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Scuola di Ingegneria Industriale e dell'Informazione

Master of Science in Management Engineering

Virtual Branch

How customers behaviour is reshaping the
concept of traditional branch

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Abstract

This report analyses the phenomenon of branch closure, highlighting how the change in customers' preferences for accessing banking services is transforming the traditional delivery models of physical branches.

As digital technologies are becoming more and more relevant in everyday life, customers want to access financial services through a variety of channels, switching seamlessly between different medium to complete a single operation.

Smart branches fulfil this need by implementing digital solutions in traditional branches, leveraging technology to optimize processes and costs, while improving customer service and offering.

The demand for high-value financial services delivered through digital-only channels is also increasing, requiring banks to completely reassess their strategy and operations to implement virtual banking services.

Worldwide, several financial institutions are investing to develop smart and virtual branches; each type of solution can be classified considering the level of self-serviceness of the delivery model employed and the breadth of financial services offered.

Three main clusters of initiatives emerge from the analysis:

- True smart/virtual banking:
offering a compelling alternative to traditional retail banking;
- Niche smart/virtual banking:
delivering only specific services digitally;
- Enhanced traditional banking:
integrating traditional banking distribution channels with added smart or virtual functionalities.

In countries with a low propensity for digital delivery models, banks are developing alternative solutions to for repurposing their physical branch network.

Italian summary

I consumatori stanno modificando il loro modo di utilizzare i servizi bancari, prediligendo i canali digitali a quelli tradizionali.

Questa evoluzione nelle preferenze degli utenti richiede una modifica delle priorità di investimento degli istituti bancari, che stanno adottando strategie di taglio dei costi per rimanere competitivi in un mercato caratterizzato da bassi tassi di interesse, margini minimi e una forte minaccia da parte delle start-up FinTech.

Chiudere gli sportelli rappresenta una strategia per tagliare i costi e ottimizzare la rete distributiva sul territorio. Infatti, in poco meno di 10 anni le banche europee hanno ridotto il numero delle loro filiali sul territorio in media del 36%. In Italia, dal 2008 sono state chiuse più di 6.700 filiali, metà delle quali negli ultimi 4 anni.

Tuttavia, questo processo comporta seri disagi per le piccole comunità rurali o montane, che si ritrovano così escluse da servizi di pagamento e finanziari, non del tutto sostituibili da soluzioni alternative come telebanking o ATM evoluti.

Nonostante le tecnologie digitali permettano di accedere ai servizi bancari in mobilità, le filiali rimangono il punto di riferimento per alcune specifiche operazioni, come l'apertura di un conto o la richiesta di un finanziamento.

In Italia, la maggior parte dei clienti bancari utilizza sia canali fisici che digitali per completare le proprie transazioni; i consumatori più giovani, invece, preferiscono utilizzare tablet, pc e smartphone per accedere a questi servizi.

Le filiali del futuro devono quindi integrare e far interagire fisico e digitale, implementando una vasta gamma di tecnologie a supporto. Sviluppare queste *smart branch*, piccole e snelle filiali che offrono

prevalentemente servizi digitali ai consumatori, significa integrare soluzioni di automazione dei processi che si traducono in risparmi anche del 15% sui processi di front, middle, e back-office e permettono di ridurre anche i costi relativi a personale e affitti, aumentando di conseguenza la loro profittabilità.

La vera rivoluzione nel mercato bancario sono, però, le *virtual branch*, soluzioni completamente digitali che permettono di fornire servizi complessi ad alto valore aggiunto, ad esempio la consulenza in ambito finanziario, tramite canali remoti, sfruttando tecnologie di videoconferenza e dispositivi mobili, fornendo al consumatore una banca conveniente, efficiente e di cui potersi fidare.

Integrare questo tipo di soluzioni significa soprattutto riallineare strategie e piani di investimento per supportare la creazione di processi perfettamente digitalizzati, che consentano l'utilizzo di tecniche avanzate di data analytics per la creazione di prodotti su misura e la finalizzazione di opportunità di cross-selling.

Molte banche stanno già introducendo soluzioni di smart e virtual branch all'interno della propria rete sul territorio, modificando sia il modello distributivo tradizionale dei servizi bancari, sia la tipologia di operazioni che è possibile completare attraverso questi nuovi canali.

Dunque, è possibile classificare le varie iniziative in questo ambito considerando il livello di assistenza proposto al consumatore in relazione ai servizi offerti.

In particolare, le iniziative analizzate hanno permesso di identificare tre principali archetipi:

- True smart/virtual banking:
alternativa concreta alla banca tradizionale;
- Niche smart/virtual banking:
specifici servizi accessibili tramite tecnologie digitali;

- Enhanced traditional banking:
funzionalità di smart e virtual banking integrate in canali di distribuzione tradizionali.

Per i consumatori non particolarmente avvezzi a utilizzare canali digitali per accedere a servizi bancari, si stanno invece sviluppando soluzioni che puntano a rinnovare il concept delle filiali bancarie senza stravolgerne l'operatività e l'interazione con i clienti.

The economics of branch closure

The future of traditional bank branches is at risk: as customer are changing the way they interact with banking services and new entrants in the financial world are developing alternative ways to carry out this kind of activities, banks are implementing cost-cutting strategies to remain competitive in an environment that is getting harsher year by year due to low interest-rates and shrinking margins.

According to a note released by HSBC in 2017 (HSBC, 2017), the usage of their UK branch network has experienced a 40% drop over the course of 5 years, from 2012 to 2017; this resulted in a total of 321 branch closures since January 2015, summing up to 27% of HSBC branch network (Milligan, 2016).

The bank explained that the reason behind these closures is to achieve *“a more sustainable branch network for the future”* as *“93% of customers' contact with the bank is now completed via the telephone, internet or smartphone, and 97% of cash withdrawals are made via an ATM¹”*.

Also, Francesca McDonagh, HSBC Head of Retail Banking and Wealth Management for UK and Europe, stated that *“the way our customers bank with us is changing.”*

Other UK banks followed a similar pattern: since the beginning of 2015, more than 2,868 branches have been closed, with Natwest, HSBC, Lloyds, RBS and Barclays being the heaviest in implementing this cost-cutting strategy (BBC News, 2018).

Indeed, customer banking habits are evolving.

A survey conducted in 2018 by PwC (PwC Financial Services , 2018)

¹ Automated Teller Machine

explores customer preferences related to the banking channel of their choice: the results of the survey highlights that among those consumers that prefer to interact digitally with their bank, smartphones are becoming the dominant medium.

This change in customer preferences requires a shift of the investment priority of banks: financial institutions need to think mobile first.

Established financial services companies are investing in digital technologies in an attempt to attract customers, cut costs and boost profits (Oracle Financial Services, 2017), but are under increasing pressure from Fintech start-ups (EY, 2018).

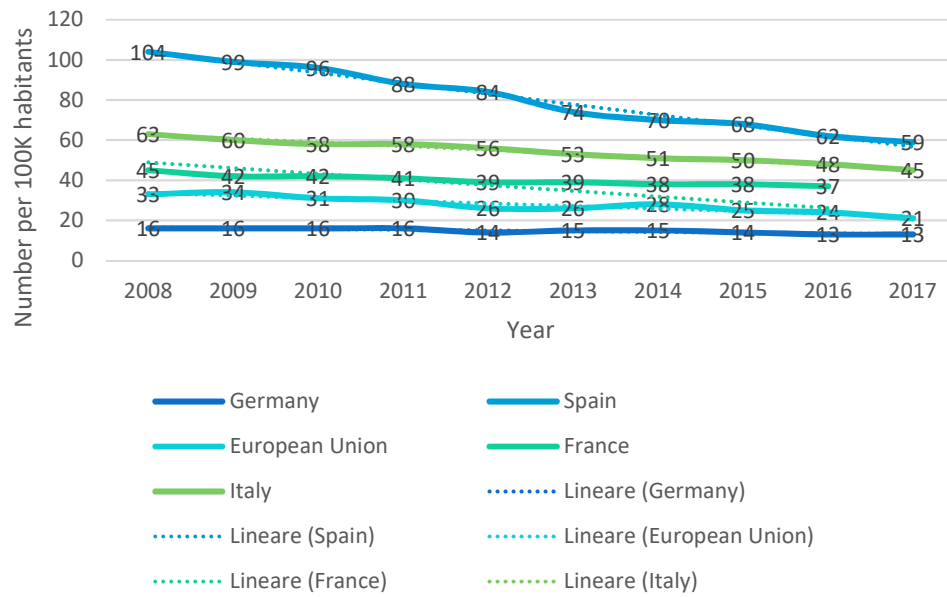
Those companies can create mobile-focused services or products more efficiently, without the burden of legacy systems or tight regulation constraints, and are able to attract large amount of funding; according to an ongoing study by KPMG, the global amount of investment in Fintech companies topped 9.4 billion US dollars during the second quarter of 2016 (KPMG, 2016).

The truth is that branches are expensive, accounting for a significant proportion of the cost base of banks: real resources as labour or land constitute around 50% of the total expenses of a bank. (Oracle Financial Services, 2017), (Hoose, 2010), (Jay D. Wilson, 2017), (EFMA, 2017)

As a consequence, banks are trimming down their physical presences around Europe: in fact, over the course of a little more than 10 years, European banks have reduced their branch network by 36% on average (EY, 2018).

The following graph shows the number of branch per 100k inhabitants of the main European countries and the EU average:

FIGURE 1: BANKS ARE SCALING DOWN THEIR BRANCH NETWORK



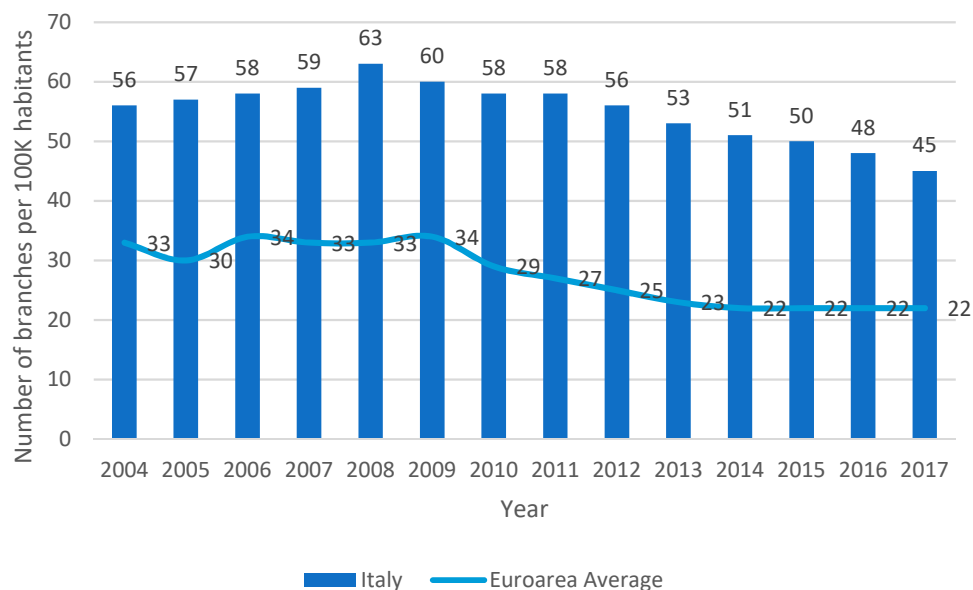
Countries like Spain, with a larger network, have reduced by a higher amount the numbers of branches to rationalize the overhead of a traditional operating model by reducing distribution and infrastructure and staffing cost.

Branches in Italy

Italy is the 4th European country with the largest number of branches, summing up to 30,258 in 2015, about 50 branches every 100.00 inhabitants, 34% more than the EU average of 37 in the same year (European Banking Federation, 2016).

The branch scale-down trend highlighted previously for the European Union is present also in Italy: since 2008, more than 6,700 branches have been closed, half of which in the last 4 years, with their number dropping from 34,139 units in 2013 to 27,358 in 2017 (EY, 2018).

FIGURE 2: NUMBER OF BRANCHES FOR 100,000 INHABITANTS IN ITALY



Likewise, the number of people employed in banks has been falling since 2007: in 2015, the total of bank staff in Italy amounted to 298,575, resulting to little less than 10 employees per branch, quite shorter than the UE average of 15 (European Banking Federation, 2016).

There are several geographic and demographic characteristics explaining those figures (Marous, 2017), among which the high proportion of seniors, the wealth distribution patterns, the average population density and the urban concentration; some of them will be discussed in greater detail through this report.

The consequences of branch closure

Closing a branch is mostly an economic decision for banks, to cut cost and harmonize their network on the field.

But for small communities in rural area or places without viable alternatives, a branch closure could mean being cut off from payment services and financial transactions, resulting in an accelerated commercial decline of these communities and in environmental damage (e.g. increasing motor vehicle use to access another branch) (Edmonds, 2018).

In fact, as Julian Vermaas of MSR Group explained, "*While banks may prefer moving customers to automated channels as a more cost-effective way of meeting their needs, eliminating branches is a risky decision*" (Veermaas, 2017).

For this reason, since 2015 banks in UK are required under the Access to Banking Standard to engage their customers and communities ahead of planned closure, and propose alternative means of banking (Shaw, 2018), as telebanking, the usage of smart ATMs, enhanced use of the post office or mobile branches, mobile vans providing banking services remotely (AgeUk, 2016).

However, the upward trend in the usage of virtual channels by customers (PwC Financial Services , 2018) reveals that there are more convenient substitutes for some physical features offered by traditional branches.

Smart Branch

Many customers, even in more digitally-proficient countries, still choose branches as a preferred location for at least some operations.

Evidence from a recent survey by PwC (PwC Financial Services , 2018) supports the role of traditional branches as preferred channel for some types of transactions: more than half of consumers prefer to apply for a new loan or open a checking/saving account at a physical branch, while a significant portion of them prefer to reach a physical branch to apply for a brokerage/investment account or receive advice over financial products.

TABLE 1: PERCENTAGE OF CONSUMERS PREFERRING PHYSICAL BRANCHES FOR CERTAIN TRANSACTIONS

new loan	checking account	investment account	financial advice
59%	58%	43%	37%

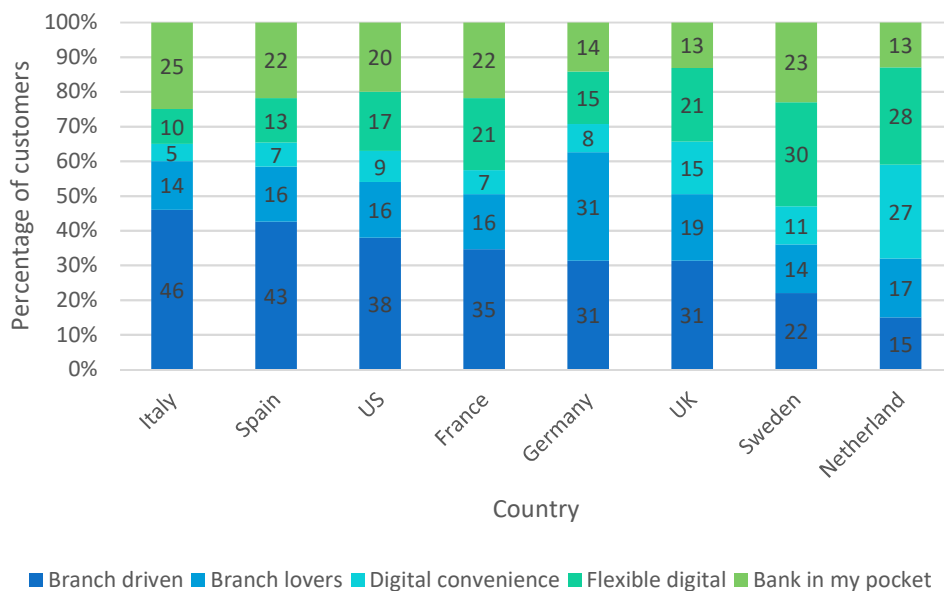
In fact, many clients still appreciate face-to-face interaction and guidance when dealing with more complex transactions (McKinsey&Company, 2017).

A recent research published by McKinsey (McKinsey&Company, 2017) identified five main customer segments on the basis of the channel preferences to access banking services:

- *Branch driven:*
prefer branches or ATMs due to low trust in banks and financial system;
- *Branch lovers:*
low-tech senior who prefer branches or ATMs for all needs;

- *Digital convenience:*
prefer internet over mobile, but purchase only basic product digitally and require face-to-face interaction for advice and complex products;
- *Flexible digital banking:*
like to do almost all banking through digital channel but require face-to-face interaction for advice;
- *Bank in my pocket:*
prefer doing everything remotely, both transaction and advice or purchases.

FIGURE 3: CUSTOMER PREFERENCES FOR ACCESSING BANKING SERVICES



The main highlight of this research is that in core European countries like Italy, Spain, France and Germany, people still prefer branches or brick-and-mortar locations for satisfying their banking needs, confirming the evidence reported by PwC Digital Banking Consumer Survey.

Branch utilization in Italy

The growing use of digital technologies has allowed clients to access banking services through a combination of physical and remote channels

A recent survey conducted by ABI² in 2018 (Associazione Bancaria Italiana, 2018) researched the usage of different distribution channels for the Italian banking sector, with a comprehensive analysis of both the demand and the supply.

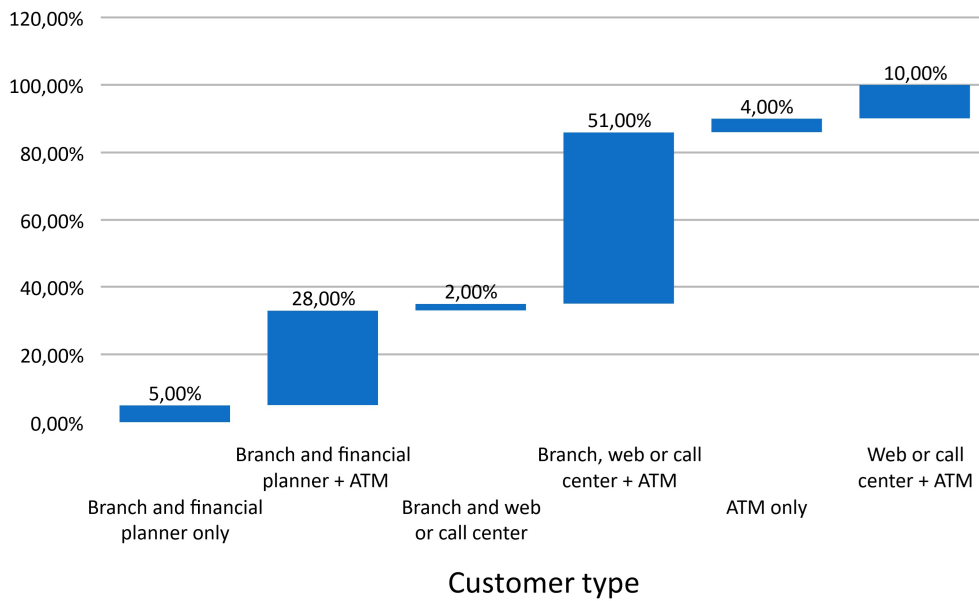
One of the main highlights of this research is that on average customers employ 1,85 different channels for completing a banking operation.

In fact, the majority of clients (53%) fall in the customer segment defined as "phy-gital", characterized by the use of both physical touchpoints, as branches, financial planners or ATMs, and remote channels, as internet/mobile banking, or contact centers.

The remaining share of the customer base is divided into "branch lovers" (33%), who use only physical touchpoints, and "only digital" (14%), who use only remote channels as the name suggests.

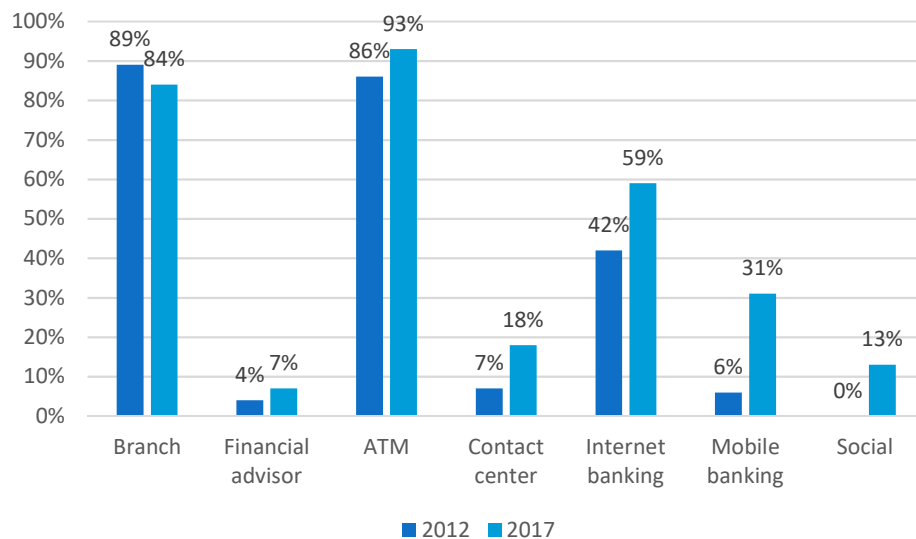
² Associazione Bancaria Italiana

FIGURE 4: CHANNEL USED BY CLIENTS FOR INFORMATIVE OR OPERATIVE ACTIVITIES



This peculiar evolution in the contact point preferences of customers resulted in a more differentiated landscape of channels, both physical and remote, available to contact financial institutions and complete financial operations.

FIGURE 5: CHANNEL USED BY CUSTOMERS TO CONTACT THEIR BANK

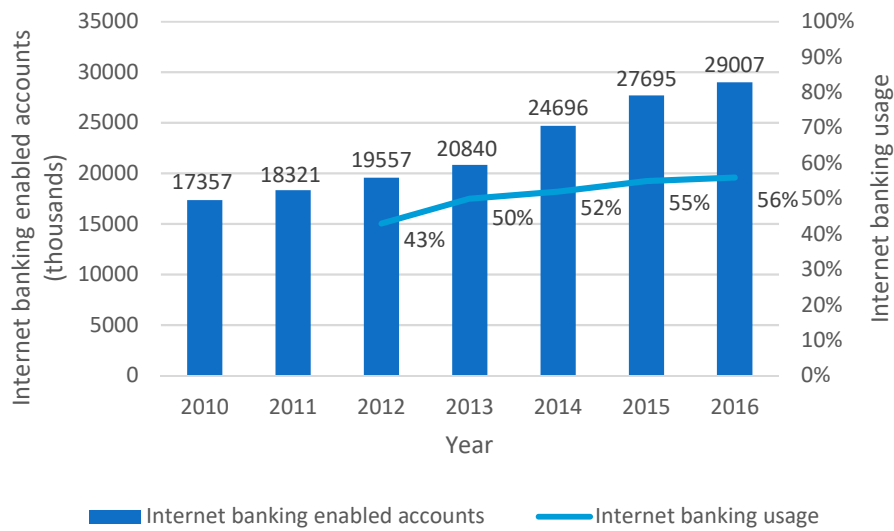


Web related channels as internet banking and mobile banking experienced a strong growth in usage during the course of 5 years,

confirming previous evidence on the evolution of customers' preferences.

In fact, the increased availability of internet banking solutions resulted in an increased frequency of usage of this channel: since 2010, the number of accounts enabled for internet banking grew from 17.357 thousands (53% with respect to the total number of bank accounts) to 29.007 thousands in 2017 (72%) (Associazione Bancaria Italiana, 2018), and the percentage of customers using mobile banking grew from around a quarter (27%) in 2008 to less than half (43%) in 2012 and then grew again to more than two thirds (62%) in 2016 (Associazione Bancaria Italiana, 2018).

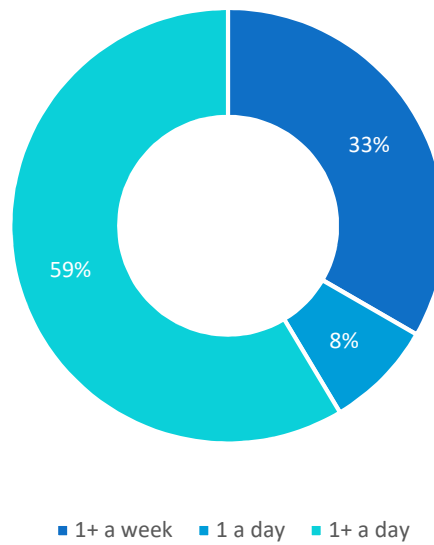
FIGURE 6: INTERNET BANKING AVAILABILITY & USAGE



Growing in a similar fashion, also social networks are emerging now as a viable channel for clients to contact their bank and especially for bank to engage with their customer base.

A research conducted by ABI in 2016 (Associazione Bancaria Italiana, 2016) revealed that 92% of banks are active on social media, 65% with daily frequency, and focusing on customer care, financial education and marketing.

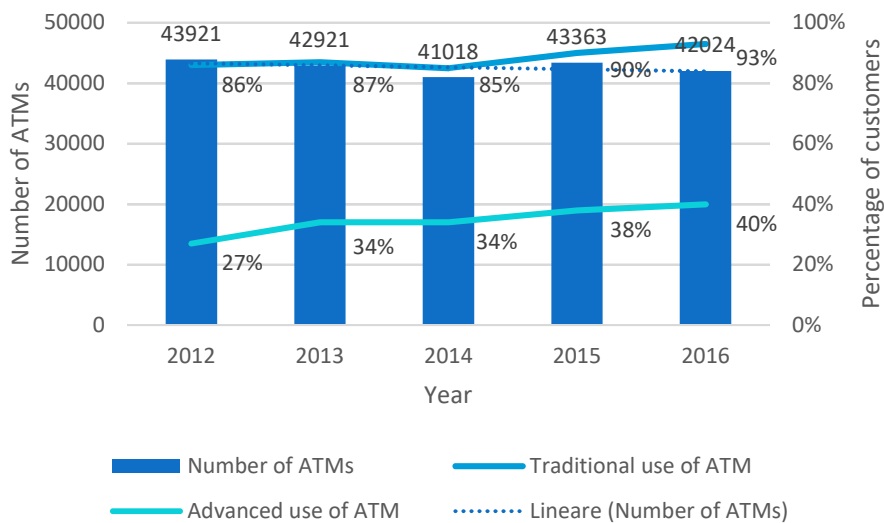
FIGURE 7: LEVEL OF ACTIVITY OF BANKS ON SOCIAL MEDIA



Considering more traditional channels, branches experienced a significant footfall in the past years, as previously stated: in Italy the number of branches for 100.000 citizen dropped from 57 branches in 2008 to 45 in 2017, a 21% reduction over 9 years.

On the other hand, even though ATMs are decreasing in number, their usage, both traditional and advanced, is increasing.

FIGURE 8: NUMBER & USAGE OF ATMs



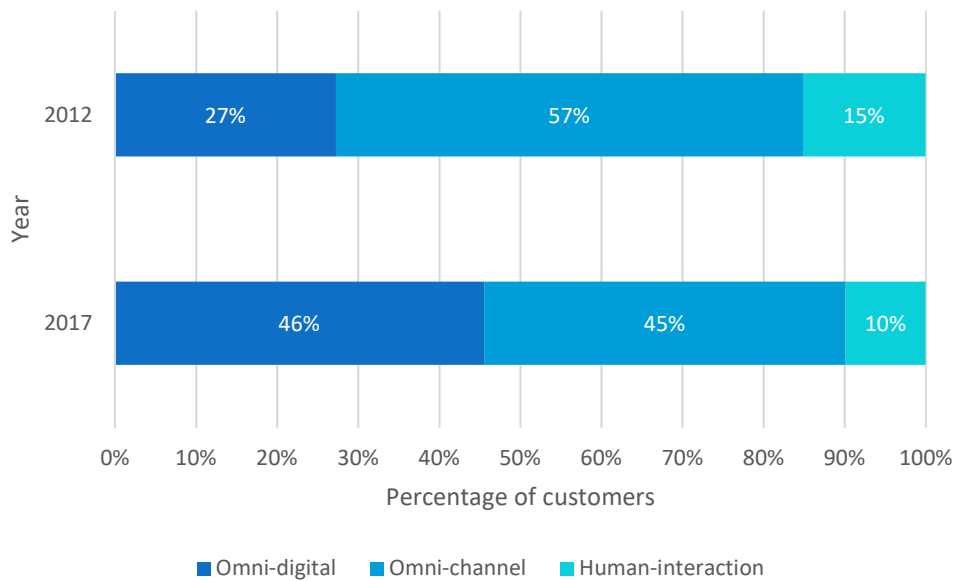
The branch of the future

Even if branches are not going away, as 46% of Italian customers prefer physical touchpoints, the pick-up of digital channels is a fast-growing trend, especially among younger population segment.

A recent study by PwC (PwC, 2017) classifies the customer base in three distinct archetypes depending on their behaviour to access banking services:

- *Omni-digital:*
only use digital channels, through internet or mobile mediums;
- *Omni-channel:*
customers that use both physical and digital channels, in a similar fashion to the phy-gital segment described by ABI, and hence require a consistent experience through different channels;
- *Human-interaction:*
only use branches, call centers and other physical channels.

FIGURE 9: EVOLUTION IN CUSTOMER BEHAVIOUR



As noted by PwC, the “*omni-digital behaviour quickly grows, while the omni-channel no longer dominates and the human-interaction continues to shrink*”; millennials preference for an omni-digital behaviour seems to partially justify this trend.

This change in customer behaviours has “*implication for branching strategies, investment prioritization, staffing models, etc.*” (Marous, 2017).

For this reason, traditional branches need to focus on supporting and complementing digital channels and services (Cognizant, 2016), transforming into a smart branch.

Technology employed

Physical and digital worlds need to coexist in a smart branch, and hence a wide range of technological solutions are employed to serve the customers; the most relevant are (McKinsey&Company, 2018):

- *Bankers tablets:*

tablets enable employees to roam the branch, supporting them in customer relationships, sales and digital channel onboarding;

- *Interactive teller machines:*

An ITM³ is a "branch in a box", and by incorporating a remote connection to a human banker, allows customers to carry out most of the activities usually done at a branch, effectively extending opening hours to 24/7;

- *Video-conference:*

individual customers or small and medium-size businesses can receive sophisticated advice through video-conference technology and co-browsing software.

Branch layout

Smart branches are smaller, simpler, and more streamlined than traditional branches, dedicating most of the floor space to self-service areas (McKinsey&Company, 2018).

The layout of smart branches is based on several building blocks (McKinsey&Company, 2018), (EY, 2013):

- *Welcome desk:*

assistance desk for directing customers to the correct area

- *Self-service area:*

located at the entrance of the branch, is opened 24/7 thanks to ATMs, ITMs and video-conferencing;

- *Standing-desk zone:*

enables a proactive approach for sales and assisted services, while signalling a quick and efficient interaction;

³ Interactive Teller Machine

- *Open-hall advisory:*
open, client-oriented area for customer servicing and advisory;
- *Video-conference stations or rooms:*
video-conference enabled stations within the open-hall area or private rooms;
- *Priority lounge:*
priority areas for premium customers and businesses to receive advisory services and support
- *Event area:*
area dedicated to the organization of local events or specific partner initiatives.

Different building blocks are mixed together depending on the destination use and the size of a specific branch; in particular, it is possible to identify four main "formats" of a bank branch (McKinsey&Company, 2018), (EY, 2013) :

- *Concept branch:*
large branch integrating all building blocks and technologies of a smart branch, with additional areas and services to promote the bank brand among customers;
- *Flagship branch:*
hub branch integrating all building blocks and technologies with relationship managers for specific customer segments;
- *Standard branch:*
spoke branch combining digital solution and human assistance, equipped with core smart branch elements;
- *Automatic branch:*
small spoke branch with limited staffing offering ATMs and self-service terminals for maximizing operating efficiency.

Standard branches constitute most of a bank's branch network, around 85%, while flagship and concept branches are lower in number (respectively, the former around 10% of the total network, the latter 5%) (McKinsey&Company, 2018).

Automatic branches are suitable for low-income areas or in case of tight space constraints.

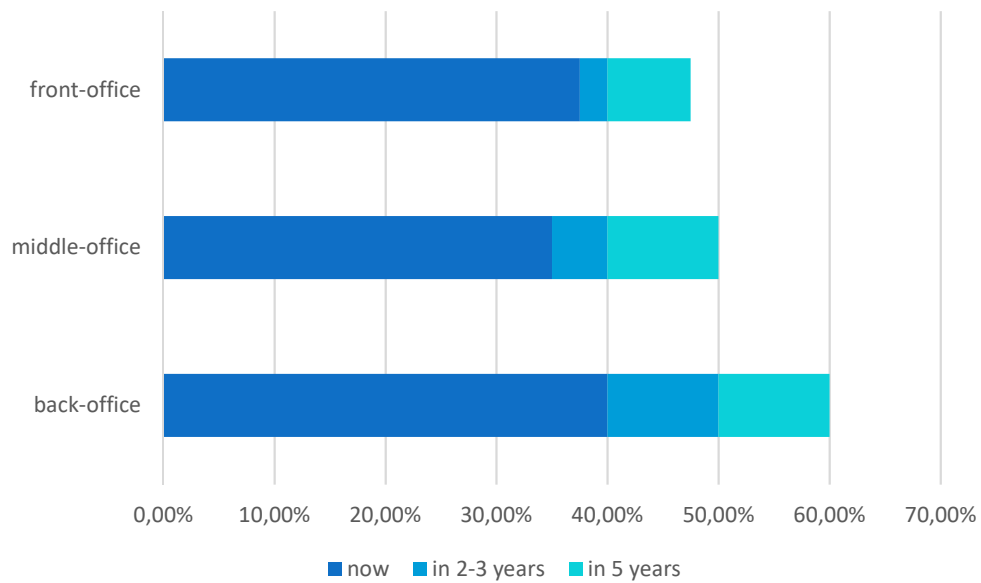
TABLE 2: DIFFERENT BRANCH FORMAT INTEGRATE DIFFERENT BUILDING BLOCKS

	Welcom. desk	Self- service	Stand- ing-desk	Open- hall	Video- confer.	Priority lounge	Event area
Concept branch	✓	✓	✓	✓	✓	✓	✓
Flagship branch	✓	✓	✓	✓	✓	✓	
Standard branch	✓	✓	✓	✓			
Automat. branch		✓	✓	✓			

Impact on performances

The implementation of technologies and digital solutions typical of smart branches will increase the level of process automation of different types of activities, resulting in a minimum of 15% cost savings on front-office, middle-office and back-office activities for the majority of banks (Cognizant, 2015).

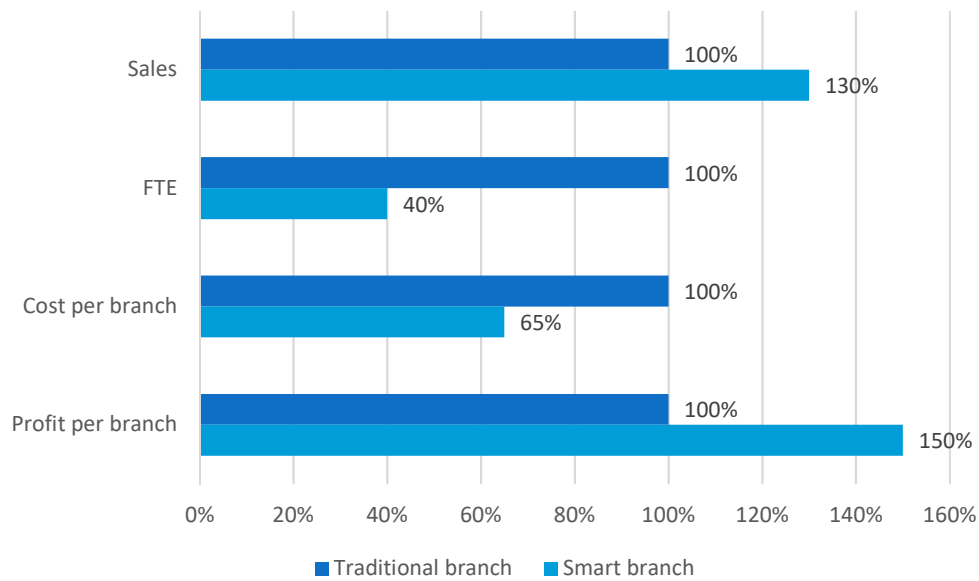
FIGURE 10: FUTURE EVOLUTION IN PROCESS AUTOMATION FOR DIFFERENT TYPES OF ACTIVITIES



Also, process automation allows savings in the number of FTEs⁴ required per branch, resulting in cost cutting or relocation of these now-available resources to perform high-value activities and increase profitability (McKinsey&Company, 2018).

⁴ Full Time Equivalent

FIGURE 11: THE IMPACT OF SMART BRANCHES ON PERFORMANCES



Model implementation

Banks are correctly tackling the cost side of the smart branch equation, streamlining their on-the-field network and harmonizing their operations.

However, closing branch alone is not enough to succeed in an increasingly competitive environment under heavy pressure by new entrants, Fintech start-ups, and evolving client's behaviour and preferences.

There are three "*must-win battles*", as defined by McKinsey in 2017 (McKinsey&Company, 2017), banks are facing to update their traditional operating model, responding to customers' expectation and unlocking the full potential of digitalization (Cognizant, 2016):

- *Reshape branch network:*
optimize bank branches for the omni-channel paradigm, implementing digital platforms and emerging technologies,

paired with new modular formats and staff multi-skilling and flexibility;

- *Embrace digital synchronicity:*

focus on a customer-first approach, providing a consistent experience through all distribution channels and creating fully digital customer journeys, which require an integrated effort to digitize front-- and back-office processes;

- *Become data driven:*

employ advanced analytics on standardized data collected through customer interactions to provide more personalized products and services, increasing cross-sale rates and boosting new customer acquisition

Virtual Branch

Virtual branches can be defined as the “*next big thing in the banking industry*”, allowing clients and customers to perform all financial transactions and operations, including accessing complex and high-value banking services, without the need of being physically present in a branch, through the use of mobile devices and internet connection.

Live video chats with financial experts, real-time desktop sharing, co-browsing, voice biometrics, on-screen signing and secure connection are some of the technology powering this new banking distribution channel (Finenews.Asia, 2017).

For a bank, implementing a virtual branch solution means “reassessing the organization’s operational alignment, capabilities, targets, strategies and investment plans, to achieve flexibility, agility and an ability to execute change and demonstrate success” (EY, 2018).

A recent survey conducted by EY (EY, 2018) analysed the level of digital maturity of banks worldwide, identifying 5 growing level of maturity:

1. *Not pursuing:*
no active investments;
2. *Beginning:*
considering the impact of digital technologies on banking;
3. *Transitioning:*
starting to digitize core business elements;
4. *Maturing:*
optimizing middle- and back-office processes

5. *Digital leader:*

integrated front-, middle- and back-office operations across functions and geographies.

The results of the survey reported that nowadays only 19% of banks considers themselves either "*maturing*" or "*digital leaders*".

However, implementing digital transformation programs is a business priority for 85% of those banks, and 62% of them aspire to become digitally mature by 2020.

Also, according to the EFMA⁵, as many as 80% of the world's banks will be involved in virtual branch deployments by 2018 (EY, 2018), (Finenews.Asia, 2017).

Enabling technologies

According to McKinsey (McKinsey&Company, 2015), there are three main groups of enabling technologies for virtual banking services that have grown more common and stable in the recent years:

- *Connective technologies:*
video conferencing, chat, co-browsing and similar solutions that "allow to build a trusted relationship with the client despite the lack of a physical presence";
- *Securities tools:*
strong authentication, e-signature, secure communication protocols and other features to avoid unauthorized access or prevent sensitive data leakage;
- *Digitized processes:*
use of front-, middle- and back-office digitization technolo-

⁵ European Financial Management Association

gies to “enable streamlined and paperless completion of transactions”.

In particular, processes digitization is mission critical for implementing a virtual branch solution, and an expanded spectrum of automation tools exists to streamline operations (EY, 2018), (EY, 2018):

- *Robotic process automation:*
software that mimics human interaction with core systems, web and desktop applications to execute processes, automating repetitive and ruled-based actions through scripts that maximize the business processes efficiency;
- *Optical character recognition:*
technology that converts text documents into structured data by performing a character-by-character analysis of photo-scanned images;
- *Natural language processing & natural language generation:*
a field of artificial intelligence that enables to understand, process and produce spoken or written human language;
- *Machine learning:*
a form of AI⁶ that provides to computers the ability to learn without being explicitly programmed, “training” algorithms to execute given tasks by generalizing from examples and collecting information from structured and unstructured datasets.

Other more sophisticated technologies include:

- *Cognitive agents* (Deloitte, 2016):
systems that interact with human beings through auditory or

⁶ Artificial Intelligence

textual methods, and collect information in a customer-friendly way;

- *Advanced analytics:*
qualitative and quantitative techniques and processes used to gain deeper insights on the data available, enhancing productivity and profitability.

Automation solutions can increase productivity, deliver cost savings and improve customer experience (McKinsey&Company, 2017):

FIGURE 12: THE IMPACT OF DIGITAL TECHNOLOGIES ON BANK'S PROCESSES

	Front-office	Middle-office	Back-office
RPA ⁷		- data migration - finance & valuation process automation	- account management - payment process automation - dispute handling
OCR ⁸			- non-EDI ⁹ data collection
NLP ¹⁰ & NLG ¹¹		- contract assessment - report generation	- check processing & flagging
ML ¹² & advanced analytics	- tailored products	- fraud detection	check processing & flagging
Cognitive agents	- self-service & automation	- IT helpdesk	

Advantages of virtual banking

"In a world of increasing busyness, virtual branches are becoming a necessary reality" (Price, 2016), as customers that have little time to visit a branch physically can interact comfortably with their bank by using digital channels.

Starting from the information available at LiveBank24 website, a solution developed by Ailleron to serve as a virtual banking platform for financial institutions (Ailleron), and considering the benefits customers value the most in their primary financial service provider (EY,

⁷ Robotic Process Automation

⁸ Optical Character Recognition

⁹ Electronic Data Interchange

¹⁰ Natural Language Processing

¹¹ Natural Language Generation

¹² Machine Learning

2014), it is possible to highlight the advantages of relying on this type of services.

Convenience is one of the main advantages of virtual branch solutions, effectively extending business hours up to 24/7 without the need to commute to a physical location, as banking services are easily accessible from multiple devices and on the move.

Also, virtual banking is an efficient solution for customers, as it reduces the opportunity cost, in terms of time, for carrying out a bank transaction through real-time execution of contracts and immediate handling of specific requests by sector specialists.

Finally, video-conferencing and live chat solution are a way to regain customer trust, by offering a "*face-to-face*" experience typical of physical branches and ensuring secure storage for contracts and other sensible documents through data protection technologies.

In a similar way, banks benefit from the implementation of virtual branches (Price, 2016).

The higher availability of transaction and interaction data generates enhanced customer insight through advanced analytics techniques, driving the development of customer-tailored products and opening to more cross-selling opportunities; as a by-product, personalization drives better sales performances, as customers are willing to buy more (28% of them) and pay more (14%) for personalized products (EY, 2015).

By accommodating small task traditionally requiring a visit to a physical branch to virtual channels (Price, 2016), banks can save cost by reducing personnel and real-estate related expenses, which may represent more than half of a retail bank's operating costs (McKinsey&Company, 2017).

Also, the rationalization of operational processes required for virtual banking (EY, 2018) forces to reshape and digitize branches' back-end operations (McKinsey&Company, 2017), providing a direction to player that *"in an environment composed of fully-digital banks, FinTechs, and non-traditional competitors" "are still hesitating about the key priorities to pursue"* (Deloitte, 2017).

Cutting-edge technologies, more transparent customer services and tailor made financial products can increase Millennials acquisition (Kreger, 2018), customer satisfaction and retention rate (Ailleron).

Case studies

Many banks worldwide are investing and implementing virtual banking solutions, often as complementary medium to smart branch offering.

Piraeus Bank "E-Branch"

Since December 2016, Piraeus Bank opened 6 innovative fully-automated branches for its retail clients, called E-Branch, as part of the group's strategy to increase efficiency through the use of technology (FinTech Futures , 2017).

The idea behind e-branches is to *"connect digital and physical"* (DinnDesign, 2016), offering *"full automation within a homely environment"* (FinTech Futures , 2017) and providing a realistic answer to the risk of alienating older customers as a consequence of the increasing use of technology (Theocharis, 2018).

The distinctive characteristic of e-branches is the "remote cashier", a specially trained cashier serving customers through a video call, able to execute over 90% of all transactions of a conventional cash-

ier desk (Piraeus Bank, 2016).

As reported by DINNI, an Italian innovation design firm assisting Piraeus bank with the project, 35% of all non-ATM transaction carried out at e-branches were performed with the assistance of a remote cashier (DinnDesign, 2016).

Also, the architectural design of the physical location reflects the friendly and warm environment typical of a kitchen living (DinnDesign, 2016), where the extensive use of technology is hidden and non-invasive while remaining easily accessible (Theocharis, 2018).

A "digital zone" with computers and tablets helps clients to familiarise with e-services (Fintech Futures, 2017); two facilitators welcome customers and guide them towards the proper station, offering assistance and providing information related to the digital services available.

An "exhibition area" display products and services of the bank or other third-party companies, while separate private spaces serve as "meeting rooms" to receive consulting services through a video-call. (Theocharis, 2018).

In November 2017, Stefanos Mytilineos, Deputy General Manager for Retail Banking, Branch Network & Deposits at Piraeus Bank Group, reported that in seven months of operation e-branches counted "*over 37,000 users per month making over 32,000 transactions*" (FinTech Futures, 2017), and expects to be able to process 80% of operations with 30% personnel costs (DinnDesign, 2016).

Piraeus Bank will gradually open more e-branches in selected locations (Fintech Futures, 2017), as this branch transformation project will affect their entire network of around 700 branches (DinnDesign, 2016).

MBank "Experts Online" & "Light Branch"

In 2013 Mbank, one of the leading banks in Poland belonging to the Commerzbank Group, launched "Expert Online", a service that enables customers to access financial advisory through secure video, audio and chat conversations (mBank), effectively combining the traditional role of a consultant with the availability of electronic banking and modern technology (Ailleron, 2014).

The bank invested roughly 40 million dollars and a team of 200 people to "*build something up to the standard of modern Internet within the financial genre*", says Michal Panowicz, managing director of mBank (Wisniewski, 2013).

The result was one of the most innovative e-banking system, available 24/7 without requiring additional software to be installed (MEDICI, 2015) and capable of handling 90% of banking transactions (Ailleron, 2014).

Also, in 28% of video connection, multimedia materials were presented on the screen, feature that "*does not only simplify the connection, but also inspires trust to the consultant*", as stated by Łukasz Wiktor, mBank's Customer Service Director (MEDICI, 2015).

In 2018, the company announced the implementation of additional features for their virtual banking solution, making Expert Online available to mobile devices and integrating a continuous chat function, which allows to access the entire conversation history, along with uploaded material and links.

Also, mBank released mAIA, an intelligent assistant whose task is to support the bank's agents during conversations with customers (Ailleron, 2018).

Aleksandra Buczkowska, Contact Center Director at mBank, confirmed that the objective of these enhancement was *"building a friendly, accessible and professional point of contact for mBank customers, which they can use to deal with every issue they have"* (Ailleron, 2018).

During 2014, the group invested over 19 million dollars to completely re-organize and optimize its entire physical delivery network, introducing small, modern and digital Light Branches, focused on acquisition, communication, experience and simple service to relocate local traffic, alongside Advisory Centers, larger facilities focused on advisory, cross-sell and business banking support.

Light Branches are designed to complete basic banking transaction through the use of available mobile devices connected to the online platform of mBank, in an *"ultra-modern and open"* format, while sharing information on more complex products via video-conference in private rooms (Marous, 2015).

For James Moed, Ideo alumni and Anthemis Edge design advisor, *"the M-bank Light Branch is the first of what I hope to see more of: Digital Native Retail"* (Marous, 2015); this interactive, digital retail-branch concept was awarded Best of Show in 2015 by FinovateEurope (Penn, 2015).

After 6 months, most visitors (90%) liked Light Branches, which performed three times better than traditional sales offices and welcoming more than 200 visitors a day, while requiring smaller spaces and offering longer opening hours (Marous, 2015).

J.P. Morgan

After successfully rolling out of its first virtual branch in India in 2015, followed in 2016 by Indonesia and Thailand (J.P Morgan, 2016), in

2017 J.P. Morgan expanded further in Asia, to serve its corporate clients in China.

Offered via J.P. Morgan ACCESS Online, the company's global cash management online portal (J.P Morgan), this solution provides a comprehensive suite of banking services securely accessed from remote (J.P Morgan, 2016), eliminating the need to be physically present at a traditional branch (J.P Morgan, 2017).

The Virtual Branch digitize the whole document exchange workflow (J.P Morgan, 2016), as, clients can upload, check and store their supporting documents electronically, monitoring all their cross-border merchandize trade transactions (J.P Morgan, 2017).

Citibank

In 2017, Citibank announced the introduction of a large-scale virtual bank service for 16 countries in its APAC and EMEA regions.

The bank aims to transfer 95% of the its offer to remote channels, implementing the LiveBank solution powered by Ailleron, while maintaining the possibility of direct interaction with customers through video, audio and chat channels, and providing collaboration, file sharing, document signing, voice biometrics and eKYC services (Ailleron, 2017).

ABN AMRO "Beeldbankieren"

In 2018, ABN AMRO launched Beeldbankieren, a video banking booking service that lets clients schedule a remote appointment with one of the bank's advisors within 24 hours, to discuss mortgage, pension or investment plans.

ABN AMRO reported that a third of all advisory meetings already take place through video banking, up to 61% for mortgage advice (ABN AMRO, 2018).

Banca Popolare di Bari "Mia project"

BPB¹³ launched in 2016 an innovative branch design as part of the project "Mia", which objective was to provide a better customer experience by integrating new digital technologies with multi-channel banking.

The result was a warm, humanized technological environment which promotes active discussion and participation using digital instruments.

A 24/7 area equipped with advanced ATMs and interactive multi-touch monitors welcomes customers.

Mobile devices provide access to online banking services, while private areas are available for remote advisory from an expert (Gruppo Banca Popolare di Bari, 2016).

Unicredit

In 2014, Unicredit launched a flagship branch located in Gae Aulenti Square in Milan, as the first implementation of a 3-year branch renovation plan.

The branch combines innovative technologies to provide an omni-channel experience to its customers, featuring multimedia stations and tablets to access home banking functionalities, a 24/7 self-service area and video-wall entertainment.

High value advisory is available in private spaces, with dedicated

¹³ Banca Popolare di Bari

meeting room equipped with video-conference technology
(Unicredit, 2014).

A classification model

The introduction of smart branch and virtual branch solutions is a relevant trend for the banking business and constitutes an answer to the customer demand of omni-channel and omni-digital experiences.

A first impact of this phenomenon is the disruption of the traditional distribution model for banking services due to the introduction of innovative digital technologies that change the way clients complete financial transaction and operations.

Banks have created delivery models that are in-between pure staff assisted, the traditional servicing over the counter by a teller or at a desk by a banker, and completely self-service through an ATM (IBM, 2018).

The main delivery models employed by traditional, smart and virtual branches, ordered by increasing self-service levels, are (IBM, 2018):

- Teller or banker;
- Universal teller;
- Mobile banker with tablet;
- Assisted self-service with ITM;
- Video-assisted services;
- Self-service.

On the other hand, the financial services offered by these new banking solutions are not significantly different from the ones of traditional banks.

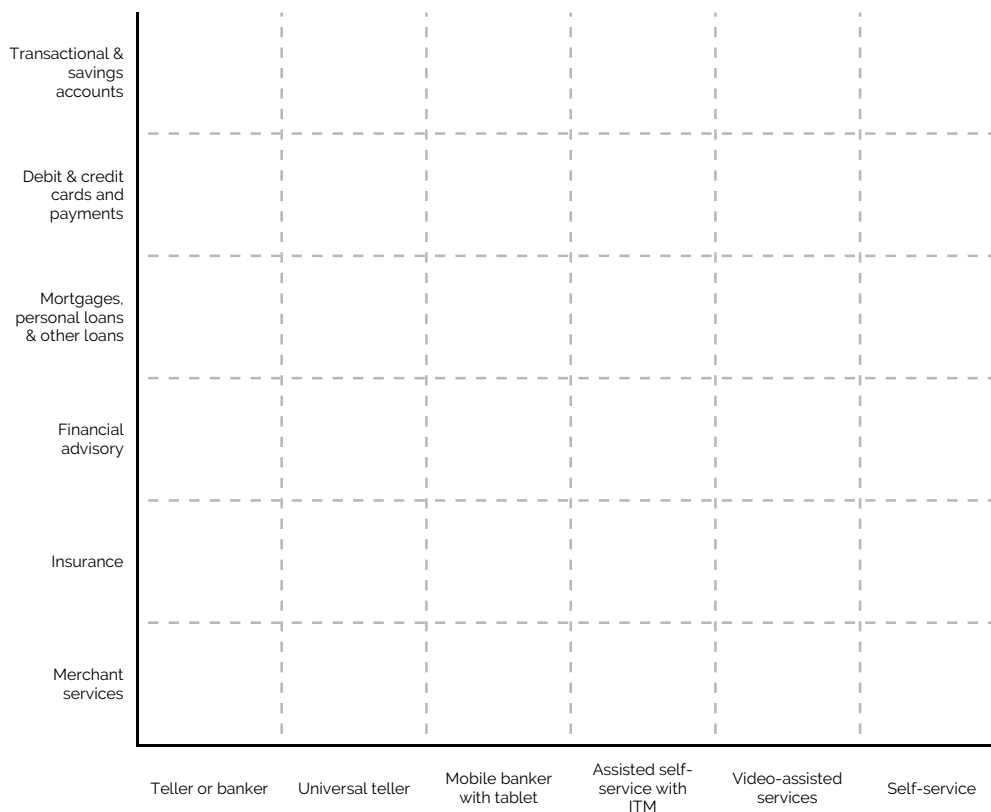
For this reason, the selection of banking services considered in the analysis is (First Bank, n.d.) (Potter, n.d.) :

- Transactional & savings accounts;

- Debit & credit cards and payments;
- Mortgages, personal loans & other loans;
- Financial advisory;
- Insurance;
- Merchant services.

The following model proposes a classification framework for the smart branch and virtual branch initiatives presented as case studies, by assessing the level of assistance given to customers, which is closely dependant on the technologies employed, and the width of banking services available.

FIGURE 13: CLASSIFICATION FRAMEWORK



The graph can be divided roughly in three parts:

- Left area:
traditional banking value proposition and distribution channel;

- Central area:
mostly smart branch solutions;
- Right area:
innovative virtual banking offering.

The various initiatives presented as study cases in this report can be classified using the dimensions of analysis defined by the model:

FIGURE 14: PIRAEUS BANK "E-BRANCH"

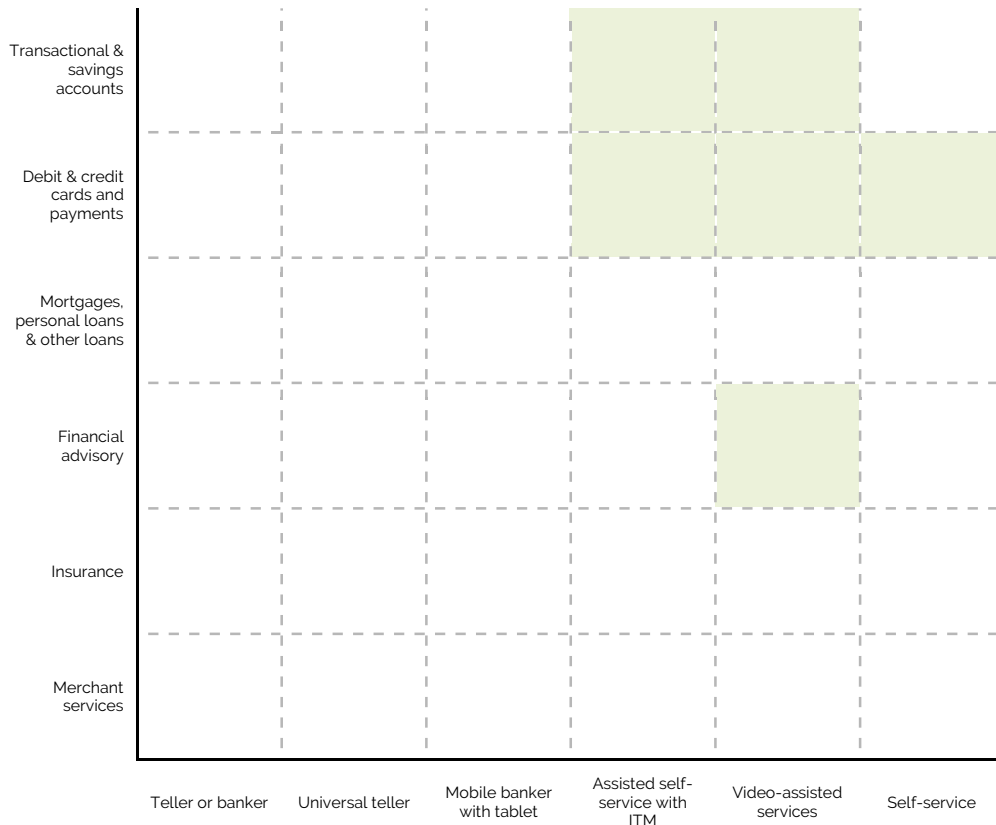


FIGURE 15: MBANK "EXPERT ONLINE" & "LIGHT BRANCH"

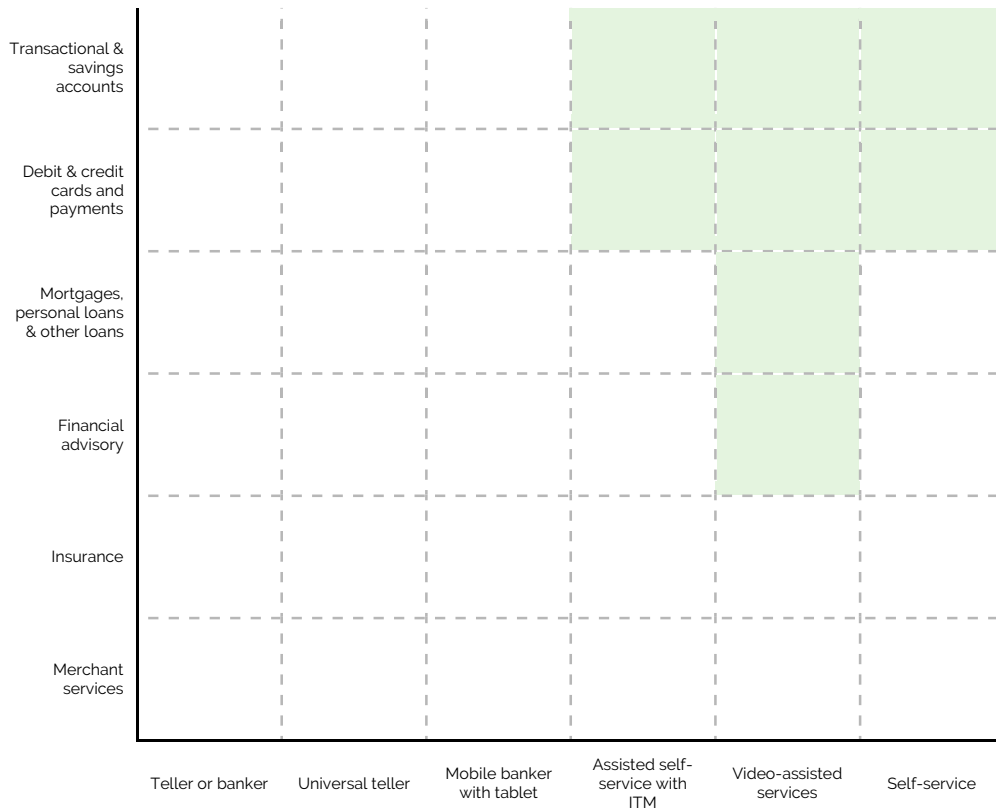


FIGURE 16: J.P. MORGAN "ACCESS ONLINE"

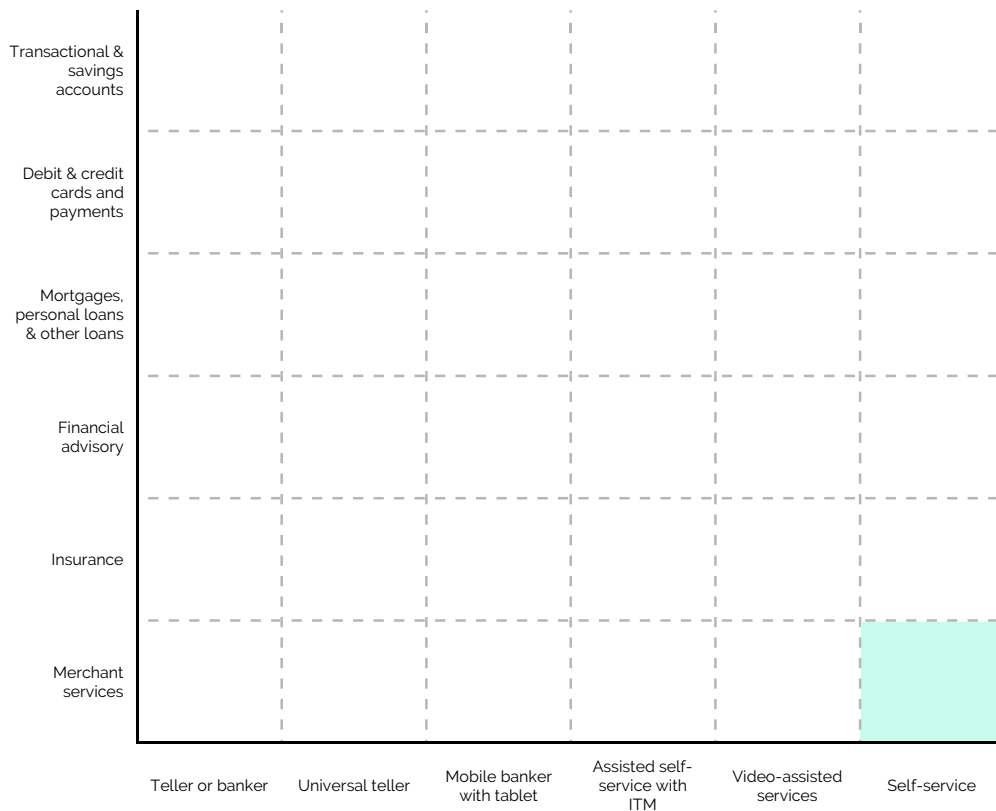


FIGURE 17: ABN AMRO "BEELDBANKIEREN"

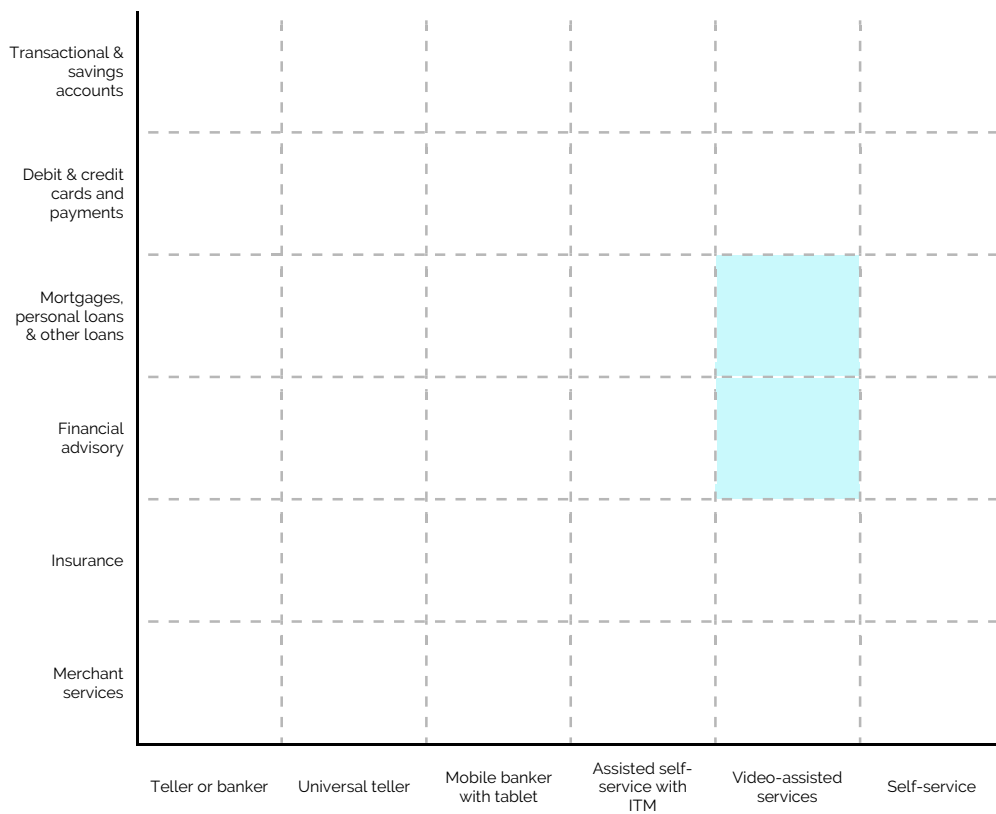


FIGURE 18: BANCA POPOLARE DI BARI "PROJECT MIA"

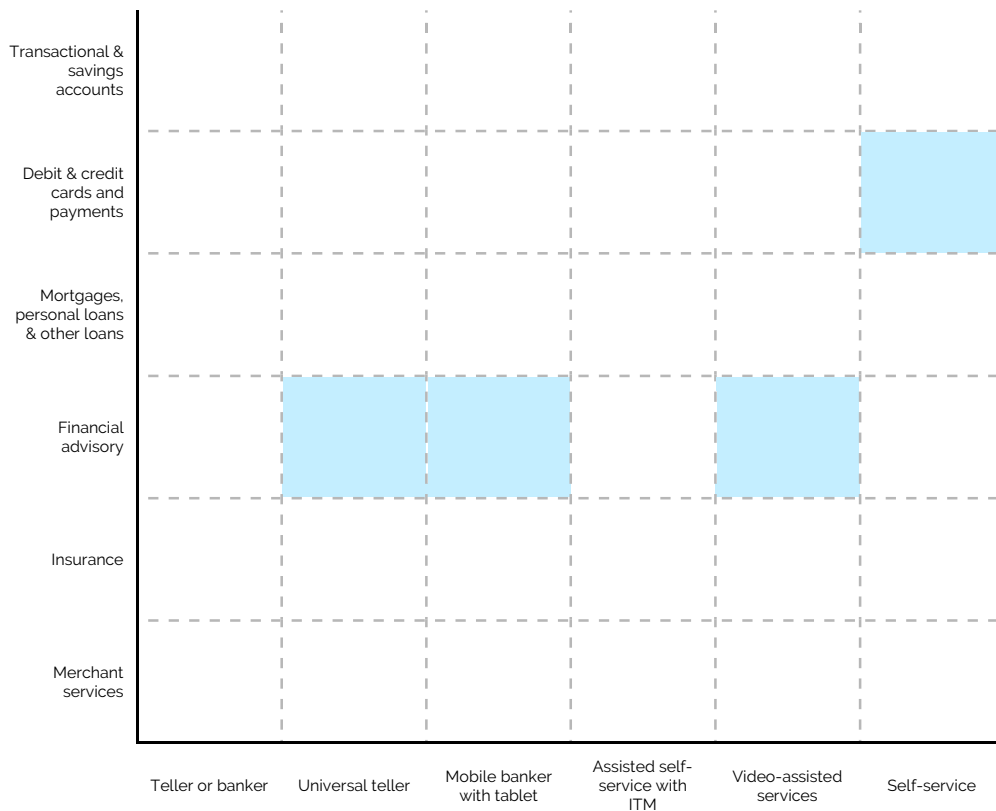
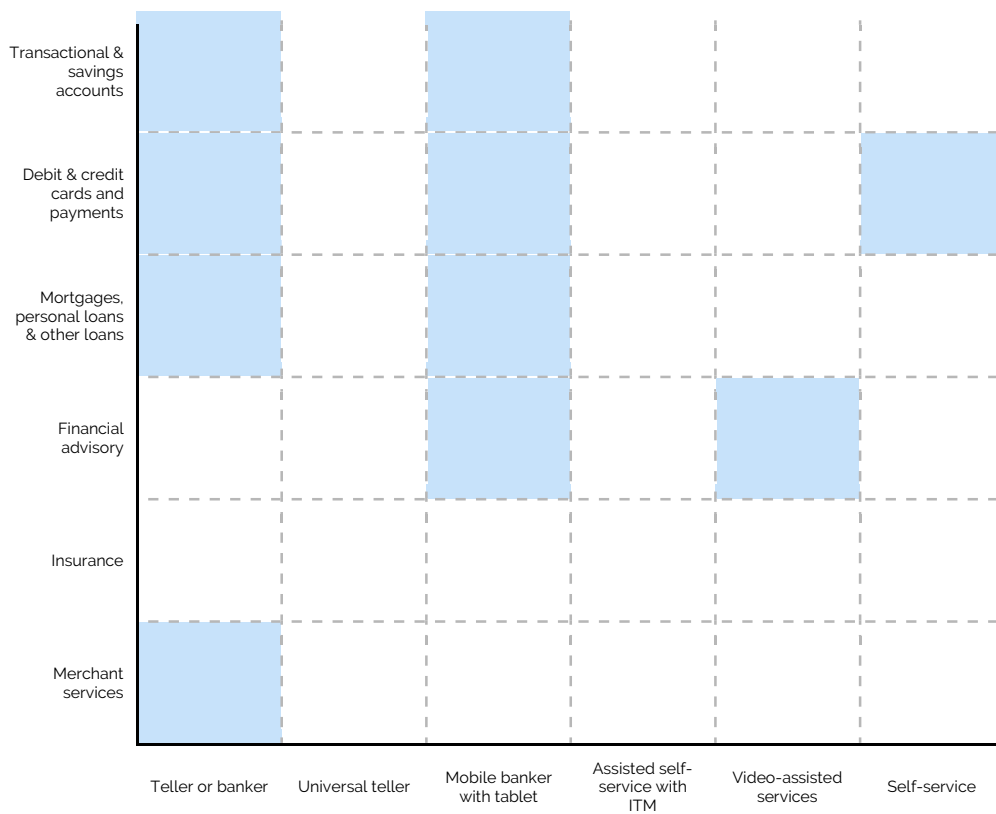


FIGURE 19: UNICREDIT



Three main categories of solutions emerge from the classification:

- True smart/virtual banking:
Piraeus Bank and mBank deliver smart and virtual branching solutions that offer a compelling alternative to traditional retail banking. All core customers' needs are satisfied, and high-value services as financial advisory or loan application are available 24/7 through remote connection;
- Niche smart/virtual banking:
J.P. Morgan and ABN AMRO focus on delivering specific services to their clients through digital means, without proposing a comprehensive alternative to traditional channels;
- Enhanced traditional banking:
BPB and Unicredit innovative branch design integrates traditional banking distribution channels with added smart or virtual functionalities.

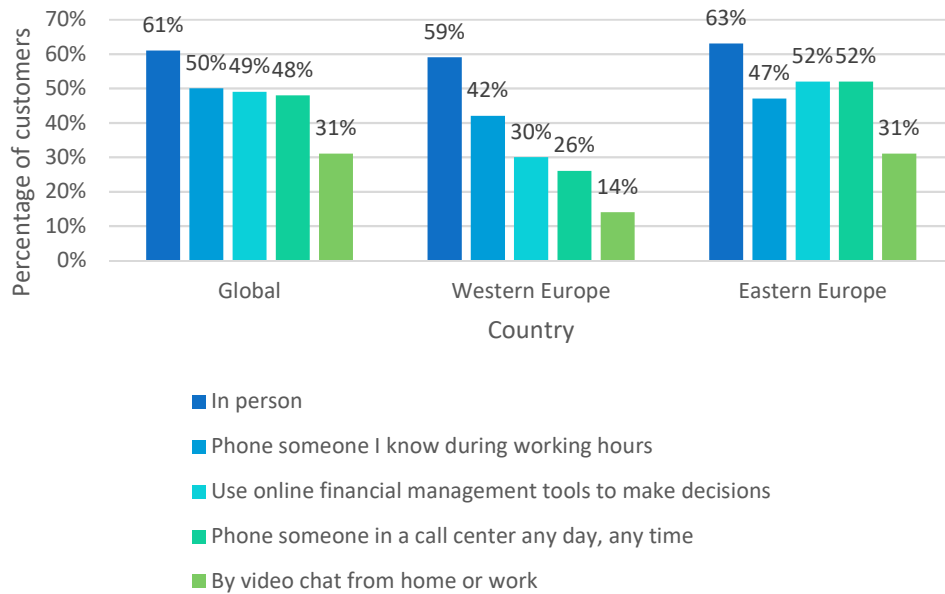
Virtual branches in Italy

The use of technologically advanced tools to access high value-added services is the core proposition of virtual banking and is relevant also for the implementation of smart branches.

As highlighted in the beginning, European customers may not be ready yet to embrace a fully digital experience.

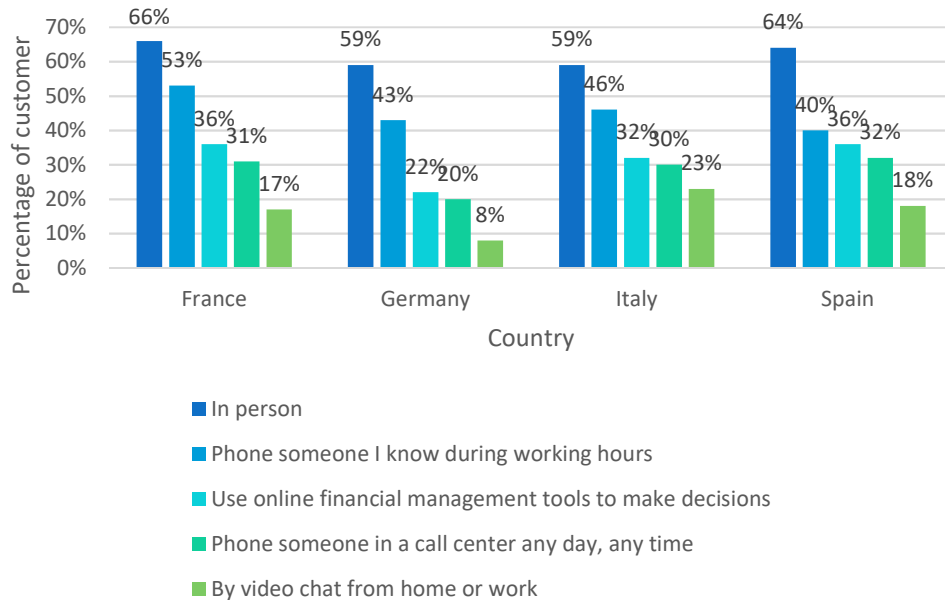
A study by EFMA (EFMA, 2014) analysed the propensity of banks clients worldwide to access financial advice or assistance through different channels:

FIGURE 20: ADVICE CHANNELS PREFERENCES WORLDWIDE AND IN EUROPE



Overall, Western Europe prefer to use more traditional channels for this type of services.

FIGURE 21: ADVICE CHANNELS PREFERENCES FOR FRANCE, GERMANY, ITALY AND SPAIN



Only 23% of Italian customers are likely to access advisory services or request assistance through channels typical of virtual banking solutions, still preferring physical branches.

In fact, this propensity for traditional delivery models resulted in several initiatives which aim to redefine the concept of physical bank branches in a variety of different ways.

Banca 5: instant banking

In 2008, Banca ITB was conceived as a dedicated banking service for tobacconist; when it was acquired in 2016 by Intesa Sanpaolo, the original offer was reshaped to appeal also to non-frequent bank users (Adnkronos, 2017) by proposing essential account, payment, loans and insurance services delivered through a network of partner businesses (Banca5).

At present, more than 20.000 of tobacconist in Italy, over 40% of the market (Bancaforte, 2017), offer Banca 5 services, creating a diffused network with high opening hour flexibility which serves more than 12 million customers.

Bancoposta

Since 1999, Poste Italiane started offering financial services through its division Bancoposta.

A comprehensive offering of account, payment, investing and insurance services are available to customer thanks to a diffused network of post offices (Bancoposta).

Intesa Sanpaolo

Since 2017, Intesa Sanpaolo is transforming some of its branches in social hub, by offering food, art and cultural initiatives to its customers and external visitors.

The key driver of this project is social sharing (Finanza Report, 2017), (Autogrill, 2017) and there are already 3 innovative branches in Mi-

lan and Rome, hosting restaurants (Autogrill, 2017), patisserie (Il Messaggero, 2018) and fashion shows (Intesa Sanpaolo, 2018).

Conclusions

Customers behaviour is evolving, as their preferences for accessing banking services are shifting rapidly toward digital channels and mobile mediums.

As a result, banks are reducing their physical network, to save cost to remain competitive in an increasingly harsher environment.

Most customers are not completely ready to convert to a fully digital banking experience though, as for them the physical branch remains the preferred channel for core banking operations.

But digital technologies are appealing, and clients expect to be able to access banking services through a variety of channels sharing the same consistent experience.

For this reason, banks are implementing smart branches solutions, streamlined version of traditional bank branches where physical and digital worlds coexist to deliver a compelling and channel-consistent service to customers.

However, in a time of impelling busyness, being able to access high-value banking services whenever possible is a pressing necessity; video-conferencing, secure communication protocols and fully digitized banking processes are essential components of virtual branches, which provides customers a convenient mean to experience face-to-face digital advisory and tailor-made financial products.

Worldwide, banks are integrating various degree of smart and virtual banking solution, from a simple enhancement of traditional branch design to niche offering and complete digital delivery models.

At the same time, alternative propositions are emerging in countries

with a low digital banking propensity, reshaping the concept of branch without embracing a virtual-driven transformation.

Banks are adapting to their customers, crafting a more accessible, convenient, transparent and human-sized banking.

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