Digital Financial Services (FINTECH) in Latin America *

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(Abstract)

This document assesses the degree of disruptive power of the application of cutting-edge technologies to financial services at a global level (a phenomenon known as Fintech). From there, we analyze the implications that this trend is having on the development of the banking system, with particular focus on the case of Latin America.

In this field, digital platforms are competing vigorously, although large technology companies have clear advantages (most regarding user data) should they decide to enter Fintech full-on. It is worth mentioning the specific business approaches of Google (Artificial Intelligence), Amazon (cloud computing-Big Data), Apple (cellular connectivity), Microsoft (corporate applications and cloud computing) and Facebook (Big Data management in social networks). In parallel, massive transactional systems of P2P payment systems and the so-called "digital-wallets" (Paypal, Wechat-Tencent and even WhatsApp) are growing as important alternatives within the context of financial markets, representing a source of tension for the traditional banking business.

The conclusion is that the traditional banking industry perceives latent competitive threats from this Fintech revolution. That is why it has awakened in recent years with waves of acquisitions-alliances with Fintech startups (improving their human capital in the process), in order to achieve better provision of technological services through the so-called "internal innovation hubs" (although they are also using outsourcing models for particular aspects of the business model).

This paper also reports the results of a bank-survey on the development of Fintech-Digital Banking in Latin America. Being aware of Fintech´s competitive threats, the surveyed banks are reacting through strategies of: i) alliances with Fintech companies (36% of the sample); ii) "organic" innovation within banks (29% of the sample), where many entities have implemented their own internal "digital laboratories" or "innovation hubs"; iii) outsourcing of digital services to Fintech companies (21% of the sample); and iv) acquisition of Fintech companies (9%). In addition, results suggest that the region shows favorable elements of development in digital banking supply, although there are persistent lags of adoption of those digital banking services on the demand side (where most users still prefer traditional banking channels such as physical offices).

Regarding prospective challenges for the development of digital banking in Latin America, the survey established concerns in key areas pertaining to: i) changes in the current regulatory framework; ii) the recurring theme of cybersecurity; and iii) overcoming cultural resistance within the banks themselves. Finally, surveyed banks project that, during the next five years, traditional banking and startups will end up “slicing” the industry in different niches of the market, while 34% think that their reactive innovation strategies will be enough to maintain their banking leadership. This document also presents the details of the countries´ individual results (Colombia, Paraguay, Perú, Ecuador, México and Argentina).

JEL classification: Financial Institutions (G00), Banks (G21), Innovation (O33), Technological Change (G30).

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I. Fintech: Financial and Macro Implications

Financial services provided through digital channels are generating a true disruptive revolution. This process is known as "Fintech", which corresponds to technology at the service of the financial system. The term Fintech encompasses both technological products-financial services applied to traditional banking and its extensions to the full range of the Capital Markets (including platforms, internet services, cell phone applications, etc.).

This technological revolution has already generated great innovations in the following sectors: retail (via E-commerce, Amazon-Alibaba), transportation (Uber-Lyft-Cabify), lodging (Airbnb), media and digital content (Netflix), and information and advertising (Facebook-Google, with elevated degrees of customer segmentation and AD focalization). In all those cases, the common trait has been the highly efficient use of Big-Data inputs, and its application to enhancing the client base. These processes involve the use of Artificial Intelligence (AI) algorithms, especially those concerning machine learning (for example Deep-Mind of Google or Watson-IBM), see Agrawal *et al*., 2018; all this has been compounded with the added leverage provided by the use of online networks and the capillarity of mobile phones (which are being turned into online banking offices, leveraging their high computing power).

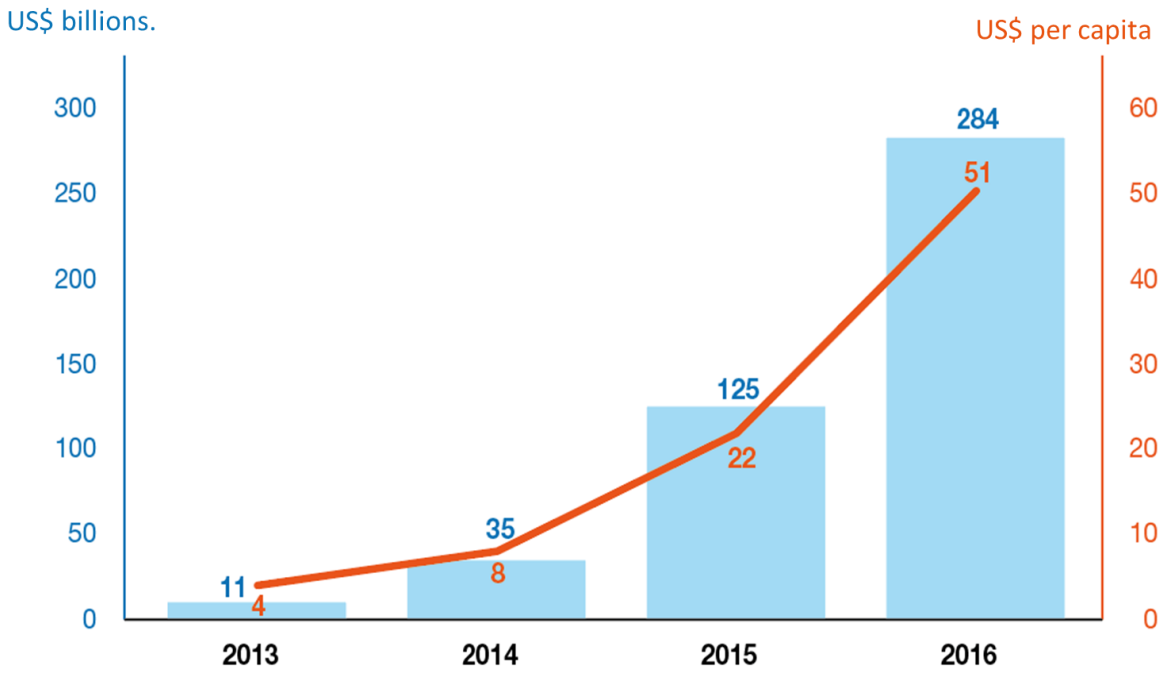
As we shall see, all this has involved a great deepening of the so-called "capitalism without capital", given the boom in investment in intangible assets (Haskel and Westlake, 2017). Its characteristic element entails the high speed with which those assets are changing the way of doing business and valuing the intangibles related to patents and their "technological applications". Suffice it to say that Uber is the largest transport company (without having a single cab); Airbnb is the largest hotel (without owning a single room); and Amazon is the global retail store (without direct “brick and mortar” stores; although with the exceptions of the well-known pilot of Amazon Go in Seattle, and more recently, Four-Star in New York).

Currently, large tech companies’ comparative advantages are evident (both for their technical know-how and their massive R&D budgets), where the American "Big Four" (Amazon, Facebook, Google, Apple) and the Chinese "BATs" (Baidu, Alibaba, Tencent) stand “head and shoulders” above their competitors, see Galloway, 2017. In the near future, the key areas of high disruption and competition will be those pertaining to cloud computing (where the current leaders are Amazon-AWS and Microsoft-Azure), the deepening of E-commerce, and the so-called programming integration applications (APIs… the computational codes-procedures that allow a variety of applications access

to financial data). All these competitive threats emanating from Big Tech companies are highly debated issues among the financial-banking sector, taking center stage even among regional discussions in Latin America (see Felaban, IDB and ASBA, 2018).

Even in the presence of such threats, part of the financial industry concludes that the degree of disruption in the global traditional banking business is rather low (of the order of 28% according to PwC estimates, 2017). This is not consistent with the competitive threats emanating from the proliferation of online loan providing platforms over the past five years (see Claessens et al., 2018). Recent estimates suggest that these Fintech loans (disbursements) amount to US $284 billion globally, according to the most recent figures for 2016 (vs. levels of barely US$10.6 billion in 2013), see figure 1. Note how those numbers imply that online credit volumes have trebled each year during 2013-2016.

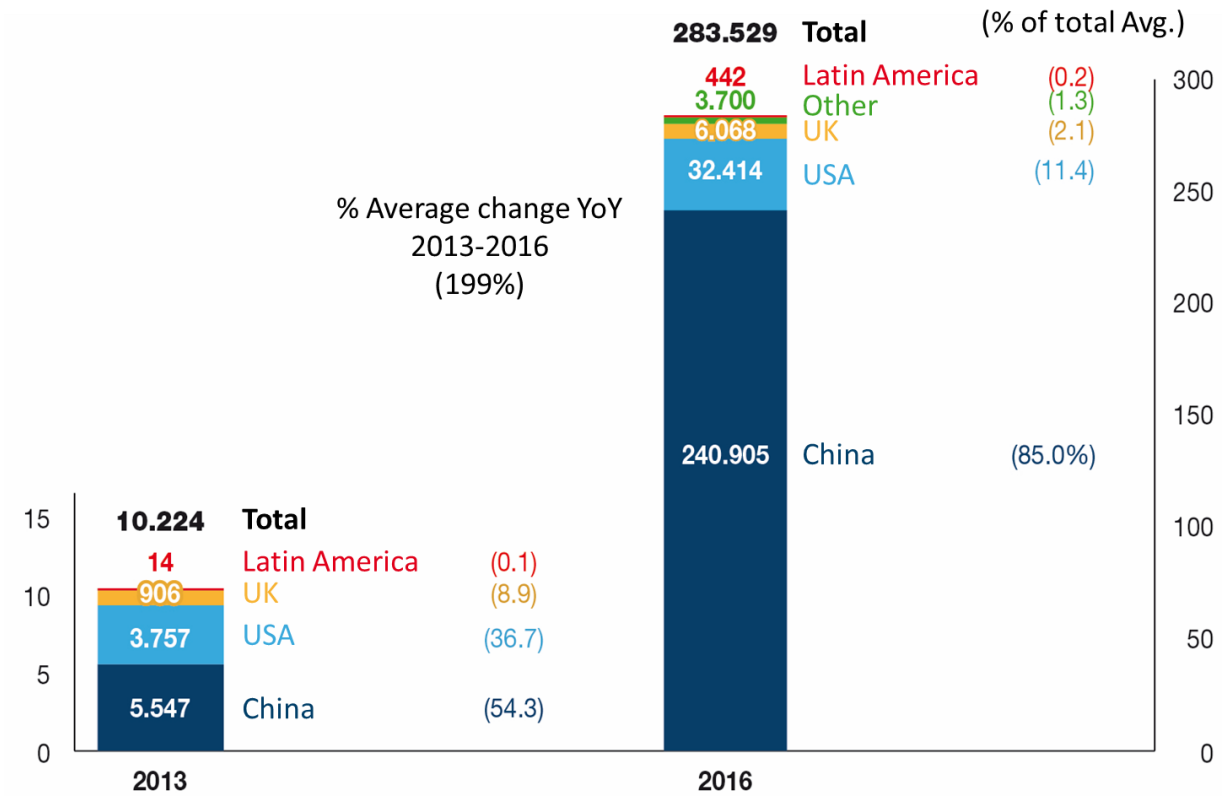
Figure 1. Global Credit (disbursements) via Fintech platforms



Source: Claessens et al. (2018).

As mentioned before, the leader in these Fintech loans is China (US$241 billion in 2016 vs. US$5.5 billion in 2013, 85% of global credit flows), followed by the United States (US$32.4 billion in 2016 vs. US$3.75 billion in 2013; 11% of global credit flows), see figure 2. With slightly smaller shares appear Great Britain (US$6.1 billion in 2016 vs. US$0.9 billion in 2013; 2% of global credit flows), Asia-Pacific (US$ 1.8 billion in 2016 vs. US$0.1 billion in 2013; 0.6%) and the Euro Zone (US$1.6 billion in 2016 vs. US$0.3 billion in 2013; 0.6%).

Figure 2. Global Credit (disbursements) via Fintech platforms: selected countries (US$ billions)



Source: Claessens et al. (2018).

In Latin America, the share of global Fintech loans is still marginal (US$0.4 billion in 2016 vs. US$0.14 billion in 2013, 0.2% of the global aggregate). However, there were significant increases in Colombia (US$131 million in 2016 vs. null values in 2013; 30% of total Fintech loans in Latin America), Mexico (US$106 million in 2016 vs. 1 million in 2013; 24% of total Fintech loans in Latin America), Chile (US$93 million in 2016 vs. US$12 million in 2013; 21%) and Brazil (US$61 million in 2016 vs. US$1 million in 2013; 14%)

It is perhaps because of this Fintech dynamism that the banking industry perceives latent competitive threats. That is why it has awakened in recent years with waves of acquisitions-alliances with Fintech startups (improving their human capital in the process), in order to achieve better provision of technological services through the so-called "internal innovation hubs" (although also using outsourcing models for particular aspects of the business model). In these topics, it is also worth mentioning that much of the perceived delay of traditional banks in Fintech services is (partly) due to regulatory hurdles that leave them with less flexibility compared with startups (specially where capital-liquidity rules are concerned).

Finally, the banking industry will have to pay close attention to the development of data regulations, a trend that is currently being led by the European Union through the recent enactment of the General Data Protection Regulation (GDPR). The main points of said regulation aim to increase data control by platform users, implementing "opt in" requirements for disclosure to third parties, as well as portability and data elimination criteria ("right to be forgotten").

II. Digital Banking Survey for Latin America - Results

51 banks participated in our Survey of Digital Banking in Latin America, with significant representation in key countries of the region. This document focuses on the countries where we were able to get a critical mass of survey responses, including Colombia (15 banks, representing 86% of bank assets), Paraguay (9 banks and a payment network, explaining 64% of bank assets), Peru (6 banks, 62%), Ecuador (6 banks, 44%), Mexico (8 banks, although with low representation of just 5% of assets) and Argentina (3 banks, explaining only 1% of assets).

Our banking sample also includes an item that we have termed as the "Rest of Latin America" comprised of responses from Brazil (with results from a single bank, although explaining about 16% of banking assets), Uruguay (1 bank, 44% of assets), and the Dominican Republic (where the single answer comes from the Banking Association of the Dominican Republic).

The Survey allows us to elucidate trends in three key aspects of the development of digital banking and Fintech in the banks surveyed in the region. Those aspects are: i) digital banking supply elements, where we seek to capture the capacity of regional banks to offer digital-online services (transforming-adapting to the Fintech disruption), their depth of investments in technology-R&D, among others; ii) demand elements, where we try to measure the degree of digital banking adoption by users (trying to assess the existence of supply-demand gaps in digital banking services in the region); and iii) elements of business-strategy in the digital-banking transformation, and the future strategic challenges that Fintech entails for the banking industry in Latin America.

As we will see, the analysis of the Latin American sample shows elements of development in digital banking supply. This is particularly true in money transfers, payments and remittances, with significant penetration in the digital provision of bank transfers (88% of the sample) and payment of utilities (87%). This online penetration is lower in products related to bank's liabilities, especially in the opening of checking and savings accounts (53%), and even more in the digital provision of banking assets-loans

(50% of the sample). Both areas of digital supply (banking assets-liabilities) exhibit significant lags when compared to the international benchmark of Spain (taken from similar surveys, see KPMG, 2017).

Despite the development of digital banking on the supply side, the region's average still shows lags on the demand side. This is reflected in the fact that banking users still prefer traditional banking channels such as physical offices (expensive for financial institutions) and ATMs. As expected, digital users are concentrated in the relatively young portion of the population (ages 25-45), which gives some hope of further digital deepening as these users increase their participation in the population (and expand their wealth-income).

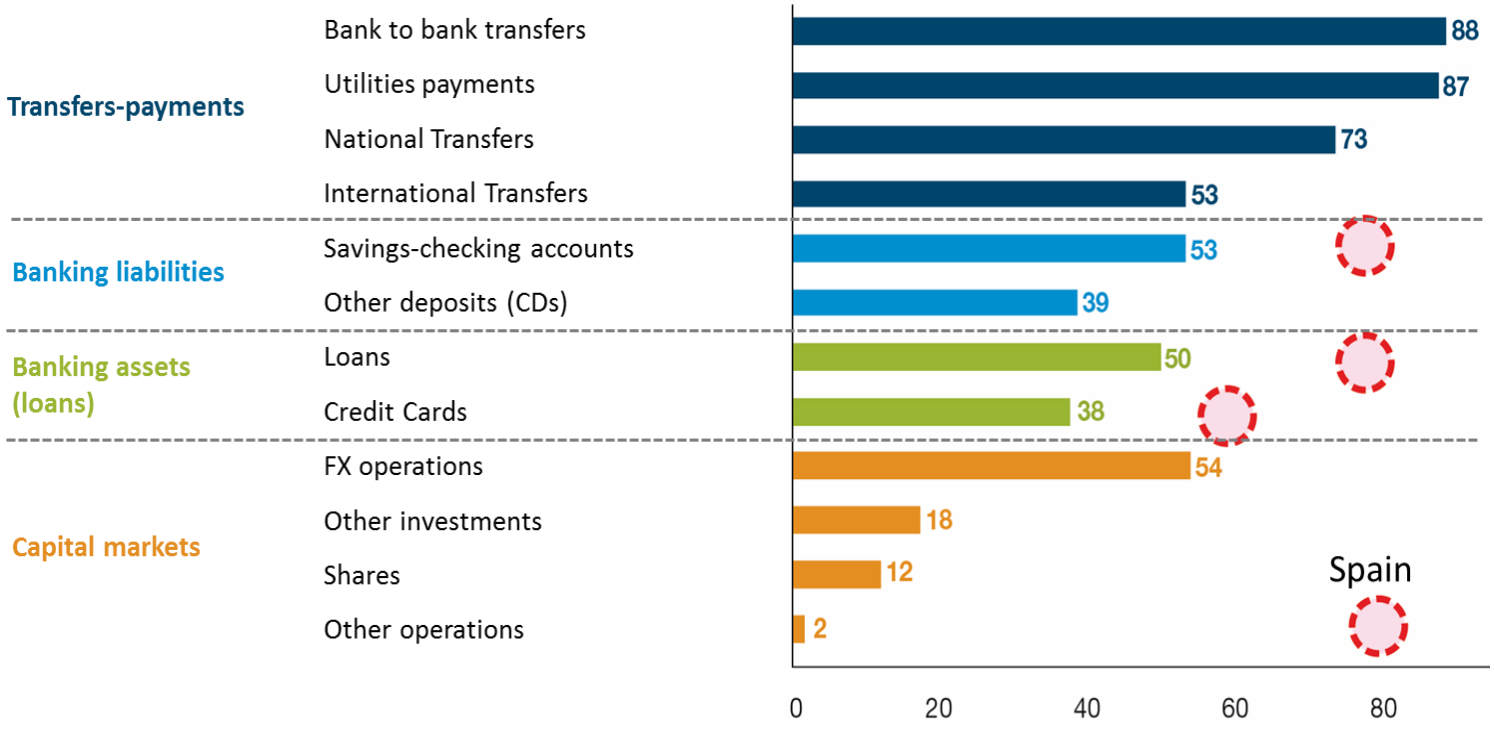
Finally, the digital strategy and challenges section suggests a regional banking sector that, on average, is aware of the disruptive elements of the Fintech revolution. This is due both to the potential impact on the banking margin (NIM) and the loss of customers, as well as to the operational elements of cybersecurity and the regulatory framework (seeking to eliminate the discussed elements of regulatory arbitrage). Therefore, the banking industry in the region is undertaking strategies of alliances with startups (36% of the sample), developing internal digital innovation (29%), outsourcing technological services to startups (21%), and making acquisitions of said startups (9%). What follows are the details of the survey results.

a) Supply elements

Figure 3 shows the services that banks in the region are currently able to fully offer over the internet (where we will use the results of KPMG-2017 obtained in Spain as an international benchmark for developed countries, as already noted). As expected, this degree of digital penetration is high in payments-local-transfers (both close to 87% of the sample), with slightly lower values in international transfers (53%). This digital banking supply decreases further when referring to banking liabilities and assets, ending with the lowest digital penetrations in the Capital Markets operations.

Figure 3. Latin America: Online banking services

(% of the sample)



Source: "Encuesta los servicios financieros digitales en América Latina" (2018) Anif-FELABAN-CAF and KPMG (2017).

For example, on bank liabilities, the regional average suggests that 53% of the sample is able to open savings accounts entirely over the Internet, suggesting some development in that product supply (although lags are evident when compared to the 80% observed in the benchmark of Spain). Note how digital availability drops rapidly to only 39% of the sample when referring to "other deposits" (mainly CDs).

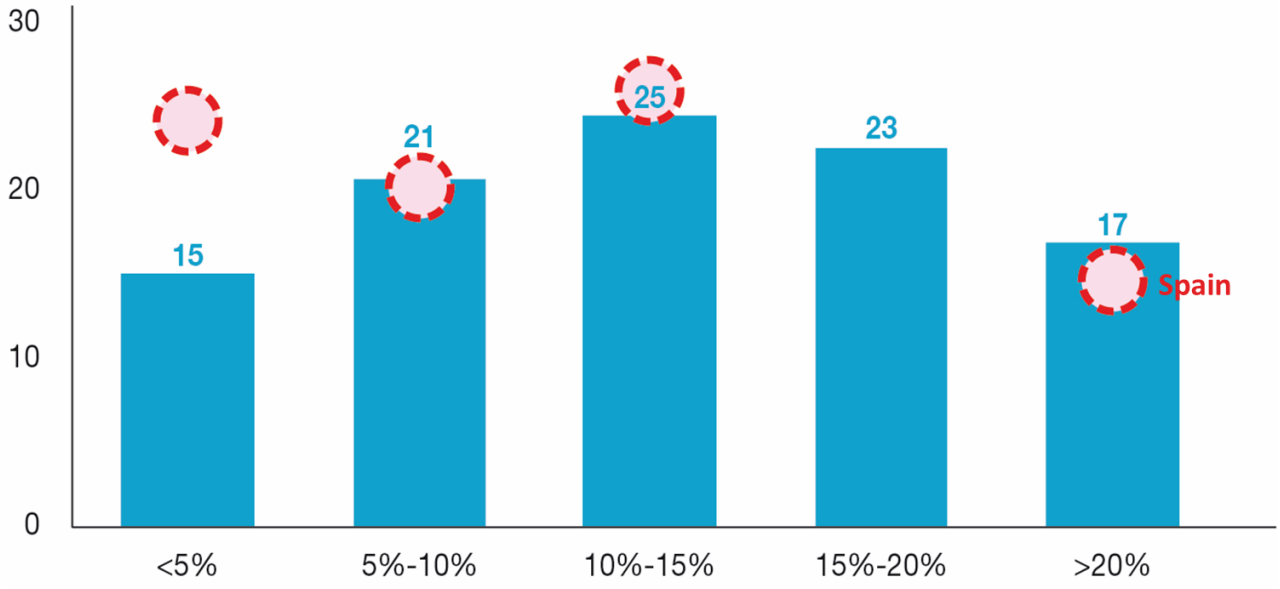
On the banking asset side, the regional aggregate also shows an average penetration of 50% in online loan provision (lagging behind the 80% observed in Spain). This digital provision decreases to 38% in the regional average in the case of credit cards, also displaying lower levels than those of Spain (60%).

Finally, this Survey found low electronic supply of Capital Markets operations, given the precarious development of those markets in the region. This is particularly evident in shares transactions (12% of the sample) and Investment Funds (18% of the sample). The exception to that low supply in Capital Markets are foreign currency transactions (54% of the sample). This is explained by important macro-financial characteristics of the region regarding: i) quasi-dollarization in some countries of the sample

(Ecuador, Peru); and ii) high flows of remittances to the region, mainly from the United States and Spain (these sources explain about 86% of remittances to the region according to World Bank data).

We also inquired about the degree of innovation through the banks´ budgets assigned to technology-innovation-R&D. Figure 4 shows that 48% of banks in Latin America allocate significant portions of 10%-20% of their budget to technology and innovation. Furthermore, the sample identifies 17% as "leaders" who invest more than 20% of their budget in technology (slightly exceeding the 15% observed in Spain). Similarly, only a portion of 15% of the sample invests less than 5% of its budget in innovation (a favorable reading when compared to the 25% observed in Spain). Here it is worth mentioning that this question does not capture the "stock effect" of such investments, where Spain is known for its high investment history (in other words, the “capacity” to act on these tech fronts derived from past investments).

Figure 4. Supply elements in Latin America:
% share of Budget destined to Tech-innovation and R&D
(% of sample)

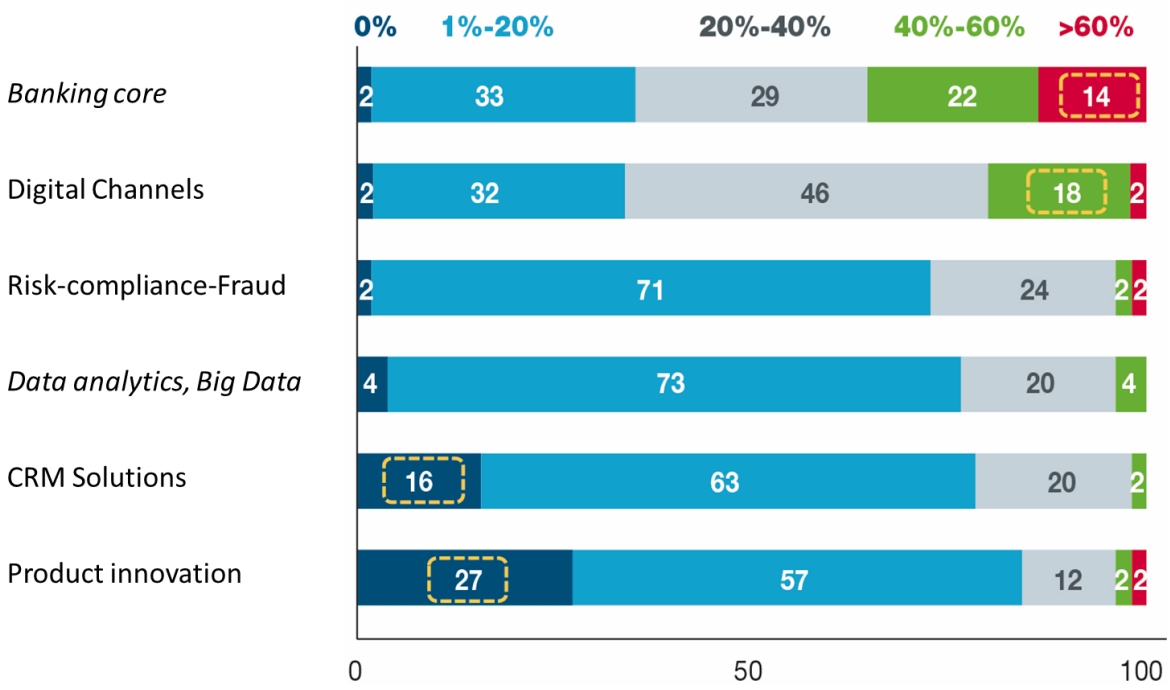


Source: “Encuesta los servicios financieros digitales en América Latina” (2018) Anif-FELABAN-CAF and KPMG (2017).

Within these investment budgets, the mayor sub-categories are: i) investments in the core banking business (allocations exceeding 60% of the budget by 14% of the sample and in the 40%-60% range of the budget for 22% of the sample); ii) digital channels (with allocations of 20%-40% of the budget in the answers of 46% of the sample), underlining the importance of the technological revolution in the way of reaching customers; and iii) risk, compliance and fraud (with allocations of 20%-40% of the

budget in the answers of 24% of the sample), showing the persistent investment needs in compliance processes, see figure 5.

Figure 5. Supply elements in Latin America:
Tech-innovation Budget distribution
(% of sample)



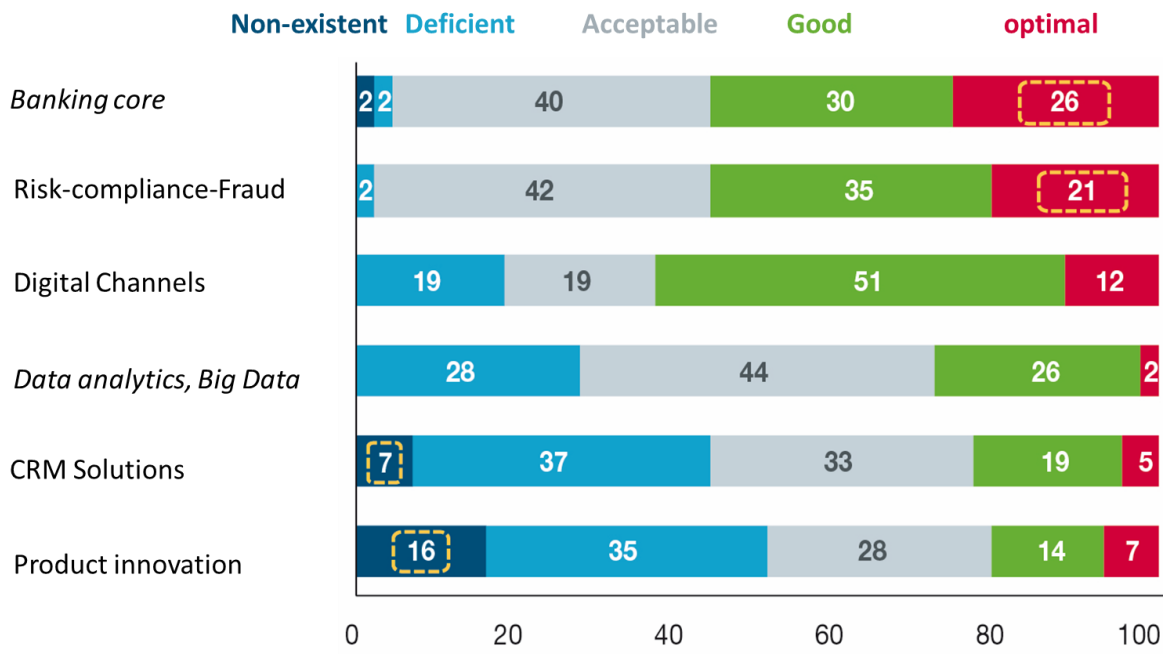
Source: "Encuesta los servicios financieros digitales en América Latina" (2018) Anif-FELABAN-CAF.

On the contrary, lower investment components were observed in: i) product innovation (budget allocations of 1%-20% for 57% of the sample and surprising null investments by 27% of the sample), showing lags in the adoption of cutting-edge technologies in product diversity-banking options to clients; and ii) CRM solutions (budget allocations of 1%-20% for 63% of the sample and null investments for 16% of the sample).

However, those "low" investment values in product innovation and CRM solutions can be explained by "high" historical investment levels that have already accumulated a stock of "capabilities" in those areas. To capture this effect, figure 6 shows the perception of the regional banks on their capabilities in those fronts. As expected, the most developed item would seem to be precisely the banking core (with "optimal" capacities in 26% of the sample and "good" in 30% of the sample). This was followed by risk-compliance (with "optimal" capacities in 21% of the sample and "good" in 35% of the sample) and digital channels ("optimal" capacities in 12% of the sample and " good "in 51% of the sample). On the contrary, banks perceive lower capacities in areas related to product innovation ("non-existent" in

16% of the sample and "deficient" in 35% of the sample) and CRM solutions ("non-existent" in 7% of the sample and "deficient" in 37% of the sample).

Figure 6. Supply elements in Latin America:
Operational capabilities in tech-innovation processes
(% of sample)



Source: "Encuesta los servicios financieros digitales en América Latina" (2018) Anif-FELABAN-CAF.

Note how all of the above implies that, on average, regional banks continue to allocate most of its investment in technology to areas where "developed" capacities already exist. This is particularly true in the case of core banking, risk-compliance and digital channels, given its persistent nature and evident operational challenges. At the same time, this implies less relative investment in somewhat lagging capacities (CRM and product innovation). In other words, the industry seems to invest in its strengths, but continues to neglect its weaknesses, still showing some resistance to technological change (although there are often understandable needs for prioritizing scarce budgetary resources).

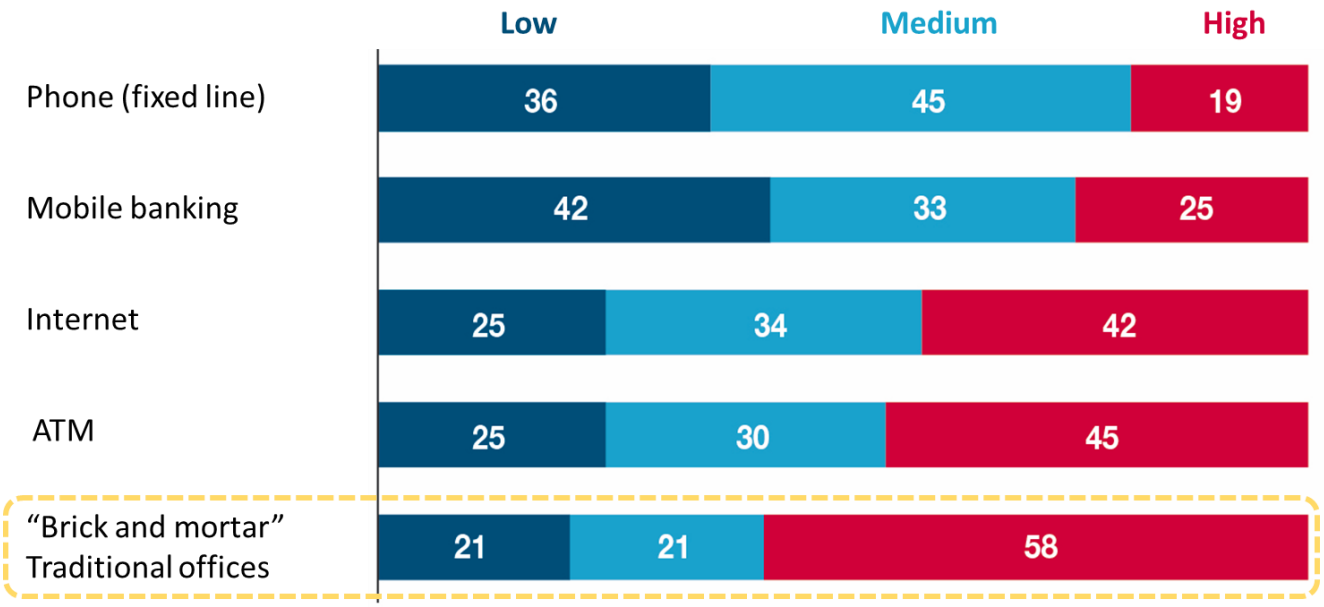
In conclusion, the maturity snapshot of the digital banking supply displays considerable advances in the region, although with persistent lags when compared to the international benchmark (Spain). In the future, it will be important to pay attention to the disruptive nature of new products and to their potential for generating greater financial inclusion, all of which entails important challenges for the region. Finally, it is worth mentioning that all this digital banking supply is turning towards concepts of

platforms that are incorporated into the banking-core, through "Open Banking" services leveraging the use of APIs.

b) Demand elements

The Survey shows some divergences on the demand side for the regional average; despite the mentioned advances in digital banking supply, the preferences of many users remain stuck in traditional physical channels. For example, figure 7 illustrates a "high" use of traditional transactional channels such as physical offices (58% of the sample) and ATMs (45%). Although this "high" intensity of use is maintained for internet channels (42%), it rapidly decreases in the case of mobile-banking (25%) and phone-banking (19%).

Figure 7. Demand elements in Latin America: transactional channels intensity of use (% of sample)

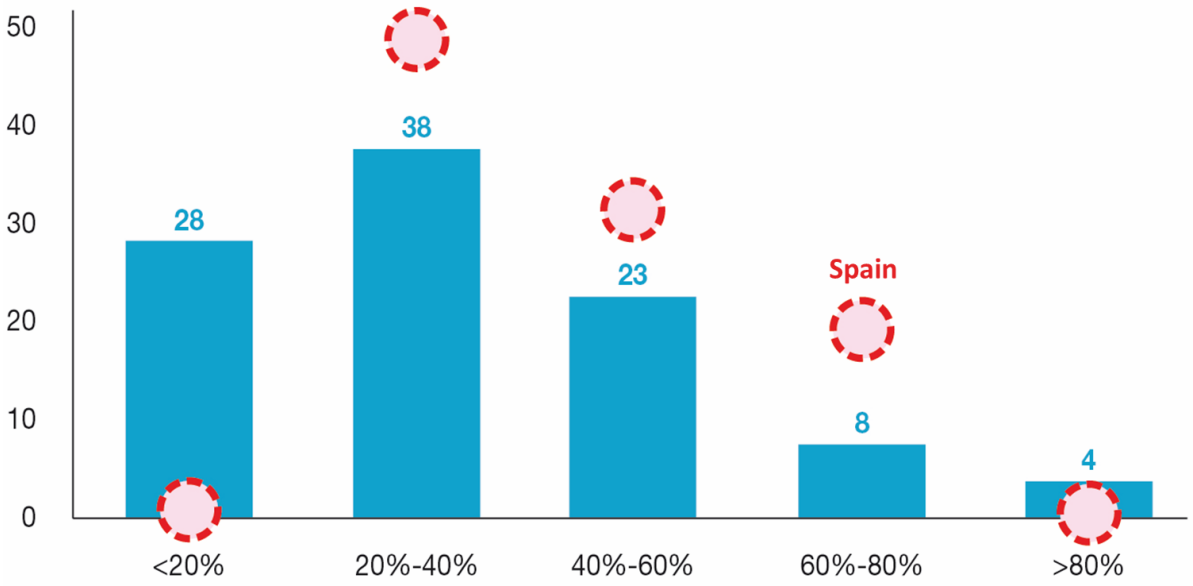


Source: "Encuesta los servicios financieros digitales en América Latina" (2018) Anif-FELABAN-CAF.

Figure 8 shows another aspect of this low demand for digital banking channels, since only 12% of the banks surveyed face high digital channel "usage" by more than 60% of their clients (lower than the 25% observed in Spain) . There is an important portion of 23% of the sample that perceives a "medium level" usage of digital channels by 40%-60% of its clients (slightly below the 30% observed in Spain),

but there is also a portion of 28% of the sample that displays relative lags, with digital usage in less than 20% of its clientele (vs. null values in Spain). As expected, these digital clients are concentrated in relatively young ages in the range of 25-35 years (55% of the sample) and 35-45 years (31% of the sample).

Figure 8. Demand elements in Latin America:
% of digital users
(% of sample)



Source: "Encuesta los servicios financieros digitales en América Latina" (2018) Anif-FELABAN-CAF and KPMG (2017).

Finally, digital banking penetration is relatively elevated in the middle-income portions of the sample (67%), with lower values in the middle income (24%) and-low income (10%) portions. These findings underline the need for greater innovation in products that increase financial inclusion in the low-income segment (where elements of financial education are dire). The surprisingly small use of digital technology from high-income clients should also be addressed, probably by designing mechanisms to capture automated-digital wealth management tools for high-income individuals (the "coveted high net worth segment").

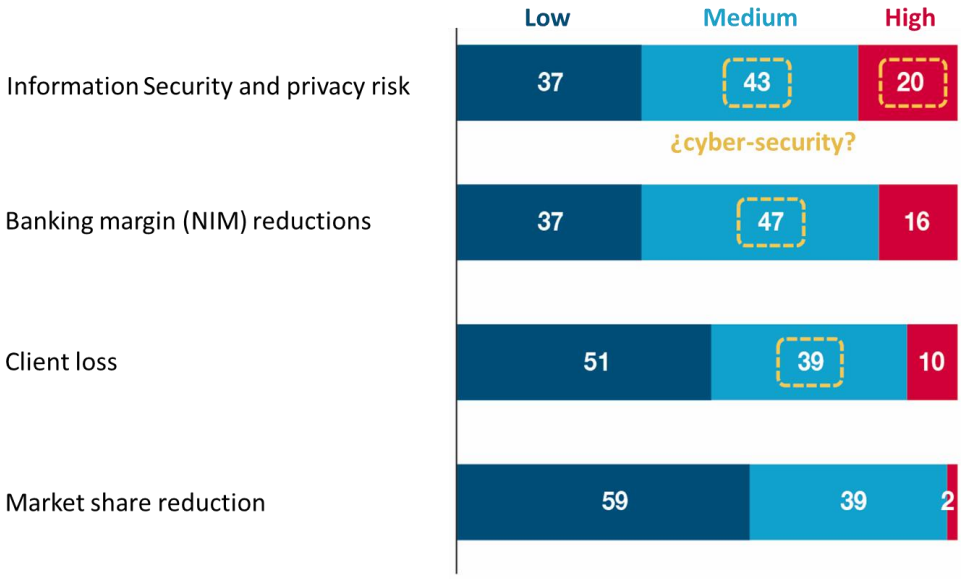
c) Digital transformation

We have seen how Fintech is introducing a disruptive revolution in the traditional banking business globally, but at different speeds. What is the degree of disruption perceived by banks in Latin America derived from said Fintech threat? When asked explicitly about this factor, surprisingly close to 63% of the banks surveyed assign a degree of "low" disruption to the digital revolution of 2018-2019. In contrast, 27% of the sample assign a degree of "medium" disruption and only 10% a degree of "high"

disruption. Here we conclude that these “perception distribution” is somewhat odd, for in the next question, 39% of banks are indeed worried about the Fintech competitive threat regarding their particular organization.

This greater concern for the disruptive elements of Fintech is even more present when investigating digital threats in particular areas of the banking business, see figure 9. The main concerns in this area are: i) information security and privacy risk, with persistent worries about data-breaches and cyber-security ("medium risk" by 43% of the sample, and "high risk" by 20% of the sample); ii) reductions of Banking Margins-NIMs ("medium risk" perception in 47% of the sample, and "high risk" in 16% of the sample); and iii) client loss ("medium risk" perception in 39% of the sample, and "high risk" in 10% of the sample).

Figure 9. Digital transformation in Latin America:
Fintech-related competitive threats
(% of sample)

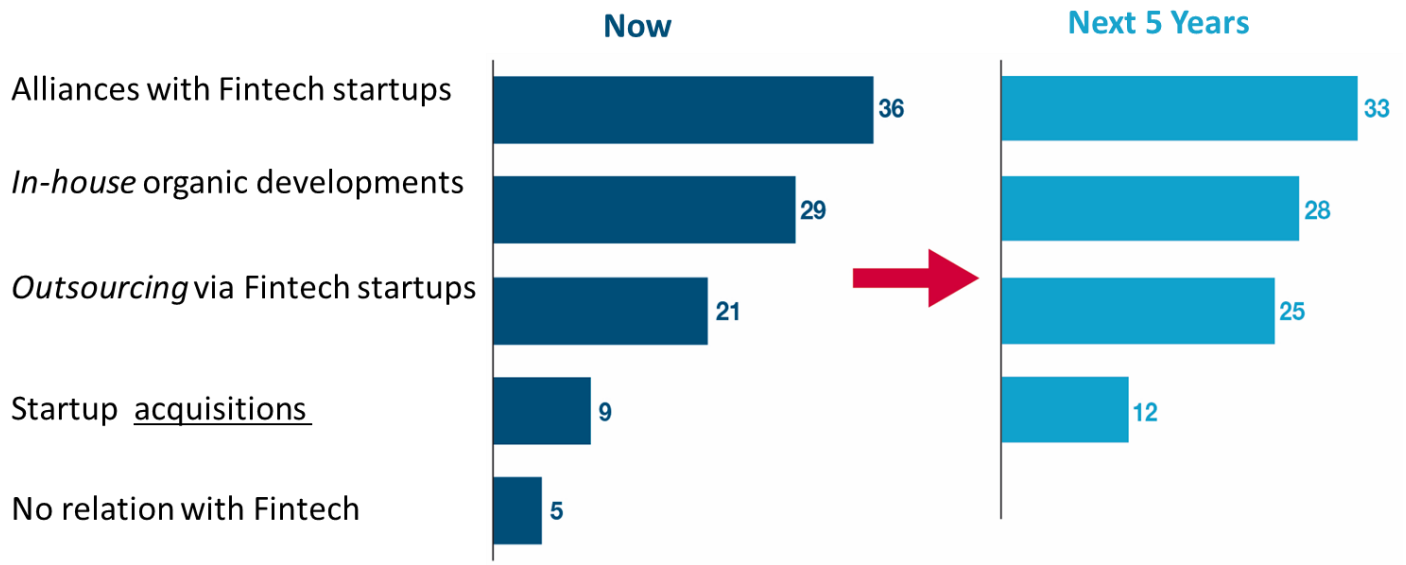


Source: “Encuesta los servicios financieros digitales en América Latina” (2018) Anif-FELABAN-CAF.

Being aware of these competitive threats, the surveyed banks are reacting through strategies of: i) alliances with Fintech companies (36% of the sample); ii) "organic" innovation within banks (29% of the sample), where many entities have implemented their own internal "digital laboratories" or "innovation hubs"; iii) outsourcing of digital services to Fintech companies (21% of the sample); and iv) acquisition of Fintech companies (9%), see figure 10. Note how these strategies would be changing little during the next five-year period, except for some increases in the disposition to acquire Fintech companies (12%).

he Survey also inquired about the human capital capabilities that the Fintech revolution will demand in the region's financial sector. There, the most relevant capacities were those regarding “customer orientation” ("very relevant" for 65% of the sample and "highly relevant" for 27% of the sample); digital knowledge ("very relevant" for 63% of the sample and "highly relevant" for 29% of the sample); and knowledge of multiple banking channels ("very relevant" for 55% of the sample and "highly relevant" for 33% of the sample). It is worth noting that those average human capital requirements in the region coincide with Spain on the item regarding “customer orientation”.

Figure 10. Digital transformation in Latin America:
Business strategies to face Fintech competition
(% of sample)

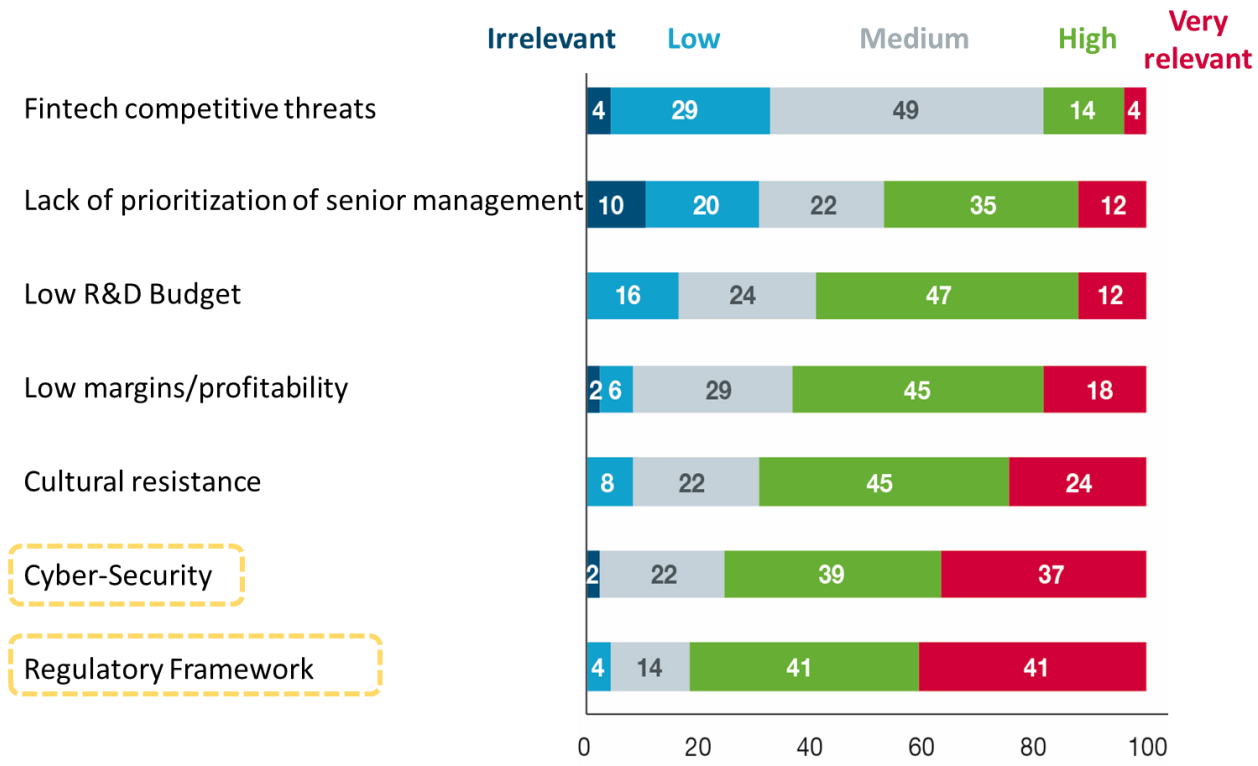


Source: “Encuesta los servicios financieros digitales en América Latina” (2018) Anif-FELABAN-CAF.

It is rather surprising that traditional banking business abilities ("very relevant" for 37% of the sample and "highly relevant" for 35% of the sample) seem to be relatively less important. In particular, these banking skills are surpassed in their importance by items such as digital communication ("very relevant" for 39% of the sample and "highly relevant" for 45% of the sample) and information management ("very relevant" for 39% of the sample and "highly relevant" for 47% of the sample). All this underlines the ongoing transformation of the labor-force in financial institutions, prioritizing digital knowledge requirements (code, algorithms, Big Data, etc.), even above core banking skills (although obviously these skills will continue to be fundamental in the strategic-direction and management of the business).

Regarding prospective challenges for the development of digital banking in Latin America, the survey established worries in the following areas: i) modifications of the current regulatory framework ("very relevant" for 41% of the sample and "highly relevant" for another 41% of the sample), see figure 11; ii) the recurring theme of cybersecurity ("very relevant" for 37% of the sample and "highly relevant" for 39% of the sample); and iii) overcoming cultural resistance within the banks themselves ("very relevant" for 24% of the sample and "highly relevant" for 45% of the sample).

Figure 11. Degree of relevance of the challenges for Digital Banking in Latin America (% of sample)



Source: “Encuesta los servicios financieros digitales en América Latina” (2018) Anif-FELABAN-CAF.

Finally, the Survey inquired about the challenges that banks in Latin America will face during the next five years. 36% of the sample think that traditional banking and startups will end up “slicing” the industry in different niches of the market, while 34% think that their reactive innovation strategies will be enough to maintain their banking leadership. It is worrying that a non-negligible portion of 15% of the regional sample “discounts” Fintech as an overvalued phenomenon. Whatever the result (highly uncertain in itself), what is clear is that in the immediate future competition will be arduous between traditional banking and the disruptive effect generated by technological innovation. Many banks think that the new course of the financial system will emanate from this interplay between banking and technology.

Naturally, all these aggregate results of the Latin American average hide the internal variance of the individual country data. In this aggregate sample, two groups of countries can be established: i) those with relatively favorable developments in their digital banking supply, although with some difficulties on the demand side (generating a gap between "installed" digital banking capacity vs. low absorption via digital banking demand), such as Colombia, Ecuador and Peru; and ii) countries with lags in the supply of digital banking, although with a greater willingness to absorb those services on the demand side; here we can classify the cases of Mexico and Argentina (although the reduced sample in these countries suggests some statistical noise in those results). Paraguay is a stand-alone case, with relatively good readings of both digital supply and demand.

III. Conclusions

This document assessed the degree of disruptive power of the application of cutting-edge technologies to financial services at a global level (a phenomenon known as Fintech). From there, we analyzed the implications that this trend is having on the development of the banking system, with particular focus on the case of Latin America.

The conclusion is that the traditional banking industry perceives latent competitive threats from this Fintech revolution. That is why it has awakened in recent years with waves of acquisitions-alliances with Fintech startups (improving their human capital in the process), in order to achieve better provision of technological services through the so-called "internal innovation hubs" (although also using outsourcing models for particular aspects of the business model).

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