



NEW BANKS IN THE 4TH INDUSTRIAL REVOLUTION: A REVIEW AND TYPOLOGY¹

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Abstract

The banking industry is strongly influenced by Industry 4.0 with the rise of digital native banks that are changing the global competition lowering costs and entry barriers. Despite the relevance of the phenomenon, there is no consensus on the concept of digital native banks. For this reason, the paper aims to reconstruct, to classify and to analyze the topic, building up a typology of digital native banks. Studies on the topic are identified through a review process on scientific and professional sources. The typology is then fine-tuned through focus group and in-depth interviews. The results verify that there are five types of digital native banks (Beta Banks; Neobanks; Challenger Banks; Big Tech's Banks; Retailer's Banks) based on five dimensions (License; Actors; Approach; Banking Market Experience; Group Core Business). The theoretical contribution of the paper is the construction of a typology of digital native banks that are little analyzed in the academic literature. From a managerial point of view, the paper allows a better comprehension of the competitors and of the new market opportunities in the banking industry. The originality of the paper is the wide and holistic approach used to analyze a nascent field that allows to open-up new lines for the academic research.

Keywords

Digital Native Banks; Industry 4.0; Banking Industry; Fin-Tech; Typology; Review

1. Introduction

The financial sector is facing a radical transformation. The evolution of the Fin-Tech started in the 1990s with the Internet enabled e-commerce. Then appeared dynamic Web services, standardization, and integration of e-business technologies in enterprise applications (Gimpel, Rau & Röglinger, 2018). Finally came mobile channels, cloud-based services and big data analytics that allowed the shift to consumerization offering user-centered life solutions in areas such as health, mobility, or finance (Alt and Zimmermann 2014). Nowadays, with the advent of Industry 4.0, Fin-Tech offer consumer-oriented banking, insurance, and other financial services (Alt and Puschmann 2012).

The banking industry, in particular, is facing a proper revolution because not only the services offered are changing, but also the characteristics of the banks it-selfs. This industry is affected by a threefold transformation based on three drivers of change: Industry 4.0, global competition and the regulatory change.

Each of these drivers of change has a double impact. From one side they impact on the existing banks with positive and negative effects, from the other side they impact on the emerging ones with more positive implications.

First of all, the enabling factor named Industry 4.0 (Kagermann et al., 2013a, Kagermann et al. 2013b) or Fourth Industrial Revolution changes what we do and how we work (Schwab, 2016) with the implementation of more than 1200 enabling technologies (Chiarello et al., 2018) grouped into nine pillars (Gerbert et al., 2015). Industry 4.0, mainly impact on the distribution channel of banking services introducing digital channel leveraging big data and cloud computing technologies. In one hand, this facilitates the existing banks reducing the branches and the related costs, but the reconfiguration of the digital channel require investments, new digital competences, regulatory adaptation and the need to correctly manage the surplus of excess workforce.

The advantages introduced by Industry 4.0, impact the second driver of change: the global competition. Currently, the banking sector sees the rapid diffusion of Digital Native Banks, platforms that through the digital channel make the business scalable across an international level, requiring a reaction from traditional banks, that must adapt their structure to the new opportunities and threats of the market.

Finally, the banking institutions are under great pressure from the point of view of compliance, particularly in Europe, where the regulator has imposed several regulatory changes (according to Thomson Reuters, BI Intelligence and Medici Research, in 2016 there have been 52.506 regulatory publications changes).

However, the new regulation might advantage the new Digital Native Banks that starts their activities ex novo with an ad hoc structure. Traditional banks, on the contrary, face more problem adapting their organization to the new rules. This requires costs and time that could disadvantage the traditional banks.

Despite the large interest on the topic of Industry 4.0, Fin-Tech and banking studies, there is a gap in the analysis of the new emerging types of banks. In particular, academic insights are scarce and most related publications are commercial and professional reports.

For these reasons the paper aims to reconstruct a comprehensive map of the existing new types of Digital Native Banks through a typology and aims to test it through focus group and in-depth interview with a pool of experts in the topic. The results show that there are five main types of Digital Native Banks (Beta Banks; Neobanks; Challenger Banks; Big Tech's Banks; Retailer's Banks) distinguished on five main dimensions (License; Actors; Approach;

Banking Market Experience; Group Core Business). The main theoretical contribution of the paper is to clarify the comprehension of the Digital Native Banks phenomenon and to identify the types of digital native banks and their main characteristics, building up a typology, that are little analyzed in the academic literature.

The paper is structured as follows. The second paragraph resumes the theoretical background. The third paragraph explains the methodology. The fourth paragraph reports the results of the typology. The conclusion highlights strengths and weaknesses of the paper and purposes future lines of research.

2. Background

In recent years, competition from the banking sector has increased exponentially with the emergence of players from the digital world, Fin-Tech (Arner et al., 2015).

Fin-Tech is the abbreviation of “financial technology”, that comes from “financial services” and “information technology” (Oxford English Dictionary). The term FinTech was first used in the early 1990s for a project by Citigroup predecessor to foster technological collaboration (Hochstein 2015). Since 2014, it has gained attention in contexts such as innovative business models.

The evolution of Fin-Tech is described as an ongoing process “during which finance and technology have evolved together” (Arner et al., 2015). Today, Fin-Tech start-ups cover many consumer-facing elements of the financial value chain. In particular, Fin-tech are based on specific segments of the value chain such as foreign exchange, payments, loans, trade, asset management or insurance, unbundling or disaggregating the services previously originated and sold by the banking sector.

From an industry perspective, Fin-Tech start-ups are typically non-financial businesses such as technology-driven companies and online businesses (Dapp 2014, 2015; Gulamhuseinwala et al. 2015; Kim et al. 2016). Although some start-ups hold a full banking license (e.g., N26), most do not. To offer services that require a full banking license or to leverage the regulatory and risk management experience of traditional financial institutions (The Economist Intelligence Unit 2015), some Fin-Tech start-ups collaborate with traditional financial institutions (Dany et al. 2016; Dapp 2015; Gulamhuseinwala et al. 2015) or newly established “white label” banks. With multiple venture-capital investments in recent years, the Fin-Tech start-up development rapidly accelerated globally, unfolding its full dynamics with tremendous growth (Dietz et al. 2015; Gulamhuseinwala et al. 2015).

Because of low bureaucratic boundaries, deep understanding of customer needs, and dynamic teams with high technical skills, Fin-Tech start-ups stand out with short development cycles and time-to-market. Though they follow a customer-centric strategy, long-term success rates are not yet available and earnings remain uncertain. However, they are attractive to traditional financial institutions, which already invested in Fin-Tech partnerships, acquisitions, and internal incubators to expand their service portfolios to reach new customer segments and enrich customer experience (Dany et al. 2016).

The competition inside the banking industry increase further not only for the emerging technological organization of the Fin-Tech, but also for the rise of organizations coming from other industries such as digital companies - Google, Apple, Facebook and Amazon, GAFA.

In order to survive in this context, banks are changing their own structure and configuration with broader implications than before.

Already in the past, banks introduced innovative technologies to improve efficiency, adherence and quality of services offered to customers. However, in the fourth industrial revolution the changes in the banking sector no longer concern only products or services, nor only the way in which they are distributed. The disruptive changes of the fourth industrial revolution in the banking sector, in fact, concern both the demand side and the supply side. As far as the first is concerned, the new needs of the two generations of digital natives must be met: millennials and centennials. As far as the offer is concerned, operators are adapting to the competition of innovative technological realities, with a digital banking proposal comparable to the quality and price efficiency standards of startups and big-techs by setting up digital native banking platforms.

However, despite the relevance and the rising of the phenomenon, there is no consensus on the definition of Digital Native Banks and there are different synonymous used with different meanings. For example, some authors use the term Neobanks (Nikolaev, 2018; Rudskaya & Poltavskaya, 2018, Likuyev & Bermisheva, 2018; Papernik, 2018), while others prefer other words such as Challenger Banks (Burnmark, 2016; KPMG, 2016). Other researches define Digital Native Banks as institutions that provide some combination of checking accounts, saving accounts and debit cards via digital channels-primarily mobile-without any physical bank branches.

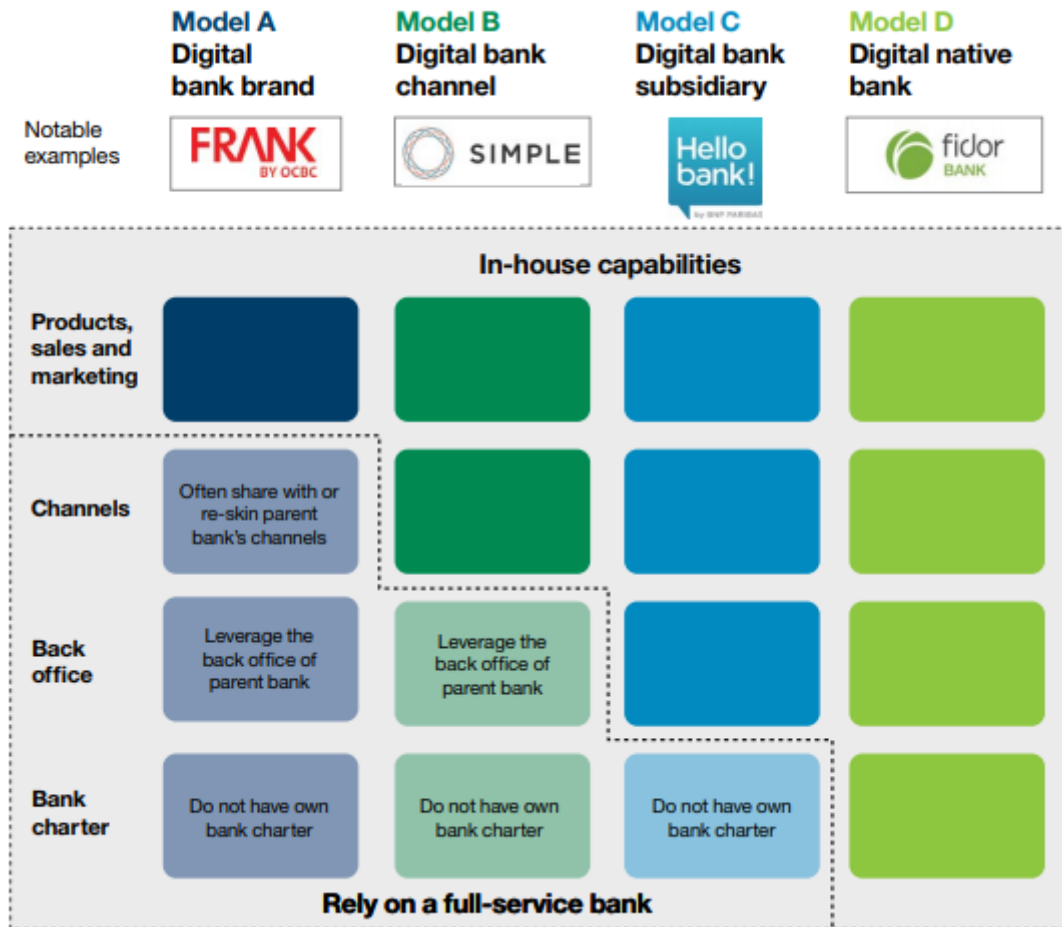
A deeper understanding of the concept related to digital native banks, is provided by two very useful reports that are described in the following sections.

In a recent whitepaper, IBM (2015) identifies 4 models of digital banks depending on their different level of dependency from another organization, in most cases, the parent bank company (tab. 1):

- Digital Bank Brand have the higher degree of dependency from other entities. Only the front end and the brand are separated from the parent bank, while the customer experience remains bounded to the parent's bank legacy system.
- Digital Bank Channel deliver new mobile and online apps that are focused on user experience reselling a real bank's products and redepositing customer funds into a real bank's insured accounts.
- Digital Bank Subsidiary occur when a large bank creates a separate organization in order to develop a true end-to-end business model with more agile and modular back end systems.
- Digital Native Bank regards full-fledged banks that build their core value propositions around digital technologies, even if does not necessarily imply branchless banking.

The Digital Bank Brand and Digital Bank Subsidiary refer mainly to what in the paper is identified as "Beta Banks", which deal almost exclusively with developing the group's online channel. Digital Native Bank mainly concerns what has been identified in the paper with the term "Challengers Banks", or subjects that are usually independent of large banking groups. Digital Bank Channel refers to "Neobanks" or independent organizations that works with incumbents on which a supply relationship exists.

Tab. 1 – IBM's classification of the Digital Native Banks



Source: IBM White, Designing a sustainable digital bank, 2015.

The second useful report is the one by PriceWaterhouseCoopers that defines Digital Native Banks as organizations that uses a fully digital customer interface and back end allowing a drastically different banking experience in comparison with non-native digital banks, in particular:

- Providing a seamless experience that are designed based on customer needs.
- Less time consuming Banking processes and more convenient, based on individual preferences.
- Tailoring products on clients' needs on the fly (almost impossible to do with legacy systems).

In accordance with previous definitions mentioned, the paper defines Digital Native Banks as new organizations that offer banking services having the following characteristics:

- They operate mainly through the digital channel, as they do not have (or almost) traditional physical branches.
- They offer an innovative user experience, so as with Big-Tech companies, each service is designed by focusing on the customer and his experience of use.
- They usually are supported by a lean technological architecture, designed specifically on the exploitation of the latest technological innovations for data management



(differently from traditional banks, that see the overlapping of different layers of technologies and software, subsequently integrated through legacy logics).

- They are born in the last (about 10) years, and are independent companies or spin-offs of other incumbents banks.
- They do not yet appear to be able offering a portfolio of services comparable to large banks, but they are gradually adding new products / services.

3. Methodology

Classification is one of the most central and generic conceptual exercises. Bailey (1994) and Smith (2002) make a clear distinction between two forms of classification, namely, typologies and taxonomies. While a typology is derived in a deductive manner, a taxonomy is usually derived empirically or inductively using cluster analysis or other statistical methods. Given that the research started from the analysis of the literature (academic and non-academic) on the topic, that gives some definitions and dimensions of the new emerging Digital Native Banks, clearly appears that a typology is more aligned with the aim of the paper.

The literature on Digital Native Banks is increased after 2016, with a plethora of labels and terms that are frequently used inconsistently by academics and not. For this reason, the aim of the paper is to reconstruct the phenomenon through a typology that overcomes the contrast between the different concepts. The typical objectives of the typologies are: (1) to identify the ideal profiles; (2) to describe the multiple dimensions or first-order constructs. In particular, ideal profiles are theoretical abstractions that are used to examine empirical cases in terms of how much they deviate from the ideal ones. Each ideal type represents a unique combination of the values associated with the fundamental dimensions.

Doing this, the typology tries to answer two main research questions:

RQ1 - What types of Digital Native Banks currently exist?

RQ2 - What are their main characteristics or properties?

Initially, each of the authors independently explore different sources of information (academic and non-academic) using informal and unstructured methods and tools. Based on the experience of the LINKS foundation's researchers, structured over the years due to the affiliation with the innovation observatory that supported the innovation strategies of some of the major Italian banks (Intesa Sanpaolo and Unicredit), a first ideal model was developed. This ideal model initially identified 3 initiatives or types of digital native banks (Beta Banks, Neo-banks and Challengers Banks) based on 2 dimensions (licensed organizations and actors).

After these initial model conception, the authors interacted several experts asking them for advice on definitions and dimensions of the different types of Digital Native Banks to refine and implement the search.

Then, is carried out a structured search in three academic databases (Web of Science, EBSCO and Scopus) and several non-academic ones (reports from consulting firms, articles from specialist magazines in the financial, banking and technological fields) to identify published sources that provide detailed descriptions of particular digital native banks types and/or direct comparisons between types with regard to their attributes or characteristics.

Throughout the process, the authors conducted several discussions to identify the key references. Between the several sources, the paper focuses on those that describe comprehensively one or more type of digital native banks or those that are cited several times as influential contributions.

After the literature analysis are identified in particular 13 non-academic reliable sources that are selected for the final sample of analysis. This sample represents the building blocks of the typology. Analyzing the sources found, the ideal model has been integrated with a further 3 dimensions useful for better describing the panorama of Digital Native Banks (Core Business, Market Experience and Approach) as well as integrating the "Actors" dimension by adding two additional features (Bigtechs and Retailers), identifying two additional types (Big-tech's bank and Retailer's bank).

Thus, are identified five Digital Native Banks types and extracted five recurrent first-order constructs (dimensions) most often used to distinguish between Digital Native Banks types.

The types are: (1) Beta banks, (2) Neo-banks, (3) Challengers banks, (4) Big-tech's banks, (5) Retailer's banks.

The first-order constructs are (1) banking license, (2) actors, (3) approach, (4) market experience, (5) core business.

The following values are associated with each dimension: (1) banking license – presence/absence, (2) actors – incumbents/startups/big-tech/retailers, (3) approach – defensive/collaborative/challenger, (4) market experience – practiced/newcomers, (5) core business – banking first/non-banking first.

4. Results

4.1 Description of the dimensions to identify Digital Native Banks

By investigating the professional literature (tab. 2) it has been possible to improve and redefine the initial ideal model in order to identify a wider number of dimensions able to define the landscape of new digital native banking operators. In particular, as previously mentioned, the following values are associated with each dimension: (1) banking license – presence/absence, (2) actors – incumbents/startups/big-tech/retailers, (3) approach – defensive/collaborative/challenger, (4) market experience – practiced/newcomers, (5) core business – banking first/non-banking first. Each dimension is described in the following sections.

Tab. 2 – Dimensions identified in the professional literature

| | | | | Paper Typology | Beta banks | Neo-banks | Challengers banks | Big-tech's banks | Retailer's banks |
|----------|----------------------|-------------------------|----------------------|--------------------------|---|--|--------------------------|--|-------------------------|
| 1 | Medium.com by | Crowdfund | UP Team | Proposed Typology | Neobanks | | | | |
| | | | | Definition | New type of digital bank that operates with 100% digital media on a digital and mobile platform with new operating systems. Currently, the digital front ends that have been added to traditional banks represent only a digital manifestation of the traditional banking experience. | | | | |
| 2 | Bank X: The | New New Banks by | Citi Research | Proposed Typology | Incumbent-Led Challenger Banks | Standalone Challenger Bank | | Bigtech-Led Challenger Banks | |
| | | | | Definition | These are started within legacy banks through investment in technology and by creating new digital-only banks. | Are primarily fintech companies leveraging technology and data to streamline retail banking by offering better convenience and pricing. Some have banking licenses, others are based on pre-paid cards and sit behind a third-party banking license. | | These are created through tech giants such as GAFA and BAT which have been branching out into financial services. With their vast networks, the bigtech-led challenger banks are perhaps incumbents' most daunting competition | |

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|---|------------|----------------|--|--------------------------|--|--|---|--|--|
| 3 | Fintech.ch | Switzerland | | Proposed Typology | | neo-banks | Challenger banks | | |
| | | | | Definition | | offer a mobile-first banking experience in partnership with a traditional bank | aim at becoming fully-licensed banks, creating new data-driven banking experiences and pricing models | | |
| 4 | Medium.com | by Aysin OZDIL | | Proposed Typology | | Neo-banks | Challenger banks | | |
| | | | | Definition | | comes with mobile-priority banking experience in partnership with a traditional bank. A neobank is a branchless digital-only bank which works only on digital and mobile platforms. They depend on customers having any financial service with an underlying Bank and corresponding bank license, offer a user-friendly interface and quicker banking solutions. | aim at becoming fully-licensed banks, creating new data-driven banking experiences and pricing models. A challenger bank is a small one which is quietly threatening the large ones' market share. The term includes any new or upcoming bank that has recently gained a license. Above all, it is a small bank that is biting at the heels of the 'big four' or 'big five' banks. Challenger Banks are "a new breed of technology-driven and customer-centric financial institutions". | | |

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|---|-----------------|------------------|--|--------------------------|--|--|--|--|
| 5 | Capco | | | Proposed Typology | neobank | | | |
| | | | | Definition | is a branchless digital-only bank. Unlike traditional banks, which focus on what financial products or services they can sell to customers, neobanks aim to get the whole ‘job done’ by focusing on fulfilling a core set of customer needs. | | | |
| 6 | CB Insights | | | Proposed Typology | | Neo-banks | Challenger banks | |
| | | | | Definition | | offer a mobile-first banking experience in partnership with a traditional bank | have applied to become fully licensed banks, creating new data-driven banking experiences and pricing models from the bottom-up. | |
| 7 | Gomedici.com | by MEDICI Team | | Proposed Typology | Bank Digital Initiatives | Over the Top | Licensed Digital Banks | |
| | | | | Definition | Traditional banks with a digital extension | Startups which have tie-ups with other licensed banks. | Startups which are licensed. | |
| 8 | Fintechnews.org | by Monika Gudova | | Proposed Typology | Digital banks | | Neo-banks | |

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|----------|--------------------|----------------|--|--------------------------|---|--|--|---|--|--|
| | | | | Definition | Digital banks are banks that operate online through a computer or app on your phone. This means they don't offer in-branch service like traditional banks do. | | are just like normal banks – they're a place to put your money, a place to borrow money from and a place to hesitantly hand over interest repayments to – the only catch is they're 100% digital. They're usually not associated with any traditional banks, and have no branches you can visit, existing solely online. | While this may raise concern about a lack of personal touch, neobanks plan to lead the pack in personalised banking by using artificial intelligence to keep track of your data and customise your app experience | | |
| 9 | KPMG report | 2016 UK | | Proposed Typology | | | Digitally focused challengers | | | |
| | | | | Definition | | | The Digitally Focused Challengers are the newest additions to the Challenger landscape, each offering the | | | |

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|----|---------------------|--------------------------|--|--|--|--|--|---|--|--|
| | | | | | | | promise of personalisation and of course technology, as key differentiators. The Digitally Focused Challengers also intend to partner with other businesses and some have even used customer crowdfunding to further their expansion | | | |
| 10 | PWC | Proposed Typology | Digital only banks | | | | Non-bank brands | | | |
| | | Definition | Digital-only banks recognise the megatrend of customers shifting to digital channels and are building their business to serve both digital natives and converts. They pride themselves on innovative technology platforms that promise exceptional customer experience and engagement, primarily through mobile apps | | | | have parent companies that are strong players in other industries, such as major supermarket chains. They have strong and trusted brands, and generally seek to serve the needs of customers loyal to the parent group as a whole | | | |
| 11 | KPMG report UK 2017 | Proposed Typology | | Nouveau challengers | Contemporary challengers | | | Classic Challenger | | |
| | | Definition | | Nouveau Challengers tailor their services to customers in underserved markets, around cutting-edge technologies or with services that bleed outside the boundaries of traditional banking – for example, Revolut, B-Social and Iam | Technology focus creates value in these banks’ distribution channels and brings life to commoditised products. Banks in this category are predominantly planning to be digitalfirst (and likely digital-only), offering customer support via online chat or call centres. Cloud architectures, streamlined third-party systems and open application programming interfaces (APIs) offer a low cost base with high efficiency. Contemporary Challengers may | | | Blending traditional and innovative models, these banks seek and exploit scale in their customer base and often a branch network. Their relative cost of regulatory compliance remains lower than for smaller | | |

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| | | | | Bank. The Nouveau Challengers do not seek to compete with the big High Street players at all, recognising that customers in the future are more likely to use banking services from multiple organisations channelled through platforms and apps. These businesses reduce competition by creating “blue oceans” of uncontested market space. | be more likely to partner with, or even consider themselves to be, Fintech companies | | Challengers. Classic challengers feature elements of classic banking, having a branch network, taking deposits, making loans – they’re flexible enough to exploit new technology and business models for innovative, customer-focused services. |
| 12 | Wikipedia Challenger bank definition | Proposed Typology | | Challenger banks | | | |
| | | Definition | | Challenger banks are small, recently-created retail banks in the United Kingdom that compete directly with the longer-established banks in the country, sometimes by specialising in areas underserved by the "big four" banks (Barclays, HSBC, Lloyds Banking Group, and Royal Bank of Scotland Group). As well as new entrants to the market, some challenger banks were created following divestment from larger banking groups or wind-down of a failed | | | |

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| | | | | large bank. The banks distinguish themselves from the historic banks by modern financial technology practices, such as online-only operations, that avoid the costs and complexities of traditional banking. In order to be defined as a "bank", the company must be authorised to accept retail deposits by the UK financial regulator the Prudential Regulation Authority (PRA) | | |
| 13 | Wikipedia NeoBank definition | Proposed Typology | Neo-banks | | | |
| | | Definition | A neobank is a type of direct bank that is 100% digital and reaches customers on mobile apps and personal computer platforms only. Neobanks do not operate traditional physical branch networks. Neobanks are technology-driven and may adopt machine learning and artificial intelligence technologies whilst not being constrained by legacy systems of traditional banking competitors. The term neobank first became prominent in 2017 to describe fintech based financial providers that were challenging traditional banks. There were two main types of company that provided services digitally, companies that applied for their own banking license and companies that partnered with a traditional bank to provide those financial services | | | |
| 14 | "Challenger Banks". Disruptive Technologies for Business Development and Strategic Advantage. | Proposed Typology | | Neobanks | Challenger banks | |

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|--|--|-------------------|--|---|
| | | Definition | <p>are financial service providers that do not hold a banking license; rather, they aligned with licensed banks that provide access to their license, infrastructure (predominant payment and money transfer) and some back office operations in exchange for compensation</p> | <p>compete directly with legacy banks like the major high street banks. CB offer traditional banking product without the baggage of legacy institution.</p> |
|--|--|-------------------|--|---|

License:

Regarding the possession of banking licenses for digital banks, the following 3 main alternatives have been encountered:

- digital operators that use the licenses of the parent bank (usually a traditional bank);
- digital operators who use the licenses of a partner banking subject, who can therefore provide their service only thanks to this collaboration, and therefore recognize a commission for the use;
- digital operators using their own banking licenses. These are therefore subjects that have undertaken the path to obtain banking licenses mainly for using it through the digital channel. For these subjects, given the complexity of obtaining bank licenses (especially in terms of compliance), a modular licensing strategy is structured.

Actors:

As previously described, thanks to digital innovation the banking sector is currently more competitive than ever, due to the high pressure from different actors interested in entering the market. Among those actors it is possible to find big player or incumbents of the banking sector, along with Big Tech's company (such as Chinese Ant Financial or Tencent) and big retailer company that created a new branch of business that involve the new digital native banks. On the other hand, we can find small new company or startup, not being part of a large industrial or financial group, using an innovative way to answer the needs of bank customers needs.

Approach:

The analysis of the professional literature highlights how recently some subjects have adopted a collaborative approach compared to current market players looking for synergies (for example, the possibility of using banking licenses in partnership). Vice versa, other subjects propose to explicitly want to challenge the players present on the market, through their predominantly digital structure. Finally, we find in the will of the economic subjects already present on the traditional market to defend themselves from attacks on the market of banking services through the establishment of a new digital bank, a defensive approach.

Banking Market Experience:

According to various professional sources, and coherently with previous dimension, a further aspect of analysis emerges which is useful to describe the context: the experience of the economic subject within the banking sector.

Traditional banks that constitute new digital native entities can leverage various valuable assets, including a significant competence in the sector, a loyal customer base as well as the solidity and perceived reliability that the banking brand has built over time (even if sometimes the digital brand is not clearly linked to the controlling banking brand, in order to target a different customer niche). Vice versa, new entrants (whether they come from other industrial sectors or new independent entities) struggle themselves in managing the regulatory complexity of the sector, which is notoriously among the most regulated.

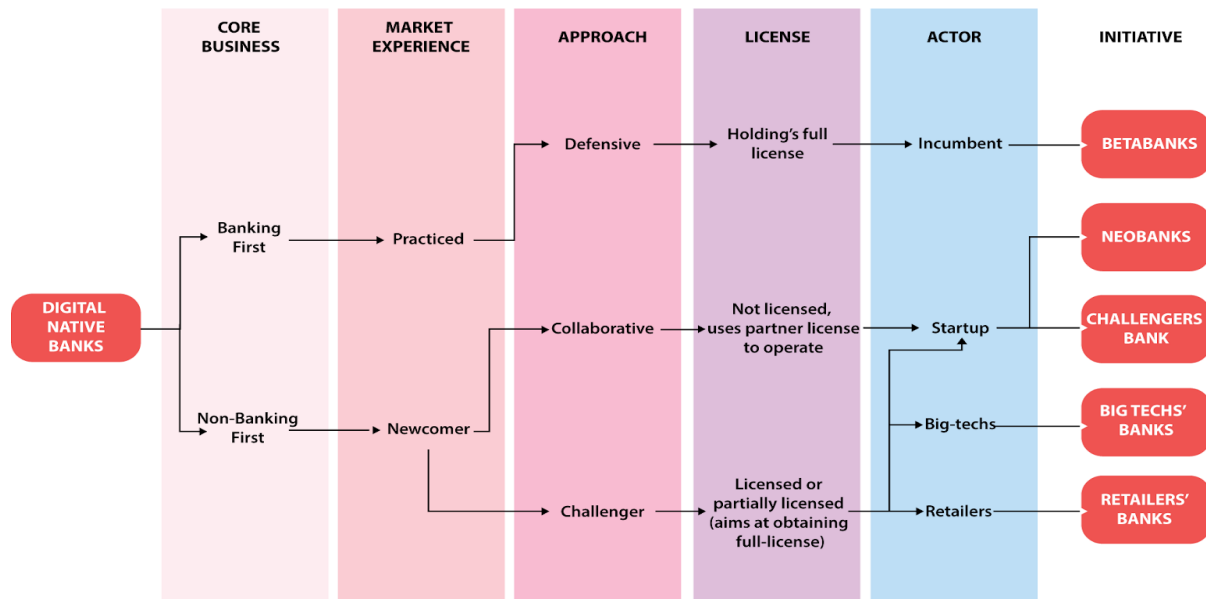
Group Core Business:

From the analysis of the professional literature emerges the rise of digital native banks owned form players who are not of banking origin. Although most digital native banks are economic entities with a major interest in the banking sector, there are significant examples of new banks set up as a branch of large groups in the technology sector or large-scale retail trade.

4.2 Description of the types of Digital Native Banks

The following theoretical framework was defined through the analysis process and the dimensions identified (tab. 3).

Tab. 3 – Types of Digital Native Bank



Source: own processing.

Beta banks:

These are new spin-off organizations of traditional banks or joint ventures in which traditional banks have corporate control, and whose core business is the banking sector (like the organizations from which they derive). These organizations already have a consolidated experience in the banking field, and represent a defensive reaction of the incumbents to the attack by the challenger banks to the digital banking market.

- The Beta Banks are able to offer a wide range of banking services through the license of the parent bank.
- Beta Banks can be used as lean operators to enter new markets.
- The Beta Banks are effectively Digital Native Banks, and are designed to circumvent the limits of legacy technological infrastructures, with a customer oriented approach and a UX typically oriented to the millennial segment.

Neobanks:

These are independent fintech startups (ownership) that approach as new market entrants and have the banking sector as their core business. Usually they do not have their own banking license, but use the licenses of banks they work with in partnership (therefore with a collaborative approach) to offer their innovative financial services.

Challengers Banks:

Challengers Banks are new entrants in the market who compete by challenging the consolidated players directly (these organizations consider the banking sector as their core business), offering banking products mainly or exclusively through digital channels without

having to bear the costs of a legacy information system. These institutions appear to be fully-fledged banks, as they have banking licenses and the necessary authorizations to provide financial services by the regulatory authorities (or aim to obtain them).

Big Tech's Banks:

Big Tech's Banks are organizations formed by large technology companies that do not have the banking sector as their core business. These banks therefore are new entrants to the market since they have no experience in the sector, but want to challenge the status quo defined by the banking incumbents using their technological assets. Examples of Big Tech's Banks are found mainly in China, with MYBANK (by Alibaba) or WeBank (Tencent).

Although the main examples of these organizations are found in China, there is a particular emphasis, on the part of specialized magazines and professionals on the imminent entry of the so-called GAFAM technology giants (Google, Apple, Facebook and Amazon) in the banking sector both in Europe and in the US.

Retailer's Banks:

The Retailer's Bank are organizations made up of large distribution groups, which therefore do not have the banking sector as their core business. Although many banks such as Tesco, Virgin were born as traditional banks, some companies such as BanQi (Via Varejo), Cashi (Walmart), Oney Bank (Auchan) are native digital banks. They therefore represent new entrants to the market because they have no experience in the sector, but want to challenge the status quo defined by the current banking incumbents by using the trust enjoyed by their network of customers as an asset.

5. Conclusion

Against the importance of the Fin-Tech, there is a growing attention of the professional world to the evolution of the banking industry. However, there is little comprehension of the evolving types of banks due to three main drivers of change: Industry 4.0, regulatory change and increasing global competition. In particular, academic literature has not yet given a single consensus on definitions and characteristics of the new Digital Native Banks. For this reason the paper build a typology following an established development process. Contributing to the descriptive knowledge on Digital Native Banks, the typology characterizes five Digital Native Banks types (Beta Banks; Neobanks; Challenger Banks; Big Tech's Banks; Retailer's Banks) based on five main dimensions (License; Actors; Approach; Banking Market Experience; Group Core Business).

The main theoretical contribution of the paper is the construction of a typology on a topic that is little analyzed in the academic literature opening up new lines of research. First of all, the results show that further research should be done on the main strengths and weaknesses of each type and on the relationship between the different types identified. In addition, the results might be implemented through an empirical analysis that verify the validity of the typology.

From a managerial point of view, the paper allows a better comprehension of the competitors and of the new market opportunities in the banking industry.

The limited number of academic paper found by the authors on the topic is the main limitation of the paper. However, being one of the first works on the subject is the originality



of the paper that uses a wide and holistic approach to analyze a nascent field that is at the moment only partly investigated in professional literature and little in academic one.

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