei or IBM already provide cloud-based platform solutions so that third parties can provide financial services.

10 Reflections for the West

While it is obvious that the Chinese case cannot be simply cut and pasted into the West because of questions of context, country scale, etc., the developments and progress in the Chinese Fintech sector nevertheless could help draw conclusions of particular interest and clues for the future.

1

China had poor banking structures and a population much less banked than the West, though this did not prevent the country from innovating more swiftly.

The infrastructure was built in an agile and cost-effective manner with smartphones[35] and the cloud, and its society rapidly became banked with cheap and convenient services. Price and convenience are always the drivers of disruptive customer behavior.

2

In the West, the superior penetration of credit cards is shaping up to be a legacy, blocking innovation in payment methods. To date, only PayPal has been able to gain in scale in the West as an alternative payment method, though this is clearly no great innovation because it is built on the card schemes. Apple Pay and Android Pay are still attempting to consolidate themselves and, similar to PayPal, have been based on robust yet old systems, and therefore expensive to integrate and maintain.

3

WeChat and Alipay have become the world's benchmarks for innovation in payments. The keys were:

a. Knowing how to lever up on the economy of platforms built by their parent companies, providing an excellent user experience in terms of price and convenience.

b. Being capable of centralizing the customer identity management and thus become an aggregator of apps on which the lifestyles of millions of Chinese users could revolve. In the West, the average user has 27 apps installed even though only 3 or 4 of them are used regularly.

Main Business + Payments + Ecosystem = *Lifestyle*

> "Alipay has evolved from a payment platform into a global lifestyle super app."
>
> Miranda Shek, Alipay

4

The financial business was strategic for the BATs, since payments were a catalyst for their core businesses. From there they were able to lead Fintech following an Oil Stain strategy and agilely avoiding the most stringent regulation regarding financial intermediation.

However, the strategic importance of payments was less for the GAFAs, since there were consolidated and prevalent systems (cards) already in place in the West. Amazon is the most likely to enter into financial services as a natural extension of its *online* commerce. The financial paws of Google and Apple, i.e., Android Pay and Apple Pay, represent an additional service on their customer loyalty model based on their operating systems.

[35] According to CIA World Factbook, the penetration of mobiles in China is 95%, USA 118% and Europe 123%.

5

After calling the WeChat business model a significant "inspiring", Facebook put the ancient CEO of PayPal, David Marcus, at the head of instant messaging, which is no coincidence.

If it were to permit payments, Facebook would become a platform for shopping and even a springboard toward a benchmark wallet (like WeChat) to control the mobile-social universe. Payments and advertising are becoming the core business while "everything else" is simply to enrich the shopping experience.

6

The Western model for apps is depleted from overcrowding. Customers are demanding integrated experiences that are convenient. They do not want to leave from one side to complete the process. It is also difficult to charge for services with payment systems that are not integrated.

7

Emerging technologies such as DLT sector the best route to the Chinese Fintech sector. In particular, DLT in combination with mobile connectivity enables financial infrastructures to be built agilely, cheaply and securely. Moreover, their peculiarities favor the financial inclusion of *unbanked / underbanked* groups in China, amounting to 234 million[36], on which Metcalfe's Law of course also applies.

8

While the Fintech sector in China has obviously benefited from a paved terrain with hardly any opposition from an obsolete and fragmented traditional banking sector, the West should not assume that "its situation is different".

If we consider the West as a single economic zone, we also see a fragmentation of traditional banking and, regarding the technology obsolescence of the sector, should we ask for the opinion of a Chinese traveler in Europe?

9

The development model for Chinese Fintech is based on large corporations providing a substantially sound balance, an ecosystem of business around which use cases could be formed, and shareholding stability.

In the West, startups are launched "from a garage", attempting to attract the interest of financial investors passing by in order to achieve a certain degree of success and scale until being bought out by some industrial buyer (normally an incumbent bank) at a very high price.

10

For banks, the loss of the payment business is harmful, not so much because of the loss of deposits, which is the most cost effective means of funding, since this service cannot be provided without a banking license; rather, the harm comes from the loss of the consumer data that help them understand their customers' behaviors.

[36] Source: World Bank

Paypal	Alipay / WeChat
Users: 165 million. Processed volume (2016): US$347 bn. Presence: 200 countries.	Users: 350 million. Processed volume: US$1,200 bn. Presence: China and indirect in India.
6% penetration in retail commerce, robust annual growth of 23% (2012-2016).	14% penetration in retail commerce, extraordinary growth (45%).
Main focus on online purchasing. Acquisitions for expanding services (Braintree payment gateway of Uber + Xoom for *remittances* + Venmo).	Greater amplitude of services (ordering food, reserving a taxi, etc.) to connect with the lifestyles of customers. Entry in O2O payments.
US$0.30 fixed commission + 3-4% variable commission.	1-2% variable commission.
Limited competition to date (though undergoing change). Limited innovation.	Rabid competition from Alibaba-Tencent. Search for efficiency and innovation.

05 NEW DISTRIBUTION AND FINANCING MODELS

Reading time
26´

Toward a "banking agents" model

The generalized adoption of smartphones has accelerated the agony of a banking's relationship model with its customers based on a capillary branch network.

An average sector RoE of ≈16% vs. Cost of Capital of ≈8% (2003 - 2008)[37] made this commercial model not only sustainable but also operational (offices made many manual tasks that were not strictly commercial in nature), but precluded the anticipation of the effects that would arise in the coming years because of the sector's insufficient digitization.

These profitability levels also hid the dissatisfaction that customers harbored over the years regarding the service provided by their banks, particularly when they compared them with the advances that they already could enjoy in the hands of technology applied in other sectors such as leisure or retail.

The crisis not only caused a freefall in profitability (2009 – 2014, RoE ≈5%)[38] but also brought technology in the form of the smartphone, which transformed the behaviors and demands of customers. The branch office-based relationship model went bust and, since 2008, the European Union reduced its branches by 20% and dismissed 300,000 banking employees.

This tendency is far from abating and will accelerate. While a *branchless* model does not appear to be a viable alternative, even in a scenario of full-scale digitization, the concept of *less-branch* does. It is possible that in 10 years only 10-20% of the branches existing in 2008 will remain. Experts predict that only 900 or 1,000 branches would be necessary in the United Kingdom.

The main challenge thus facing banking in this post-Smartphone era is to create a new digital relationship model for its customers. It is necessary to progress from a *branch-centric* concept to a *customer-centric* one, which cannot be done by merely closing branches and reducing staff.

Two lines of work are helping build the new model:

- An augmented service based on personalization and proximity in treatment. It requires that banking get to know the new personality and behavior of the people who first entered their nearest branch office some 10, 15 or 20 years ago. Current technology lets us gather intelligence from the data that the customers themselves generate, yet without a sufficiently elevated degree of sophistication despite the major investments made in that regard.

- Inseparable from this intelligence, industrializing and robotizing back office has become essential. Though customers perceive these tasks to be of low value, they nevertheless come at an enormous cost for entities and should be reduced with a view to financing the implementation of a different business model that would require the investment and disengagement of low-value tasks.

[37] Source: European Central Bank, listed European banking.

[38] Source: European Central Bank, listed European banking.

New *Frontoffice* Service

Customers in the post-Smartphone era feel strong and confident. This generally leads them to:

1. Gradually adopt new channels for making the most transactional tasks. The cost of the transactions and convenience of the service are the two relevant drivers in this adoption.

2. Look to get advice from their peers, which is free and more independent. If not sufficiently sophisticated or trustworthy, then they would require help from their bank.

There is also a segment of customers that, in any case, prefer human contact to manage financial matters of a certain complexity. For them, some entities are rightly committing to a customer-support model based on mobile agents, capable of combining the growing digital capabilities of the bank with a closer and more personalized relationship with its customers.

This model seeks to offset the loss of capillarity resulting from branch closings and attend to the new demands of customers while also improving new contract ratios by simplifying complex products that were all too often left not formalized because customers either did not feel comfortable with the information received or simply because they were not right for the customer.

Putting this model into practice calls for the entity to at least contemplate the following:

1. **Selection, training and retention of candidates**: The selection and training of the personnel who will represent the brand vis-à-vis customers will make all the difference in this model in a context of the lost image of banking. The investment made in building the network should be protected with personnel retention programs. This network should be coordinated with traditional networks, branch networks, and likewise have the support of central units specialized in operations of particular complexity.

2. **Mobility tools**: The future of the banking service is linked to the value delivered to and perceived by customers, and agents must thus have tools that give them:

    - A 360º vision of their customers.

    - Powers to initiate and even complete mobility transactions.

This network of agents in mobility could prove to be particularly valuable for the more professional segment of customers (self-employed and small business owners) as a way to access agile financial advice, whether in person or remotely, capable of carrying out the full gamut of their transactional activity from any digital channel.

New *Backend* Service

Approximately 60% of operating costs are associated with branch networks and thus represent 30% (pp) in an entity with a 50% efficiency ratio. 60-70% of office personnel carry out transactional tasks that could be automated or enhanced to a more efficient model.

The industrialization and robotization of backoffice underway in the sector is shored up by ever maturing technologies with a comprehensive impact on the main banking processes (mortgages, payment methods, companies and consumer loans):

1. Mobile Technologies: Providing functionalities such as:

    a. The capability to sign up a new customer from a mobile device with a regulation-compliant standard and unassisted (digital onboarding).

    b. The ability to help customers buy products, not only with financing but also with information of value (finding the most cost-effective price, informing about the future maintenance costs of a car, advice regarding the capability of assuming financing payments, etc.). The next pages will address contextual banking.

    c. The means to manage a field-based sales force (agenda, routes, etc.) and formalize contracts in mobility, increasing new contract ratios and reducing processing times by as much as 33%.

2. Artificial Intelligence and Machine Learning:

    a. *Next generation contact centers* that, supported by machine learning technologies and real-time analysis of the conversations result in a higher level of customer support.

    b. *Automated Valuation Models*, enabling the automated valuation of property assets through mathematical and statistical techniques. The next pages will address these systems.

    c. *Intelligent Content Automation*, tools capable of processing unstructured content to infer and validate the relevant information in the content of documents, databases or social media by simulating a human process.

3. *Robotics*:

Automation of a massive amount of repetitive tasks, simulating the working force of an operator. This reduces errors and processing time while improving on the perceived quality.

The average savings from these solutions amount to 35% on the operating costs in a window of 1 or 2 years.

4. *Digital Content Management*:

Distributed and/or centralized tools that process images of massive quantities of documents for the purpose of capturing and exporting information for use in business processes.

5. Advanced BPMs:

Tools for monitoring and controlling the workflow. They are used extensively for managing mortgage loan processes, payment methods and consumer loans. The most advanced of these tools can cut back on the processing times of every transaction by 35%.

Contextual banking, a paradigm shift in consumer financing

What do banks and their customers think about consumer financing?

"Get ready for a stampede of customers at the branch today, we have launched our campaign to sell car loans that cost us a fortune..."

"...anyway, look how times have changed!...Now customers show up and compare you with the competition, and if you don't get them the best price, they just get up and leave..."

"...and look how they are all in a hurry, as if cars were going to run out! I hope the Risks department can handle this quickly even though it is Christmas"

Bank

"Why is it so difficult to buy a new car? Nobody helps anybody, it's a good thing I only have to do this once every ten years..."

"...and above all that, I will have to fight with the banks and the dealership to get cheap financing..."

"...but I need this car now to be able to go skiing, so I will select the first one that gives me the cheapest loan!"

Customer

The endless barrage of challenges facing banking include some which are particularly relevant for consumer financing:

1. It is very expensive to capture a new customer, concretely between 300 and 500 euros which compares to an expense that is ten times less with GAFAs.

   Moreover, banking gives a first impression of being riddled with hassles and paperwork, which contrasts with the *Wow!* effect of the digital giants.

2. The customers that banking is able to capture are becoming less loyal to their financing entities. This compares with the loyalty that they profess for "the digital", whether in terms of products (Apple) or services (Amazon), where they perceive a higher value: best price, best image, best service...or a combination of all of them.

3. The *commoditization* of products and services has severely eroded profit margins. Customers now sign up for pure prices, since they see no difference between the offerings of different banks. Winning over a customer almost always means an erosion in the net interest income.

4. Customers in the 21st century are in much more of a hurry than their 20th century counterparts. Banking systems and processes have not been sufficiently adapted. If paper appears at any moment, the process is no longer 100% digital and the bank will not be quick enough. GAFAs do not use paper.

This all forms part of the perfect storm that punishes the RoE of the sector.

How can banking turn this situation around?

There is no exaggeration in saying that "user experience" is the holy grail of retail banking and therefore part of its digital transformation thus entails the incorporation of excellent user experience.

Contextual banking is the way to accomplish the best experience possible as users. Banking no longer appears exclusively at the end of the customer journey for a purchase to sell the customer its products. Rather it is concerned and interested in its customers from the initial stage of their **journey to buy** the consumer goods that they consider will help them progress personally.
The advice provided by the bank enables the customer to buy these goods for cheaper, with greater agility or in better conditions, exceeding their expectations and generating positive emotions that reward the bank:

- Banks that accompany their customers along the entire *customer journey* become their natural financer.
- This happens without any erosion into margins, since the service provided excludes any competition.
- The advice *decommoditizes* the product and creates a value that the customer rewards with greater loyalty.
- The bank provides an unexpected experience that matches up with the digital giants.

Contextual banking helps customers buy better, providing them with the banking utility in the right place, at the right moment and with a product that can be ordered in 3 or 5 *clicks* and in real time.

Financing the supply chain of companies

We are moving toward an increasingly collaborative economy based on belonging to an ecosystem, which is in our common and individual interests to strengthen. In this regard, good companies should contribute to creating a healthy supply chain.

This comprises many dimensions, which clearly include the delivery capability of the supply chain but also, from an even more modern perspective, its reputational risk and economic/financial solvency.

The last financial crisis exposed the vulnerability of the SMEs to a block in the provision of funding from banks. Neither expansive monetary policies nor the new legislation launched in Europe and the USA could prevent periods of abusive payments from the large corporations.

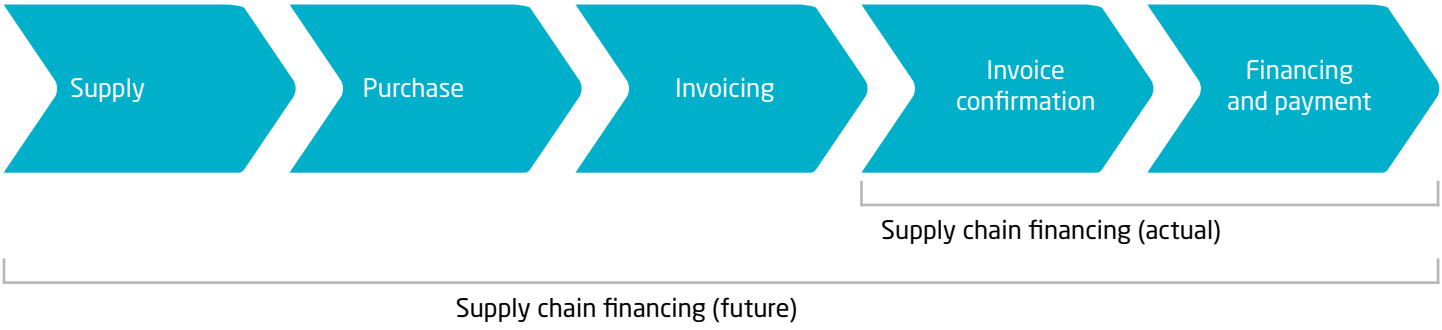
The new banking regulation conceived after the financial crisis increased the cost of financing and reduced banks' risk appetite, which certainly weighed heavier than the mentioned measures.

With the crisis behind yet not far beyond its rearview mirror, the financial sector is committed to harness the strength of technology intelligently to build a new digital relationship model with its SME and corporate customers. This entails finding new ways of financing from which all the parties can benefit.

Supply Chain Finance (*SCF*) refers to the collection of processes and financial products that, usually with the intervention of a bank, connect a physical supply chain to a financial supply chain, thus enabling:

- **Suppliers,** normally SMEs, to anticipate the date on which their bills issued for products or services to downstream companies will be paid.
- **Buyers,** normally large companies, to improve their balance by reducing working capital (lengthening supplier payment periods) or secure supplies at the best price.

While not a totally novel operating model, since it in fact appeared during the nineties, all analysts agree that its potential size is at least ten times larger than the current one.



Why isn't this financing formula used more nowadays?

In general, banking has historically failed to adequately satisfy the expectations of its customers (slowness, *commoditized* products, lack of sector-specific adaptation, etc.), and, though certain that growth would increase on an annual accumulative rate of 20% with the crisis, the problems persisted

- Banking processes and the technology supporting financial products are still not sufficiently flexible, which is an obstacle for banks in their attempt to not only gain a global vantage point of their customers' supply chain but also synchronize with it, particularly for multinational customers (increased complexity when including areas such as pre-embarkation financing, purchase orders and inventory).
- Financing offers normally target large buyers with good *ratings* with the expectation that SME suppliers will join the programs. Banking's own processes, which are faintly digital, have rendered SME customers hardly interesting for products of this sort, when really these types of companies generate ⅔ and ¾ of the GDP in developed economies.

Fortunately, technology affords banks (and also Fintech) the levers to mine profitability and growth through SCF, while also contributing to the financial health of a much broader community than the company's customers.

The adoption of non-banking electronic billing platforms enables the provision of financing within the supply chain to the "long tail" of the smaller suppliers, to whom until recently only dynamic discounting had been an option.

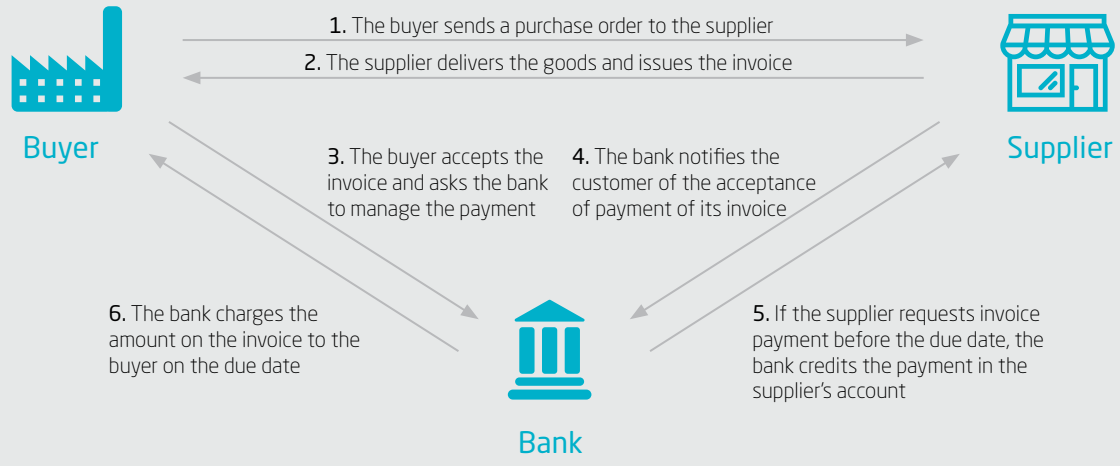
This also benefits buyers, who have more levers to manage their treasury, working capital and income statement.

What are the most common products (banking and non-banking)?

- ***Factoring:*** The Supplier assigns credit (invoice issued to a buyer, which becomes collateral in the operation) to a financial institution in exchange for an amount in advance (less a discount). The normal method lets the supplier digitize the invoices for incorporation into the financial institution's portal.

- ***Reverse Factoring or confirming:*** The Buyer reaches an agreement with the financial institution so that, after confirming its intention to pay an issued invoice on the due date, it requests to advance collection to the supplier. The collateral of the operation is not the invoice (unlike *factoring*) but rather the solvency of the buyer. The supplier will decide whether to advance the collection or wait for the due date.

  In order for this system to make sense, the buyer must have a solid balance and more solvency than the supplier. This thus lets suppliers secure financing at the cost corresponding not to its own rating but to the buyer's rating, which thus makes it cheaper.



- ***Dynamic discounting:*** The buyer employs its surplus treasury to advance the payment of invoices received that have yet to come due in exchange for a discount on the amount for the supply.

  Though this could have a negative impact on the balance (increasing the working capital), it produces a benefit on the income statement, thus offsetting this effect abundantly.

  This operation is previously consented between the buyer and supplier through an arrangement of discounts according to the deadlines contemplated for the invoice. In this case, there is no intervening financial institution.

Multinationals such as Apple, Colgate, Dell, P&G, Kellogg or Siemens, some of which considering the financial health of their suppliers as part of their corporate social responsibility strategy, use Fintech-provided SCF solutions to help fund growth in new and emerging markets.

Some Fintechs have already begun challenging traditional banking with new business models, causing some banks to shore up in this business area.

Challenges to be met by banking

> *"The electric light did not come from the continuous improvement of candles."*
>
> Oren Harari, professor at the University of San Francisco

In the lives of business customers, banking can and should also play a central role. Boosting technology partnership platforms that connect B2B and B2C interactions among the players in an ecosystem (customers, providers, public institutions, etc.) place banking in the driver's seat of digital transformation as a creator of new, differential business models that will change their model for relationships with all the other stakeholders in the value chain.

The main challenges that banking must rise up to meet are:

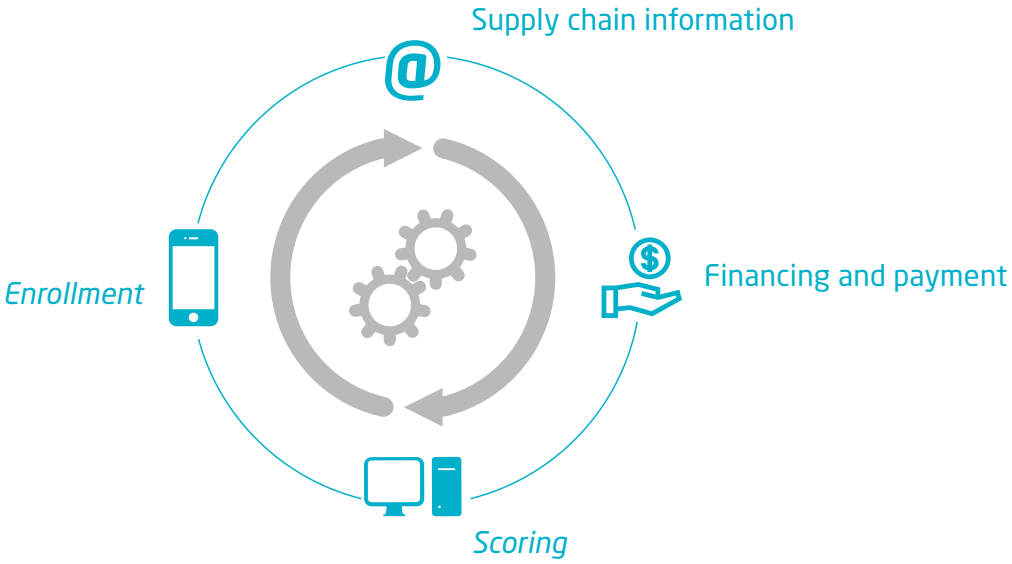
- **Understanding of sector-specific dynamics**: The supply chain is not a single concept for all sectors. It is therefore critical to understand the particulars of each one while also detecting common patterns to industrialize the model.

  The model should reflect the complete cycle of the supply chain, from provider approval to the moment invoice payment is settled, and consider the specifics of each step/event in the cycle (contract, order, delivery note, invoice).

- **Visibility of information**: Digital transformation shifts traditional relationship models among companies toward digital-automatic cooperation. Providing stakeholders with an end-to-end vantage point of the information and enabling new payment methods reduces friction in the system and provides incalculable value to the system.

  IT providers have been contributing for many years to the creation of added value networks with platforms that simplify the exchange of information among companies and the integration of complex business processes.

- **Redefining the criteria for accessing financing**. Having additional information enables us to rethink the risk models, e.g., by incorporate variables related to the operating channel (from provider approval to payment).



- **Cultivating agility for enrolling into programs.** Once again, identity management appears as the key in the transformational process. In this case, and in line with the need to understand the concept of "identity" in another way, the ecosystem can simplify the process by providing information and knowledge sufficing to establish the appropriate KYC controls.
- **Creating new financial propositions of value.** Anticipating the needs for financing (e.g., when issuing an order) calls for changes in the banking business model with a new commercial approach, a redefinition of the operating and *backoffice* model pointing to *end-to-end* advice.
- **Simplifying the inclusion of SMEs.** Need to work with an approach that enables the inclusion of SMEs into these programs, which could call for simplification or providing a limited collection of services.

Success stories are increasingly built upon the success of others. Favoring competitiveness in the industrial supply chain favors banking's competitiveness. The moment to join the change has arrived.

Digital mortgages and the smart management of collaterals

The purchase of a home is one of the most economically transcendent, emotionally charged moments in a customer's life, but also an essential milestone.

For the bank, a mortgage loan *per se* is not the most profitable product in its catalog, but it is nevertheless the best opportunity to create links to customers that will last their entire lives.

In practice, however, customers meet an enormous amount of friction when attempting to contract this product, which today is scarcely digital and characterized by elevated costs, enormous amounts of paperwork, a lack of transparency and the constant need for the physical presence of the customer, normally during their working hours and therefore bothersome.

The potential incorporation in all stages of the process of new technologies such as virtual reality, financial simulation with the aggregation of data, workflow control, digital identity or the smart real estate appraisal through algorithms would yield better customer experience, greater bank efficiency and an expanded role in delivering more value to differentiate the bank from its competitors.

Denmark, European benchmark in digital mortgaging

Denmark has become one of the benchmarks in the digital transformation of mortgage loans. The convergence of technology and regulatory willingness (legislation and electronic institutions) enable the process with no need to be physically present.

Local banking's ability to aggregate data, the existence of a property register and electronic treasury, legal validity of the digital signature, standardized contracts and the possibility of an automated valuation of collaterals have enabled the transformation of a process that normally lasts 2 months (from request to signature) to 2-3 weeks, reducing paperwork and costs significantly but gaining in transparency.

Despite the state-of-the-art technology currently available, this standard has yet to be attained throughout most of Europe and North America.

1 Stage 1: Purchase prospecting by the customer

In all its products, banking has both the need as well as the opportunity, through new technologies, to recover at the initial stage of the customer journey in the purchase (car, home, etc.) and from their build its relationship with the customer. Doing so protects the margins (forestalling pure pricing competition) and decommoditizes the product by incorporating advice as a differential element.

In the case of mortgages, there are also elements that reinforce this outlook:

- The financial crisis has made baking a large holder of real estate, which should continue to be drained.
- The reinvention of digital banking is an opportunity for it to recover a central role in the lives of its customers, providing excellent service in the most relevant moments of their lives.

Some of the most innovative entities have begun incorporating technology in some stages of the process.

Virtual/Augmented Reality

House hunting is one of the most time consuming aspects for customers. Capable of providing a fully immersive yet remote experience for visiting properties and providing contextual information (neighborhood characteristics, construction year, surface, etc.), virtual reality simplifies the task of identifying and filtering out homes of interest.

While historically expensive, this technology today is accessible via a mid-range smartphone and will surely flood into the consumer market within the next 2 years.

Automatic assessment and access to supplementary real estate information

The latest big data processing and statistics modeling technologies enable precise, real-time, automated appraisal of real estate individually.

Automated Valuation Models (AVM) have been enjoying popularity in the most advanced countries (USA, UK, etc.) as a way of ascertaining a price references, which is highly valuable for customers and banks. Their algorithms help locate the most comparable properties (through geographical microsegmentation) and adjust outgoing sales prices to the real transaction prices.

They are also capable of anticipating pricing tendencies, comparing purchase prices against rental prices, providing information regarding the liquidity of the geographic microsegment (useful for estimating how quickly a property can be sold or the pressure for a sale), and reporting on services and utilities (schools, hospitals, green areas, sporting facilities, public transit services, etc.) or the socio-demographics (immigration, average income, etc.).

Advice on the impact of the mortgage payments on the customer's personal finances

After finding a suitable home and "estimating" its price through AVM, following the current status quo and merely notifying the customer regarding the estimated monthly payments no longer suffices, which will not be closed until the scoring process has finished.

Banks should have an automated 360º vision of family finances (including potential spouses) with two objectives:

1. Power to yield a more accurate credit score, lowering their rates of false negatives and positives.

2. Power to give customers advice on the impact that the payments will have on their personal finances. It is thus essential to capture and understand the aggregated data of their different bank accounts, including potential spouses, through accurate classification. Diagnosing the situation will yield a valuable recommendation on whether to modify the loan conditions (term, etc.).

This comprehensive vision is attained through data aggregation technology. The current instruments referred to as Personal Financial Managers (PFM) use *screen scraping* technology that, in Europe, with the entry into force of PSD2 (4Q 2017) will become obsolete when banks will be required to make APIs available to be able to assign the transactional data of customers to their authorized parties.

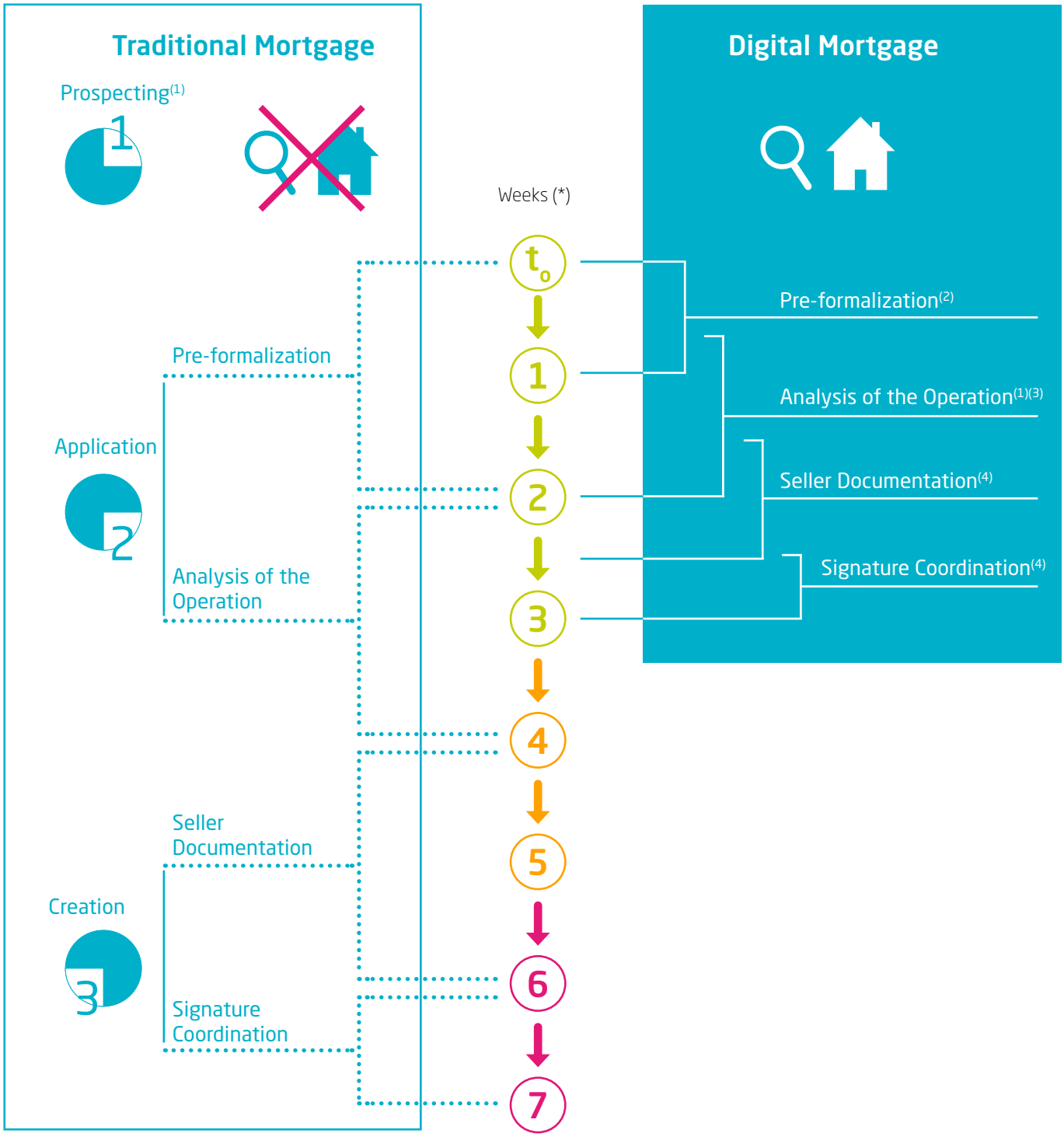
PSD2's entry into force will be transformational and it is essential for banks to have the best transactional data classification algorithms to be able to extract the best intelligence from them, whether for their own or potential customers.

This will become one more way to capitalize on the digital trust that banks have at a level that goes far beyond the possible competitors from other sectors.

Extracting intelligence from the data entails upgrading the current PFMs to more advanced versions that overcome the shortsightedness and from the simple analysis of the expenses of the customer toward an outlook capable of anticipating income and expenses, purchase/critical investment planning in their financial life and further aspects such as taxation (deductions for purchasing a home, provisions to retirement plans, etc.).

Making some of these services available to current non-customers also lets the entity acquire intelligence to be capable of providing the right product at the right moment to a potential customer.

Comparing traditional mortgage with a digital mortgage processes



(*) Customer satisfaction decreases as the processes lengthens.

Associated technologies

(1)
- Virtual Reality (VR)
- Automated Valuation Model (AVM)
- Financial Simulation (PFM)

(2)
- Data aggregation
- Digital Signature
- Document Manager/BPM

(3)
- Digital identity (not customer)
- OCR+AI (Natural language recognition simple note)

(4)
- Document Manager/BPM
- Digital agenda

Stage 2: Formal mortgage loan application and granting

The swiftness in the bank's response regarding whether to grant financing and the corresponding conditions proves to be differential to enable the entity to win the operation that will link a customer for life.

It is essential to bear in mind that the customer has most likely made a down payment to the seller for the property that could be lost if the bank fails to grant the loan for the amount and in its proposed conditions. Even when fulfilled, the result could be equally negative when done outside the time window agreed between the seller and buyer.

Technology again affords an opportunity to reduce the duration of this stage, reducing the normal 4-8 weeks to 2-3 weeks.

Pre-formalization

As soon as the customer formally applies for the mortgage, the bank could have already finished most of the heavy lifting that usually appears as a bottleneck in the process: appraisal of the property (via AVM systems) and credit scoring (via data aggregation technology).

The bank's advising service to the customer could also have begun in the previous stage, with the pending steps entailing a more personalized contract (perhaps done by videoconferencing) and some formal authorization (access to risk analysis database, which could be done via digital signature).

The use of a secure document manager permits more agile information sharing (declaration of income, draft mortgage deed, etc.) and a workflow will indicate the completed and pending steps, thus rendering transparency and a clear vision of the next part of the work.

Analysis of the operation

With the customer's documentation and credit history at hand, the operation can be examined economically and legally. Non-customers will need to be enrolled, which is done through a specific and unassisted enrollment tool with no need to visit a ranch, employing document validity verification technology and biometrics.

The legal analysis requires a verification of property encumbrance registration via summarized telematic request. Today this reading can also be automated through natural language processing.

The appraisal of the property is done in this stage. Some advanced countries permit the use of AVM systems in the admission, which entail savings of 80-90%, though today most of them continue requiring an actual visit by a specialist. In such cases, AVM is useful to speed up the process (its results do not differ by over 10-15% vs. the actual appraisal) and as a means of quality control.

Stage 3: Signature preparation

On conclusion of the economic and legal study in this stage, the remaining documentation is compiled from the seller (energy certificate, substantiation of being up to date on payments, etc.). Once again, the use of a shared document manager and workflow could streamline and secure the exchange of documents while also rendering the process transparent. The digital signature could also improve the process flow in this stage.

In this stage, charges and encumbrances (if any) are cancelled, the payment method is prepared and the agenda of the parties is coordinated for the signature (buyer, seller, notary, bank, consultancy, real estate agent). A shared agenda could also provide coordination.

Stage 4: After-signature

This is the least critical stage for the customer, since the purchase of the home has already been formalized. The customer will usually recover part of the provision of funds in advance after completing all the formalities (payment to treasury, property registry). These formalities are, however, highly relevant for the bank, since they could result in significant liabilities for the bank and customer if they are not handled correctly.
This stage usually takes at least a couple of months from the signing date with hardly any room to shorten the terms, which are in the hands of the notary, treasury and property registry, each one with its own legally established deadlines.

This stage will become more agile, primarily when the notary and registries fully digitize with digital signature and telematic registration technologies.

The smart management of collaterals

After formalizing the mortgage loan, banks usually do not monitor collaterals with sufficient precision. In any case, updates are run on their value through index-based methodologies.

The new technologies also provide the possibility of creating an authentic "CRM for collaterals" to improve the management on collaterals and other properties on the balance. This is done by combining AVM systems with calculation and modeling engines that exploit data analytics on visual graphic layers based on GIS (*Geographic Information Systems*) mapping.

Accurate and up-to-date valuation

The first step in business decision-making on the portfolio of collaterals entails having an accurate and up-to-date valuation. The recent regulation in this regard in many countries (Spain, United Kingdom, German, Netherlands, etc.) now goes beyond the use of simple statistical methods (primarily by updating indices on the initial values) toward the highly superior aforementioned AVM systems.

The use of indices, which is decreasing because of their lack of rigor, has many inconveniences because of their bias toward historic appraisals that are unable to avoid the year-on-year dragging our of errors initially made in datum quality and lack of geographic granularity. The main rating agencies recommend the use of AVM systems instead of updating via indices.

Real estate geointelligence

State-of-the-art technology also lets us project the real estate portfolio over digital maps to view:

- Data on the particular property such as situation, price, details (construction characteristics, surface, height, etc.) and a comparison with similar buildings.
- Data from the relevant reference market for the property such as its liquidity, social-economic characteristics, facilities and communications or the expected tendency of the prices in it.

Having a real estate portfolio tracking and control system such as the one described proves to be differential for banking in the admission stage, possible refinancing, drainage of awards and transparency policy vis-à-vis third parties such as rating agencies.

Use of indices vs. AVM in the United Kingdom

	Indices	AVM
Portfolio Appraisal	• Only one bank in the top 5 (and two in the top 10) still places its entire trust in indices. • There is no significant use of other valuation techniques.	• All the top 6 banks (and many of the rest) have used AVM to completely revaluate their portfolio. • 4 of the top 5 have been doing so every quarter over the past 3 years and one has been doing so for over a decade. • Employed for modeling capital provisions, anticipated management, asset purchases, etc.
Mortgages (admission)	• They are very seldom used.	• Employed in 25% of mortgages and particularly in refinancing.
Quality Control	No	• Commonly used for detecting fraud and quality control.
Others	No	• Widely used by most mortgage intermediaries. • Hardly used by consumers.

Source: European AVM Alliance, May 2016.

06 CUSTOMER PROGRESS, THE ESSENTIAL VALUE PROPOSITION OF DIGITAL BANKING

Reading time
20´

As a specialist in segmenting its customers by different criteria, banking can create an initial division of the world's population into two major groups:

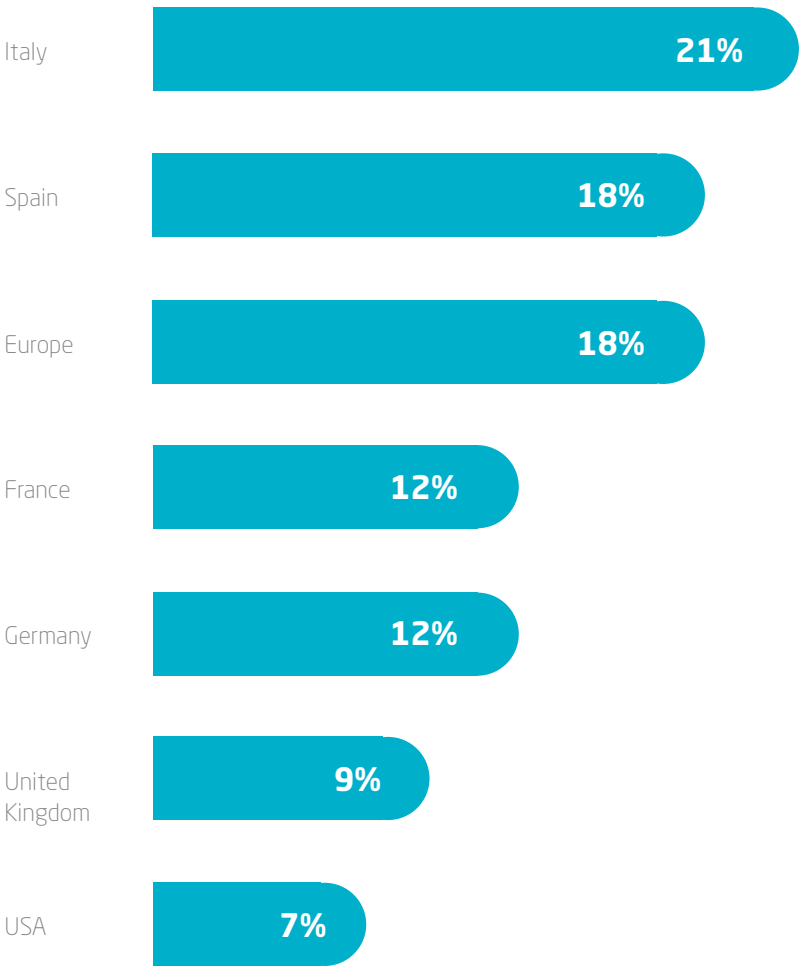
1. The first with 50% of the world's population, which is *unbanked*. Until now, traditional banking had no profit yielding impetus to tackle the problems associated with this group: regulatory bases, identity provision, creation and distribution of products, construction of a credit history, etc.

   There is a strong temptation to equate the unbanked population with faraway lands such as Malawi, Burundi, Camboya, etc, which is incorrect. The United States[39] is home to ≈20 million underbanked people. In Europe and Central Asia there are ≈170 million, and in Latin America and the Caribbean there are ≈210 million.

   Europe has a shadow economy estimated[40] at 18% of its GDP, amounting to several millions of workers with an income but no payslip, which is a key requirement to signing up for any financial product.

2. The other 50% of the population is already banked, though it is clear that most of this group is not content with the service and fails to see sufficient value in the relationship with their bank.

Shadow Economy as % GDP 2015



Source: University of Linz, Austria.

[39] Source: World Bank.

[40] Source: Eurostat.

A value proposition that meets expectations

The different degrees of financial inclusion and sophistication results in a value proposition that differs for each group:

- For the unbanked group, this is related to the ability to access financial services that helps them progress in their lives. We are referring to the provision of identity services, credit history construction, risk analysis using non-traditional methods and, most importantly, "light" versions of financial products and services through mid-range and mid-low end mobile devices.
- For the banked population, including the current group and the unbanked group that will soon join them, the proposition is related to added value services for consolidating a long-term financial health and wellness, to help accomplish their real life goals.

In both cases, we return to the basics of banking, namely helping people progress in their lives.
The banked population has certainly heard something regarding the reinvention of banking, but it still sees little changes in the daily operations. In fact, to date most of these entities have focused their actions on:

> *"As banks, we existing to contribute to the progress of persons and companies."*
>
> Ana P. Botín, Chairman at Banco Santander
> *International Banking Conference (22 October 2014)*

- Launching frontend initiatives to convey a renovated image. After the initial moments, in the best of cases they have helped customers gain access to some products.
- The rollout and management of multiple pilots, most of which will never reach production. There is a large wall between experimentation in the innovation area and its passage through the gate to operations.

  The foregoing can be achieved by applying fresh concepts such as "omnichannels", mobile banking or APIs, which significantly lose their effectiveness when applied on a traditional banking business model.
- A certain organization of some internal systems and, most importantly, a drastic reduction in costs, primarily staff and branch related, – which per se has little to do with "digitization" –.

This normally characterizes the initial stage of a process that will last at least 10 years only to create more accessible banking (quick, 24x7 and within reach via smartphone) and/or more efficient banking in terms of costs (more control over risks and less operating costs), meaning that banking and its customers are not benefiting from half of the opportunities afforded with digital transformation.
Harvard Business School professor Clay Christensen and author of *Innovator's Dilemma* [40] states in his new book *Competing Against Luck* that companies dedicate too much time "looking inwardly" to see what they can do instead of "outside" and asking themselves what their customers want and expect from them.

Is banking running the risk of designing faster horses instead of cars with piston engines?

Is banking running the risk of designing smaller cell phones instead of smartphones?

> *"If I had asked people what they wanted, they would have said faster horses."*
>
> Henry Ford

[41] Published in 1997, a revolutionary book on understanding innovation. The Economist says that it is one of the 6 most important business books ever published.

Of course customers have a very clear idea of their most important life goals and are equally aware that some of them could be attained much more easily in a better economic situation. However, the reality is that most customers either are under-educated insofar as managing their personal finances or have other, more pressing matters to attend to.

What customers need most from their bank is help in creating sustainable "financial health, financial wellness", though they have serious concerns as to whether banks can provide a service of value, since historically banking has been very poor in this regard.

This unavoidable challenge facing banking is out of the reach of traditional banking in practice not only because of its lack of competitive pressure (which changes with the appearance of the Fintech/GAFAs phenomenon42) but also because of insufficient technological maturity.

Fortunately, the appearance of new technologies, including the aggregation and understanding of massive amounts of data, anytime-anywhere processing (cloud) and real-time delivery with maximum capillarity (via smartphones), will let us turn what had been a dream only a decade ago into reality.

My Project

The essential

The financial

Banking Traditional	Accompaniment in reaction to the customer. Providing the financial products/services that customers demand.
Digital Banking	This "reactive accompaniment" opens the door to advising for improved personal finance management. It has a positive impact on personal finances, which fosters success in the customers' life goals.

42 Acronym used to refer to the digital giants: Google, Apple, Facebook and Amazon. Some add another "A" (GAFAA) to include the Asian giant Alibaba.

> *"There are two major changes in the expectations of our customers.*
>
> *The first lies in how they want their relationship with our banking to be – whether face to face, by telephone or instant messaging – and digital unassisted. We want to know when consumers want each type of interaction and what they are looking for in each one.*
>
> *The second is that banking helps them much better in achieving their financial wellness, preferentially through long-term relationships."*
>
> European Banking Directive (2016)

A retail customer linked to a financial entity is 4 times more profitable [43] than one who is not. To establish this link, the model normally followed by traditional banking was a *de facto* obligation on its mortgage customers to sign up for an endless array of additional products: credit cards, life insurance, homeowner's insurance, car insurance, payment protection insurance, pension plans, etc., without assessing their appropriateness for the customers.

This model for forcing the link is flimsy. Customers view it as an unavoidable price to pay to get a home, tossing it in the same bin as a tax. In no case will customers see them as helpful or as advice from the bank in such a relevant moment in their lives, rendering the link even weaker.

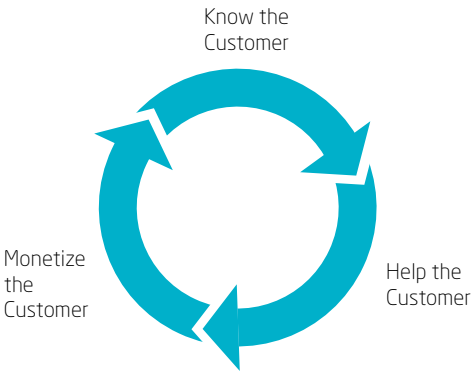
Current technology and the new regulation (PSD2) are perfect allies to gain a 360º customer vision and understand their "financial" starting point. This is the door to enter the virtuous circle in a **linked relationship** with customers to:

1. Get the best order intake on financial products by customers with the greatest margin by moving away from mere monetary intermediation and entering the field of consulting or advising, which has a positive impact on RoE (given the increase in profitability).

2. Get greater recurrence of order intake on financial products by customers, which has a positive impact on CoE (given the decrease in the business risk).

3. Clear away competition, which will miss the customer relationship train, which has a positive impact on CoE (given the decrease in the business risk).

...all these steps with customers who consume less "physical structure" than traditional customers.



...and this is the way things work at Google, Amazon, etc.

What does being *customer centric* mean for banking?

Converting customers' personal finances into a useful leverage to achieve their life goals.

[43] Source: Banco Santander

What steps should banking take to become a financial health service provider for customers?

It is firstly essential to begin by **sharing a common language** with the customers, i.e., a same concept of financial wellness.

The **Center for Financial Services Innovation**, the leading institution in the USA entrusted with ensuring the financial wellness of consumers provides a simple and suitable definition:

✓ Balanced income and expenses. "Manageable" debt service. *Credit scoring* of at least "*investment grade*".

✓ Liquid savings. Debt capacity and insurance for emergencies and long-term security.

✓ Access to information and tools for planning finances and ability to make investments.

✓ Situation control: prudent management and chosen (not forced) financial decisions.

Why is it so important for banking and customers to share the same language?

The absence of a common language has contributed to alienating banking from its customers. For instance, qualities have been incorrectly attributed to tools such as PFM (*Personal Financial Managers*), which are simple descriptive algorithms of a customer's expense patterns, only one of the 4 dimensions in which we will propose to measure financial health. They might have done better by calling the tools PSM (*Personal Spending Manager*)...

The next generation of PFM will let customers have two things simultaneously:

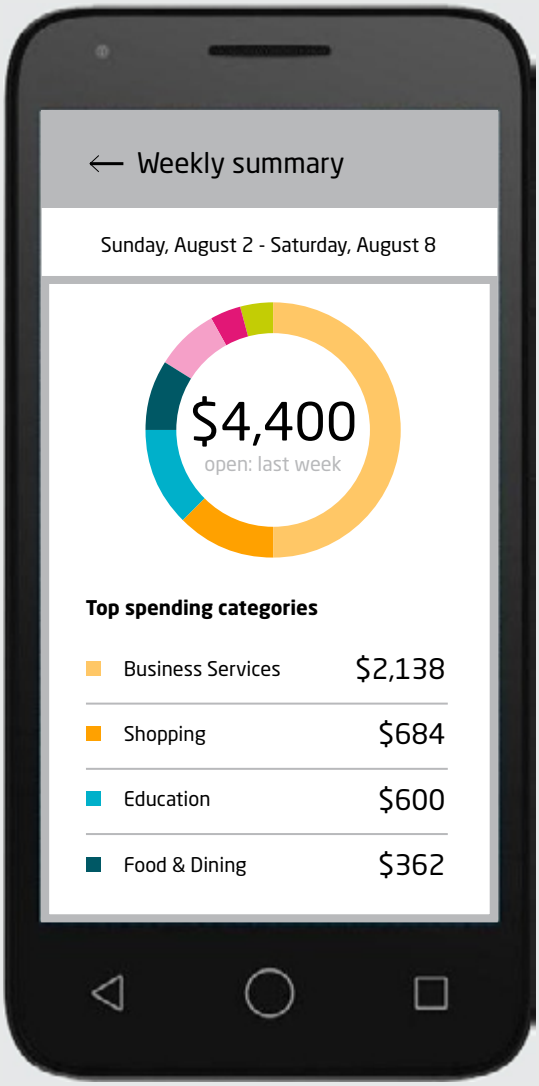
1. A full overview of their financial health, which will require an analysis that digs much deeper than currently available, and also a better understanding of customers and their life goals.

2. Ability to take steps for "moving the needle" on these 4 commented dimensions: Expenses, Savings, Debt Capacity and Planning. In other words, the PFM will go beyond a simple dashboard to gain a 360° vision of my financial health, it will be a comprehensive console from which actions can be taken.

The challenge will not entail becoming an aggregator of the customer's updated financial situation (which is in fact provided under new legislation such as PSD2), but rather: i) creating KPIs[44] that objectify this situation so that it can be monitored, and ii) enabling the bank to provide sufficient and quality services to improve the KPIs.

Having the bank morph into the drive and monitor of the customer's financial health is the best way of creating links with the customer, much better than forcing customers to sign up for insurance that they do not need.

The smart console is the visual part of a key event in that the bank has a holistic vision of the customer's finances on the basis of which the console becomes the main channel for providing advice and products that could even include non-proprietary products and services that were created in its ecosystem.



44 *Key Performance Indicator.*

Secondly, it is essential to **measure the customer's financial health** and its progress over time, which will over time become a KPI for the bank. This will prove to be key when designing the new digital banking, since businesses end up being built upon the variables that they measure:

- If what we are measuring is the value created for shareholders, the business will be built to maximize share value without considering the value delivered to customers.

  In this regard, banking has lost the core value in the lives of customers and now must race against the clock to recover it.

- If we measure the efficiency ratio, everything will remain subordinate to adjusting the business costs regardless of the importance of providing a differential product or service of elevated quality.

  In this regard, the banking products of today are mere commodities, which have left an opening for Fintech to enter into the financial services sector.

> *You are what you measure.*
>
> Michael Corbat, CEO Citigroup (2013), to 300 bank executives.

> *We currently provide customer service through employees, but we are unable to gain sufficient proximity or personalization. It's true, when you contact a call center, you get people who seem to be machines, a situation that should be flipped. Our challenge is to render treatment "one to one" or between equals and propositions personalized, even when your liaison is more machine component and less physical person.*
>
> European Banking Directive (2016)

1. Constantly measuring the financial health of customers as a central KPI pushes the envelope on designing new banking that is now customer centric.

   This even shifts the treatment between bank and customer toward a closer and more humanized relationship that contrasts with the current situation, in which there is a lot of interaction between people albeit with highly mechanical treatment.

The bank alone with its products and services is incapable of maximizing the value of the KPI and must therefore transform its business model toward a platform to gain leverage on the collaboration with Fintech companies via an open systems architecture.

In this business model, the bank can acquire a central position as it alone will have all the customer's data and thus a holistic vision of the financial health, which will become a true value for the customer above the individual products provided by the companies connected to the platform.

> *There can be no digital transformation without big data. While most processing algorithms still have not harnessed the potential lying in these data, technology now lets us extract intelligence that until only recently was impossible to gain.*
>
> *From the point of view of digital customers, big data should let us create segments and adapt value propositions differentiated and personalized for each customer, which should also follow customers as their life progresses, even making the bank change its business model over time.*
>
> European Banking Directive (2016)

Model for measuring and tracking the financial health of customers

> *We can't solve problems by using the same kind of thinking we used when we created them.*
>
> Albert Einstein

Digital transformation is an unexplored path that has been entrusted to managers who all too often and for some time now do not actually live and breathe the reality of banking. Many consultants are also hired, but they also fail to have a clear understanding of the path because everything is coming on so quickly and keeping up to date is difficult.

Two good starting premises to rebuilding the business are:

1. You will never see your customer face to face again. This drives us toward a new digital and customer relationship model entailing new ways of managing identity and providing excellent *delivery*.

2. Everything that you were providing your customers can now be attained for free (advice, information, etc.).

Firstly, Internet and particularly the GAFAs have transformed the pricing model for services, making them "*apparently* free[45], i.e., Gmail, Google Maps, Amazon Premium service, free apps in the Apple Store, instant messaging on Facebook (WhatsApp / Messenger), etc.

Secondly, technology is increasingly making it easier for anyone to offer products, e.g., money can be saved as bitcoins.

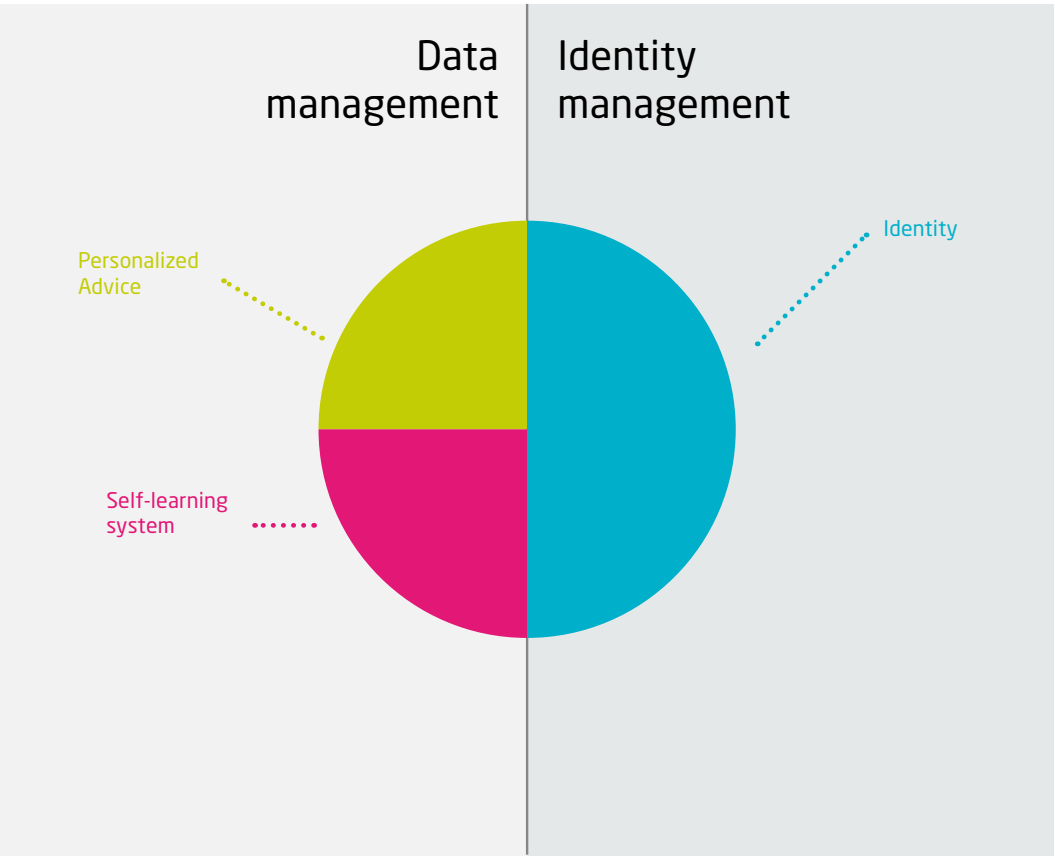
In this regard, the "free model" could end up reaching banking[46] and the way that it will earn money is by providing services of excellent added value such as, e.g., Google Maps. Some sectors that are not dissimilar to banking such as insurance are now discussing the possibility of granting the use of a car to customers in exchange for navigation data. *Asset management* also began feeling the pressure of robot-advisers and even Charles Schwab is offering free asset management services, monetizing with other add-ons in the portfolio.

Therefore, the two most important skills in new digital banking will be "mastering": i) customer identity management, and ii) securing value from their data.

The services built around or in combination of both will become an imprint of the company brand and *de facto* intellectual property, which contrasts with the products on the market to date, pure commodity.

[45] Truly more than "free", they are without "explicit payment", since service monetization almost always comes from advertising income.

[46] On 30 November 2016, the Euribor 12m, the main benchmark reference for the mortgage market in Europe reported -0.078% (negative interest rates).



"When you launch an innovation that yields success, you know that your competitors will copy you. Your best response to this is to get back to innovating as soon as possible, doing it many times during the year. They will copy you again and again, but this is good because they will become followers while you will lead the sector, which is a competitive advantage. Apple is an example of this, the most recognized brand setting the pace of the sector.

The ones that cannot copy you will go to great lengths in an attempt to discredit you, though with an excellent delivery you will have beaten them at their own game.

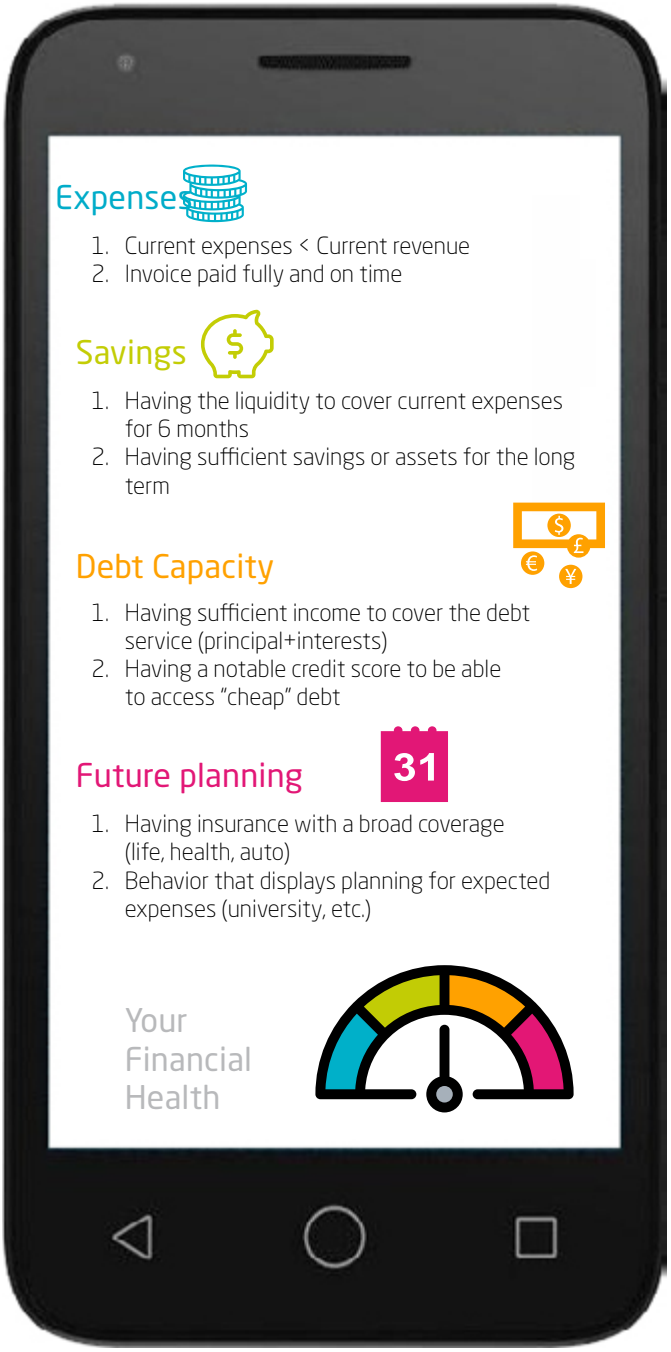
To enter into this virtuous circle, the wheels of innovation must be set into motion and gain momentum, which means making mistakes quickly and cost-effectively, and learning from them. Relax, success will soon appear."

Brazilian Banking Directive (2016)

In keeping with the guidelines set by the **Center for Financial Services Innovation,** we can propose a model for measuring and monitoring financial health, where there are 4 dimensions and eight indicators for assessing them, each one of which requiring a particular sort of data that banks tend to have.

While not an easily implemented service because of, inter alias, the difficulty of entering the psychology of customers and the different types of behaviors concerning their finances, it is nevertheless a service of enormous added value for them.

The new generation becoming banking customers is more acclimated to consuming services than buying products (Spotify, Netflix, etc.). To provide a financial wellness service, banking must rise above its vision of product and enter into the realm of service, understanding that customers need a meaningful customer journey toward their financial wellness and that banks have the opportunity to be their guides, which would separate them from the threat of becoming a utility.



> *We see that our customers are looking at their financial future with an increasing sense of responsibility. This could be linked to the expected drop in pensions.*

European Banking Directive (2016)

How should customers be classified based on the way they handle their finances?

Owl (shrewd and wary)

They have an understanding of finance and confidence to make their own decisions. Owls are rational and analytical.

In the short term, they work on their financial decisions and even though they operate with long-term objectives, owls appreciate flexibility to redefine their strategy for the future.

The appreciate helpful tools, yet always under their own control. They do not accept instructions from the bank.

Ant (focus on the short term)

Highly adverse to risks, unexpected events cause them a great deal of anxiety and they thus have an in-depth control over their finances.

They brace their long-term financial wellness through meticulous daily management, always acting prudently and taking advantage of opportunities (loyalty points, offers, etc.).

They appreciate and are willing to explore helpful tools (setting budgets, coupons, etc.).

Cricket (enjoying life)

They are hedonists. Money is a means to enjoy life and everything else is subordinate to this priority.

Crickets are shortsighted consumers:

- They appreciate tools that bring them convenience (speed, simplicity) and are consistent with their lifestyle (wallets, etc.).
- They don't readily acknowledge long-term management tools (goals, etc.).

Stork (long-term focus)

The value making progress in their lives and are thus planners.

Storks define long-term goals that condition their short-term behaviors with a noticeably thrifty attitude.

They want to control their finances but use their own tools, since the bank's tools are not useful for them.

They appreciate helpful tools that bring them closer to their long-term goals.

> *"Smartphones make banking more accessible and in real time, thus transforming the way customers deal with their own finances, going from getting them over with to wanting to manage them more actively.*
>
> *The foregoing is an enormous opportunity for banking to provide new services, helping our customers spend better, save more and, ultimately, render their finances more intelligent."*
>
> US Banking Directive (2016)

While banking clearly is not accustomed to working under the proposed system, it should come as no surprise that other sectors such as the physical health sector have had great success with it.

Activity wristbands (e.g., Fitbit) have revolutionized the behavior of many users regarding their own health, also overlooked like personal finances:

- Activity wristband wearers are now actively managing their health (their finances). A combination of gamification techniques, user experience and social media have improved their fitness (sustainable financial wellness) and longevity.
- Consequently, every year users consume even more health (financial) products, which are increasing in terms of sophistication (added value). Moreover, they will do so for a longer number of years (long-term relationship with banking).
- Users entering into this dynamic become its ambassadors and end up bringing many other nearby users to adopt it (*client advocacy* produces a viral effect).

Users of this sort are increasingly more accustomed to measuring and monitoring specific indicators on the status of their physical health such as pulse, cholesterol levels, blood sugar, body mass index, etc., which are similar to the indicators that we proposed for measuring financial health.

Fitbit is becoming a platform business model. Through APIs, it has opened its architecture to developers so they can use the data retrieved by the device to build other added value services for its own users.

> *"It's all about taking care of people and helping them take care of themselves, by making money easy."*
>
> Anne Boden, CEO Starling

Why should a bank be banned from talking about "multichannels"?

The original bank cores were designed in the sixties on a mainframe infrastructure to automate back-office processing on transactions from their branches.

The current banking systems continue being weighed down by this starting point, and all efforts over the last 50 years have been centered on rendering the initial design more efficient, though based on moving paper inside a physical network, first locally and then more internationally:

- During the seventies, offices were equipped with the IBM 3270, a simple terminal that made data entry in the records managed by the mainframe more efficient.
- ATMs made their debut during the eighties to automate money deposits and withdrawals that had initially been done from branches.
- The nineties marked the appearance of call centers, which centralized and industrialized customer support.
- In this decade, their legacy systems were rendered more complicated following a wave of corporate operations (M&A) and the implementation of multiple systems from different manufactures, resulting in an incapacity to gain a 360° of the customer (in addition to the IBM accounts management system, there were systems from other manufacturers such as Unisys or Fujitsu).
- In the decade beginning in 2000, the buzzword was multi-channel with the arrival of online banking. This was the appropriate moment to rethink systems architecture, but banking merely created a web layer that gave access to internal machinery with a username and password, which is essentially where most banks still remain. In fact, the portals of most online banks seem like they were designed in early 2000, with banking data displayed in the same format as a printed bank account statement.
- The decade starting in 2010 marked the advent of smartphones, 24x7 connection and apps that other sectors employed to provide extended functionality.

In contrast, banking limited itself to simply changing the size of the information, switching from 21" for desktop monitors to the 5" for cell phones, which is by no means an advance, and the information displayed was not in real time and provided no superior user experience.

While the traditional banking model became efficient, it has nevertheless reached its limit in this regard, for which the only remaining solution is to change the way banking works and doing so requires reconstruction of the backend.

Similar to ATMs, call centers, online banking and mobile banking, branches were a layer on the mainframe. Each one of these layers was referred to as a channel, which is why we can say that banking attempted to use the appearance of omnichannel functionality to convey a sensation of modernity, though nothing could be further from the truth. In fact, channels are part of an obsolete legacy architecture built in the sixties to distribute paper in a network of offices.

The new way of working in new banking cannot be built from the frontend but must be built from the backend core systems. Could anyone picture Facebook in terms of channels? Of course not, because it was built with a digital core, designed so that digital data could flow through IP networks to users from wherever, web, mobile, etc., all in real time. It would also be unthinkable to send an email through Gmail from a mobile device but be unable to view the email when switching to a PC. In banking however, if the customer begins an operation online and after while opts to continue it via call center, the customer would need to start from the beginning all over again...

Having a *digital core* brings user experience to another dimension: i) the best offers can be made at the right moment, thus increase a customer's life (cross-selling, loyalty points, etc.), and ii) any risk can be monitored better (fraud, cyberattack, etc.).

The future will entail creating service levels on this digital core, but not legacy access layers. In other words, digital over digital instead of legacy over legacy.

GAFAs have neither channels nor silos, but they do have an *approach* that is 100% digital. They have a single service that can be accessed from several devices (cell phone, tablet, etc.) to complete the different stages in a single *customer journey* and therefore everything must be synchronized and in real time.

Hello! I am Daniel's wife Marta. You can find out about my first day with our new digital bank by clicking **here**

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