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ELECTRONIC PAYMENTS: FROM BARTER TO MOBILE BANKING

PAGAMENTI ELETTRONICI: DAL BARATTO AL MOBILE BANKING

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INTRODUCTION

This thesis aims to address the development of the payments system from barter to mobile banking and money transfers made using mobile devices. The most recent technological developments in the intermediation industry are deeply changing the banking business, thus is of primary importance to understand the implications both for customers and banks.

The thesis is structured in three chapters. The first chapter illustrates the history of electronic payments, analyzing the most important stages and the turning points that have led to the new forms of intermediation.

The second chapter analyzes some payment systems, with a focus on the most important changes.

The third chapter deals mainly with the topic of online banking, its development and the substantial differences between online and traditional bank, discussing also a case study Illimity bank, a recently founded online bank.

CHAPTER ONE

THE HISTORY OF THE PAYMENT SYSTEMS

1.1 FROM BARTER TO COIN

The first source of exchange between economic actors was barter, which consisted of a bilateral exchange of goods and services between people.

“ Each side wants the specific goods the other side offers, the person exchanging goods maybe total strangers to one another, and the terms of trade are determinated by familiar supply and demand forces, both parties to the transaction seeking to economize or maximize, to receive the most for what they pay” Dalton (1982).

This form of exchange had considerable drawbacks in fact it was difficult to exchange goods that have different valves, at the same it has the limitations to be difficult to store and accumulate.

Barter could work within a simple economy where relations between different economic actors were rare and irrelevant.

The process of specialization of work induces man to find means of exchange accepted by everybody.

This was the way to move to money, and the goods used as a mean of payment were initially precious metals, which were traded.

The main features were: stability over time, inadmissibility and easy transfer.

Metals were used for the production of the coin.

At first, they were more or less hard ingots depending on the percentage of mobile metal inside.

Then metal diskettes were used on which images or symbols were cloned: the metal coin.

After some time, this tool also presented some problems, mainly related to the high value of the material used that made it difficult and risky to transport and to safekeeping, especially for merchants who during their trade could be robbed.

Later, around the 9th century AD, paper money was introduced.

As trade began to intensify, so did the demand for money, but the supply of precious metals was not easy to control. So, little by little, paper money became widespread.

Bankers introduced banknotes by issuing notes convertible into gold to people who deposited coins and precious metals with them. Anyone in possession of such notes could go to the issuing bank and ask for the equivalent in gold or coins.

In other words, bankers had to be accepted in payment by law, but they could also be converted into gold at the issuing bank.

1.2 THE FIRST BANKNOTE

In later times, banks realized that deposited coins were not withdraw all at once, but in small quantities.

In order to prevent what they deposited from remaining unproductive, banks began to carry out lending activities.

Banks begin to lend money by issuing banknotes worth more than the precious metal they keep in their coffers.

This type of money isn't a certificate of deposit but becomes real money.

The first banknote issue dates back to 1700's by the Bank of England.

Banknotes were accepted in payment because of the confidence that they issuing bank had in their conversion into metal.

Banknotes are not made of precious metal. The banker issuing the banknote guaranteed it with his signature, or his symbol, indicating the treasury containing the exchange value in gold of the same indicated on the note.

Anyone possessing a banknote could render it for its value in gold.

In this way, the convertibility of the banknote was guaranteed and this ensured confidence in the banking system.

Currency is used as a mean of exchange, and its essential characteristic is that it can be given by anyone to obtain goods and services in exchange.

Other characteristics of the currency are that it is a unit of account, in fact it measures the prices of goods and services that are exchanged, and it is a legal means

of payment, so that those who contract a debt can pay it off by paying a sum due in currency.

Finally, money is a store of value that allows the accumulation of wealth as it is not perishable.

1.3 PAYMENT METHODS IN THE 1980s AND 1990s

Looking at the evolutionary historical contest we can understand that important technological development and increasing innovation greatly affected the means of payment.

In fact, in 1950 one of the most widely used modern payment instruments, the credit card, was created.

In 1914, the Western union company allowed its most important customers to have a metal card to defer payment for its services. In 1924, also the General petroleur company issued metal credit cards called metal money for automative payments, and then, in 1930 AT&T, a telephone company, created a specific credit card for its telephone service.

In 1967 four banks in California founded the Mastechange program.

Two years later, the majority of the independent cards joined: Visa and Mastercard, which expand further and become active in international markets.

In 1986 the birth of interbank services represented the entry point also for the Italian banking system in the credit card markets.

Another important innovation is represented by online banking or internet banking, indeed with the advent of the Internet the implementation of payments through the network has been possible.

Already in the 80's in America four banks in New York offered home banking services for both individuals and small businesses.

The Pronto service was introduced in 1983 which allowed transactions and cash flows to be controlled online.

In the United Kingdom, Homelink was introduced, which was based on the use of Prestel technology and the use of a computer connected to a monitor and a private internal telephone network.

In Italy it only arrived in 1995 with Cariplo (Cassa di Risparmio delle Province Lombarde) which introduced a home banking system that required a client to be installed on the user's computer later.

It was improved by other operators who allowed clients to be provided with access through the browser, and since 2003 most banks have reset the cost of online banking.

Overall, over the years the evolution of mobile devices and the strong development of the internet has had a strong impact on the behavioral and purchasing habits of consumers and on commercial activities that seem to want to develop more and more business strategies.

CHAPTER TWO

AN OVERVIEW OF PAYMENT SYSTEMS

2.1 THE LEGAL CURRENCY

"A money transfer is an act of transferring money from one place to another" Corselli (2020).

Basically money transfer is a financial services, that involves the acceptance of cash, cheques or other monetary instruments on the one side, and the payment of a corresponding sum of cash or other forms of credit to a beneficiary on the other side.

This can happen by means of communication, messages, transfers or through a network to which the money transfer provider belongs.

"Money is a valuable merely because everyone knows everyone else will accept it as a form of payment" Beattie (2015).

This means that these types of transactions and the use of this particular service may include the use of one or more intermediaries and also a final payment to a third-party.

In Italy, the legal currency is the Euro, which began to circulate on January1, 2002, replacing banknotes and coins denominated in Lira.

The euro can be used in Italy to make payments, but transactions above 3000 euros has to be necessarily carried out using instruments other than cash.

According to a study by the Bank of Italy using data of the Italian sub-sample from the survey conducted by the European Central Bank (ECB) in 2016, it appears that cash was the tool most used by consumers when it comes to payments, although cards and alternative instruments would be preferred in the event that the individual could choose the payment method without constraints.

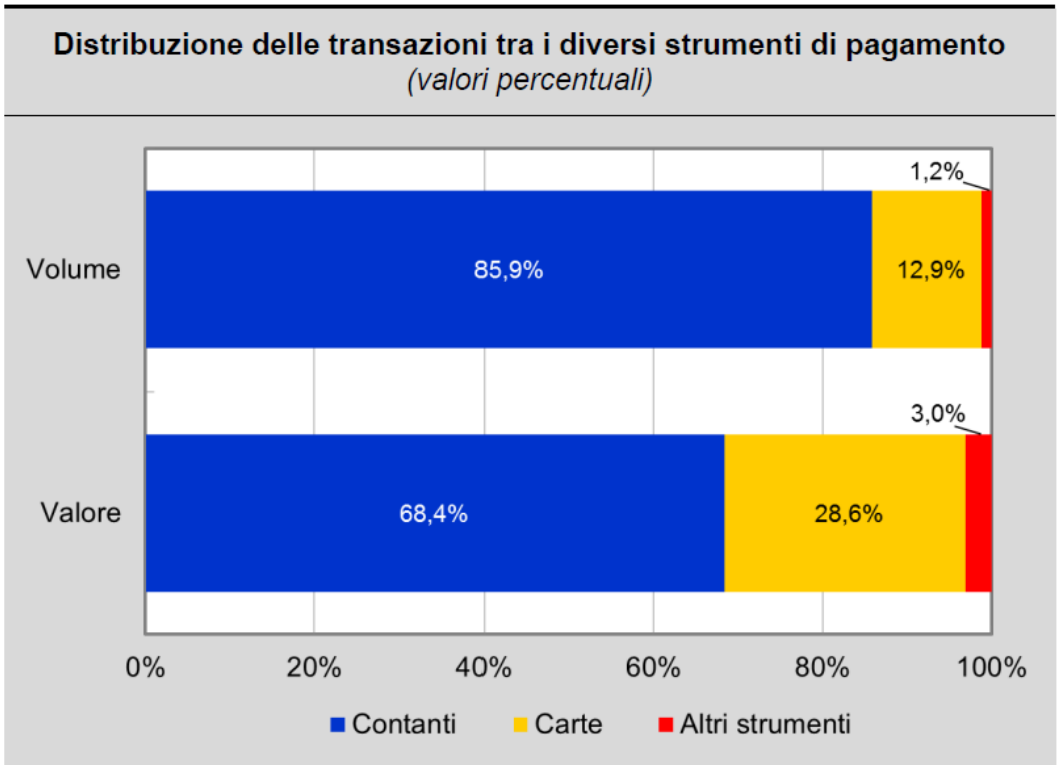

Figure 1: Distribution of transactions between different payment instruments

Source: European Central Bank

Figure 1, shows us that cash is the most widely used instrument (around twelve transactions in a week) with 85.9% of the value of transactions, for a value of 68.4% of the total.

The most widely used alternatives to cash are payment cards, accounting for 12.9% of the volume of transactions and 28.6% of the total transactions.

This demonstrated that cash is used for payments of low amounts while cards are used for higher amounts.

Finally, the figure shows us that the number of transactions with other payment instruments account is 1.2%.

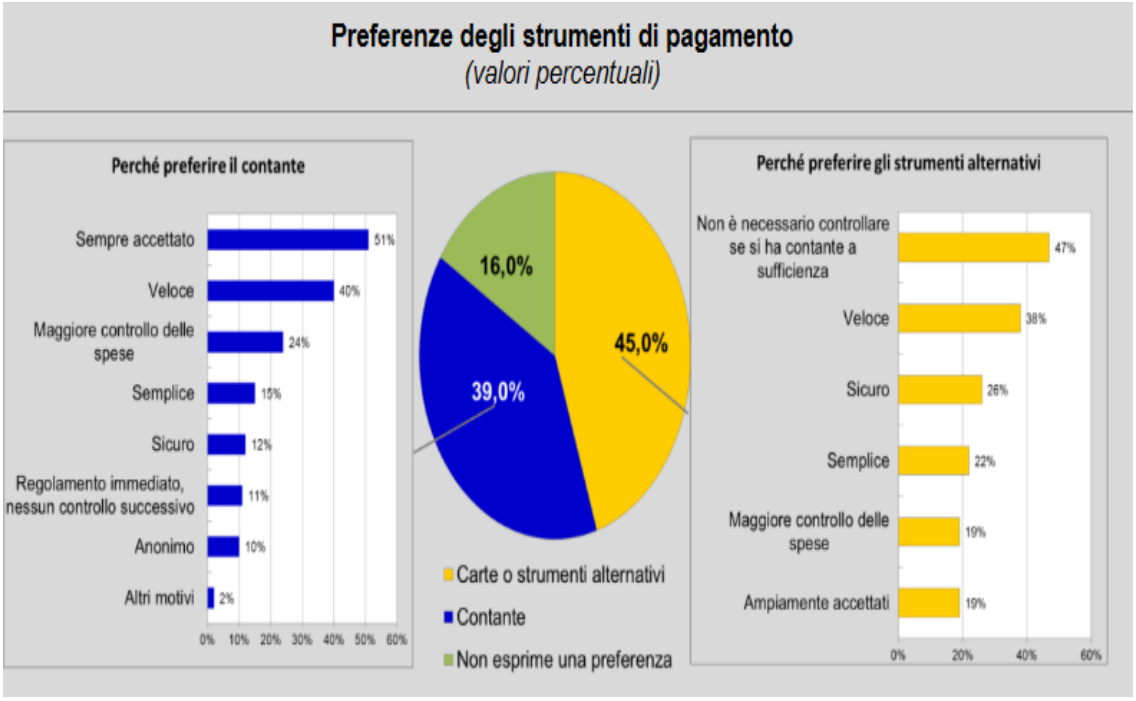

Figure 2 : Payment instrument preferences

Source: European Central Bank

Figure 2, shows that if individuals could choose their mode of payment, cash would be the least used. In fact, 45% of the sample prefers to use cards or alternative instruments because they are faster and extremely secure.

While, those who, prefer cash claim that it is a mean accepted by everyone and allows them to keep their spending under control.

2.2 THE NEW MOBILE BANKING

“New technologies have radically changed the way we get information. Over the last few years, the use of computers and mobile devices has made the internet increasingly present in people's daily lives, changing their habits and leading them to use the resources found online in a very massive way” Mazzoli (2013).

Using a variety of platforms, services are being created to enable mobile devices to perform many activities of the traditional internet, albeit in a reduced format for mobile devices. One area of activity is mobile banking. Banking is an area that has extended in many different ways in recent years, including telephone and online banking.

“The use of mobile phones in order to effectuate banking transactions is bound to increase in a significant way in the near future” Weber (2010).

This growth in the mobile banking financial services depends on consumer confidence in the provided services.

“Italians who use the internet are increasing”. That’s what it emerges from the report, citizens and International Citizen Service (ICS), compiled by Istat (2019), which investigates the relationship of Italians with communication and information technologies.

In the 2019 were 38 million 796 thousand people aged six years and over who have surfed at least once on the Internet over three months, 812 thousand more than the previous year.

The share of people who connect to the internet on a daily basis increases, with young people being the most frequent users.

One of the most popular activities on the web is online shopping with 57.2%, equal to 20 million 403 thousand people.

In terms of digital banking, Italy is among the countries where consumers use digital banking solutions most frequently, with 59% using them at least once every two weeks.

Given the increasing, digitization and connectivity of banks, 79% of Italian consumers say security is the most important criterion, followed by transparency, time saving and ease of use.

The evolution of these devices had a decisive impact on consumer's behavioral and purchasing habits.

Banks are already investing in mobile technology and security, developing smartphone apps, adding new features such as remote deposit of checks, and educating consumers.

A study from Harvard University (2018) shows that while online banking improved customer retention and reduced cost per transaction, it led to an increase in the total number of online and offline transactions, which resulted in an increase in the total transaction costs.

Payments through electronic and mobile channels have the potential to reduce these costs by a third and also avoid leakage due to corruption.

Mobile technology is transforming the global banking and payment industry by providing added convenience to existing bank customers in developed markets, and by offering new services customers in emerging markets.

2.3 PAYPAL

PayPal was founded in 1998 under the name Confinity offering a money transfer service.

The company was responsible for processing online payments, securely allowing the sale of products and services directly through the use of the internet, getting a revenue by collecting commissions.

PayPal introduced a novelty within the industry, allowing the transfer of money abroad using the internet.

It was possible to send money to another account simply by using an email address.

PayPal allows a customer not to share sensitive data of his cards during the online payments process while making the payment.

At the same time fees imposed on the markets were lower than those required by credit card issuers.

These two fundamental advantages, both for the buyer and for the seller, allowed PayPal to significantly increase the number of users.

PayPal offers significant advantages including security. Sensitive data at the time of payment are not entered and are not shown to the seller.

This provides credibility to small businesses by offering a payment service where customers don’t have to submit their credit card number over the internet, in this way merchants may increase the user’s confidence, even when they are hesitant to buy from a site that they may never visited or ever heard of before.

Another advantage is the flexibility because PayPal, in the case of insufficient funds, allows the customer to pay at once by adding the missing balance by withdrawing from the bank account.

In addition, PayPal offers a mobile application where a customer can keep under control his account and make all transactions directly from his phone.

Another peculiarity is that it allows to send money to another account quickly and with low costs, for example, the opening of an account is totally free and most transactions have not fees.

Despite all these advantages and opportunities, there are some risks and problems.

One of the main issue of PayPal are the numerous scams performed by users.

PayPal being a widely used online payment system is the main victim of cyber criminals.

For example, the scammer, using someone else's PayPal account, makes an overpayment or is asked to refund the excess amount to another account.

It is claimed that the excess amount is used to pay for delivery costs, which must be sent to the account of a fake transport company.

PayPal being an online platform can often have errors or bug.

The most common ones are in the currency converter, and errors in making a payment or the malfunction of the platform when a customer place an order without funds in his account.

To conclude, it can be said that a lot of people sign up for PayPal's service every day, with more than one thousand dollars that go through the PayPal financial engine every second. Also, thousands of people and businesses from all over the world come to PayPal looking for a solution to meet their online payments needs. PayPal is now available in over one hundred countries and seventeen currencies, with ever broader expansion planned for the future (Williams 2007).

2.4 CREDIT AND PREPAID CARDS

Credit cards have become for many consumers the preferred mean of payment for travelling, entertainment, retail purchases and bill payment.

In 1950, the Diners Club issued the first card, a general purpose charge card that allowed customers to make purchases using a payment card that was accepted by multiple merchants beyond their local geographic area.

The issuer both authorizes and handles all aspects of the transaction and settles directly with both the consumer and the merchant.

Many banks developed universal card products that did not tie the consumer to a single merchant or product but allowing the consumer to purchase goods and services in many places while providing a revolving credit feature.

The Diners credit card quickly became popular among banks and credit institutions, which joined the initiative. During the 1950s, other banks took the Diners card case history as an opportunity to launch their own credit cards. The late 1950s and 1960s saw the birth of American Express and the first credit cards now known as MasterCard and Visa.

In the 1970s, credit cards were equipped with a magnetic strip that allowed the merchant to read the information on the card by swiping it on an electronic reading device.

Thirty years later, in the early 2000s, credit cards are also fitted with a microchip to expand the amount of information recorded and increase the level of security of transactions.

In 1995, approximately 65% of households had at least one credit cards (Sienkiewicz 2001).

Today we can say that payment cards are plastic cards with a microchip and a magnetic strip that can be use to pay for goods and services in stores and on the internet without having to use cash.

Companies issue the cards after the customer sign a contract.

Credit cards are issued by the bank to trusted account holders. They can used to make payments both in the domestic country and abroad.

There are two ways of paying back the sums by the bank: either by repaying the entire amount on a given day or by paying it back fixed installments over a longer period of time.

To make a payment in a shop, a customer insert a card in the POS machine and sign the receipt it prints out.

In the case of a small purchase, the credit card has a contactless option.

Simply place the card or smartphone close to the POS terminal enabled to receive the payment. With its integrated antenna, the card will respond to the signal. Payment is made once per transaction.

The prepaid cards can be obtained from banks, post offices and some stores.

The so-called prepaid payment cards differ from debit and credit cards in that they are linked to a so-called electronic purse, access to which is guaranteed by the card itself.

The payment is accounted instantaneously: this substantial difference with other payment instruments is a major advantage for those who have to cash the amount as immediate crediting is guaranteed.

Adults often choose this type of card because it is safer; in case of loss, theft, or fraud only the money still credited on the card is at risk, as the card is not connected to any account.

Prepaid cards are particularly well-suited to young people as the amount they can sped as limited.

Overall, it can be stated that Credit and prepaid cards are now accepted at over four millions locations in the U.S.A. and over fourteen millions locations around the world (Sienkiewicz, 2001).

2.5 PAYMENT CIRCUITS

Payment circuits are international companies that make it possible to make payments electronically using credit cards or debit cards.

Payment circuits represented the union between the seller and the bank issuing a given card.

The main characteristics are security, simplicity, practicality and the possibility to use them in traditional stores or online stores.

The payment circuits verify with the card issuer whether the transaction can be accepted, confirming to the seller that the payment can be made and carrying out the transfer of the sum from the card issuer to the retailer.

The main payment circuits are:

1. **Mastercard** is one of the most popular and famous circuit in the world. In recent years it has worked to created increasingly innovative technologies to offer consumers new and unique experiences, to make shopping more enjoyable and, above all, to make payments faster and safer. With the introduction of contactless cards, Mastercard has enabled millions of users to make purchases not only with their cards, but also with their smartphones. Mastercard works alongside brands and device manufactures to revolutionize and simplify the lives of consumers around the world. In an era where digital technologies are becoming increasingly integrated into the daily lives of consumers, it is important to ensure the highest possible

security. Mastercard is working on technologies that can provide consumers with security and simplicity when making payments such as solutions like facial or fingerprint recognition. These innovations can either replace all traditional passwords or offer additional benefits and security when making purchases.

2. **Visa** aims to enable individuals, businesses and economies to thrive through an innovative, reliable and secure payment network. It uses a global processing system that provides secure and reliable payments worldwide. The company is constantly innovating its services, enabling a rapid growth of connected commerce on any type of electronic device and towards a cashless future for everyone and everywhere.
3. **American Express** is an American company that operates in the financial and travelling sector. It is considerated an elite payment circuit and issues credit cards directly. A distinctive feature of the latter is in monthly spending limits, and the time for charging payments, which can be longer than that of other payment circuits.
4. **Diners Club** is one of the leading credit card circuits in the United States. Accepted at more than 2.5 million merchant locations in 175 countries, Diners Club serves more than 6.4 million cardmembers worldwide (Giordano & Mckenne 2017). It is a company that carriers out activities in

financial services. It directly issues and manages credit cards with diversified set of annual fees and services.

5. **Bancomat** is an Italian payment circuit that allows to withdraw cash from ATMs, to pay for goods and services through POS and also to make instant payments on the web through Bancomat pay.

2.6 THE NEW PAYMENT PRODUCTS

The emergence of electronic payments is not only an advantage in terms of convenience and security for households and firms, but also represents an opportunity of growth and development for a country, as well as a significant reduction in transaction costs.

Below we will detail some examples of new payment products and their influence in everyday life.

Nexi pay is the paytech of the banks, leader in Italy in digital payments: also on the mobile front, Nexi has developed innovative solutions both for those who make purchases and for those who accept them.

Nexi pay is the app to manage a card and make purchases both online and in store. The mobile app allows a customer to pay at all stores equipped with a contactless pos, thanks to HCE technology on Android devices and through Applepay on the apple world.

By making a payment with Nexipay is very simple because all a customer has to do is confirming the transaction using one of the available biometric systems, or by entering a pin.

Nexipay offers the possibility to consult the transactions of all of one's payment cards, to activate the app notification service and security services for online purchases, or to recharge prepaid cards and cell phone SIM cards.

In addition, the mobile app gives access to all accounting documents and allows a customer you to quickly manage features such as transfers and cancellations.

Apple pay is a payment system that uses the NFC antenna on the top of the iPhone or Watch to make transactions.

A customer can approach the device to the pos exactly as in the case of a contactless credit card payment, by confirming with Touch ID, and finalize the payment.

Apple pay can be used wherever contactless payments are possible.

The other use of the app is on the web, with several e-commerce affiliates, allowing a customer to skip the long registration process that each site requires for purchases.

It is possible to add a card to Apple pay with a simple process.

Furthermore, the card specifications remain on the phone and are not recorded, they remain between the user and the personal bank without any communication to Apple pay.

The payment system is designed on three fundamental aspects.

First, easiness, as it is immediate, a customer just has to approach his mobile phone.

Second, security, thanks to the Touch ID system, which always requires confirmation with the fingerprint.

Third the privatization of data, because the data of a card remain at the bank and are not collected by apple nor stored in servers.

The Apple's goal is to get people used to making transactions on the iPhone as much as possible.

Samsung pay arrives in Italy in March 2018, with the aim to accelerate the advent of the "cashless society" and help transform money management.

Samsung pay allows a consumer to pay with his compatible Samsung smartphone and smartwatch and make purchases at virtually any store that accepts debit, credit and prepaid cards.

This service works with almost all payment terminals, as it combines NFC technology with MST technology, allowing purchases with pos not yet enabled to contactless.

Its strengths are the security of the user's payment card data thanks to the three levels of security (pin, fingerprint and face scan).

To use the service, a customer has to access the Samsung Pay app by registering with the Samsung account credentials, and virtualizing the payment card by following a quick wizard.

The payment is done, simply selecting the card to use, identifying the customer through the available methods (fingerprint, pin, face scan) and bringing the device close to the pos.

Samsung pay is a service that is accepted in virtually all businesses where customers are accustomed to using credit, debit or prepaid cards.

Samsung pay is a service accepted by virtually all merchants where people are accustomed to using their credit, debit or prepaid cards, so it is designed to make smartphone payments secure, simple and convenient.

It offers several integrated services that simplify and enhance the various stages of purchase.

Samsung pay users can access continuously dedicated promotions and load their loyalty cards to have them always at hand at the time of payment.

Google pay is a simple contactless payment system from smartphones and can be used for online purchases and applications allowing you to send money to users of the same platform.

A customer can use Google pay in order to pay for purchases made in a shop with a pos, as it uses NFC technology.

Through the new big G payment system, the Google pay app that allows users to make payments simply by using a phone, a customer can make purchases on play store, e-commerce sites, and online stores of famous brands (Tessa, 2018)

Google pay has been introduced to support boarding passes and tickets for events such as concerts.

The Sisal pay group has been present on the Italian market for over 70 years and has focused its growth strategy on the development of proximity distribution channels, the diversification of the services offered, and the commitment to the best technology on the market.

Today it is also possible to digitize and archive paper receipts of payments made at Sisal pay sale points, speed up recharge operations through QR CODE and pay bills in a very short time.

2.7 THE BENEFITS AND RISKS OF ELECTRONIC PAYMENTS

Starting from the benefits certainly the speed and ease of use brought by the new payment methods are advantages for the consumer.

Making a payment in a store using a contactless system, whether it's a system with a credit card or a digital app, has significantly decreased the time it takes to complete the transaction.

In fact, using the contactless system on a payment card greatly increases the speed of execution because it is enough to bring the card close to the pos and the payment is instantly made.

In the past, the process was slower because it was necessary to insert the card into the pos, to type the security code and press the enter key.

In a study conducted by Visa (2016), the payment via contactless mode takes two seconds to be completed, while using cash takes an average of seven seconds longer. From the point of view of a single transaction, it does not represent a great gain in time, but by adding many transactions the time saved is.

The latest payment methods are directly usable through a smartphone or an applications, which supports the payment cards.

Through these applications it is possible to keep track of current expenses, set limits and other opportunities for customization.

The cashless payment in addition to saving time, in some cases also involves a cost reduction, avoiding costs of storage, counting and ordering money.

Another fundamental benefit of an electronic payment system is security as it allows the user to use certain tools safely and without worries.

Improvements in security are made even in the most modern payment systems, e.g. the authorization of a payment through the smartphone is done by reading the fingerprint or scanning the face.

Companies that rely heavily on online purchases have introduced buyer safeguards that allow for more secure online purchases.

A further advantage of adopting new payment methodologies is the reduction in costs for the user, indeed most fintech solutions have no costs for setting up an account. Also operating costs are lower than equivalent services offered by banks or non-technology infrastructures.

The expenses using fintech solutions are on average lower than the services offered by contracted entities.

Nonetheless there are some risks and threats, such as are cyber-attacks, which are a growing threat within the financial system and may have an indirectly impact on the end user by disrupting the ability to use a particular payment system.

Moreover, an increased introduction of fintech solutions could cause exposure to this risk.

A greater number of fintech service providers could increase competition and diversity within the industry, making cyber-attacks less relevant on a systematic level.

Fraud during an online payment is also on the rise, linked to the growth of online transactions.

In 2015, 12,860 cases of scams were reported, while in 2017 the figure stands at more than 48,000 cases. In the rest of the world, the increase in online scams is also steadily increasing, for example in Australia there was a 148% growth between 2015 and 2017 and in the Netherlands the rate is 135% (Wagner, 2017).

Using software, sensitive credit card data are copied and then used to make online purchases.

Fortunately, this scam is becoming less and less viable given the advances introduced by new technologies to secure online credit card payments by obscuring sensitive data during the purchase process.

Innovative fintech companies lack the coverage of existing legislation, regulations and legal aspects could be adapted to new technologies and payment systems.

The implementation of regulation has an impact on the service offered by fintech companies that may have to adapt different aspects of their services to the new regulations, affecting the experience and usage habits of their users.

CHAPTER THREE

THE BANKING INDUSTRY

3.1 THE FUTURE OF MOBILE BANKING

Due to increased competition from many start-ups and large markets, technological innovations and the evolution of the PSD2 regulation “Payment Services Directive (‘PSD2’) has been adopted to stimulate the development of an integrated internal market for payment services. In particular, it facilitates payment initiation services and account information services by granting the providers of these services access to the accounts of the payment service users. At the same time, the recitals state that the PSD2 guarantees a high level of consumer protection, security of payment transactions and protection against fraud” (Wolters, Pieter, Bart, 2019) the world of mobile payment is undergoing a profound transformation.

A study carried out by the Innovative Payments Observatory came up with seven qualifying points that frame the opportunities for the development of digital payments in the future.

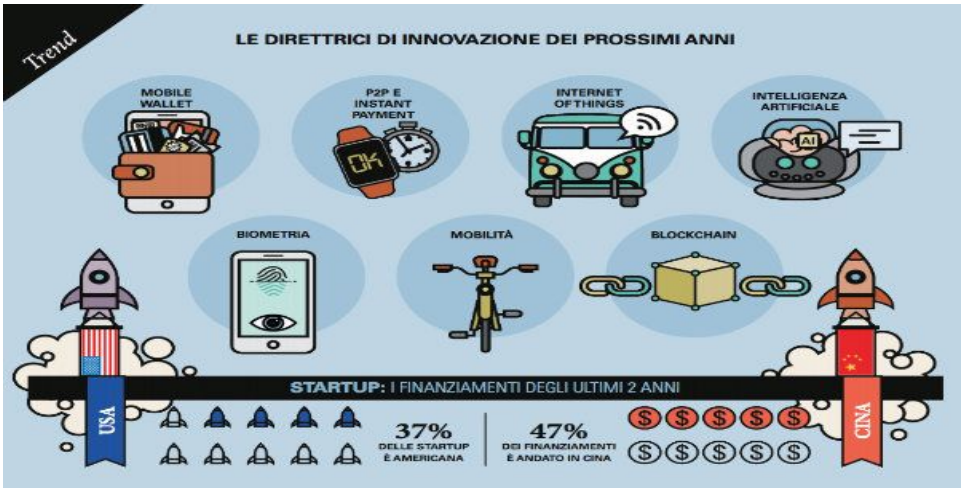

Figure 3: Directions for innovation in the coming years

SOURCE: Mobile payment & commerce Observatory

1. THE MOBILE WALLET is a service that allows the smartphone to replace the traditional wallet, as it has enabled banks to create solutions that allow them to store card data on secure servers and process payments easily.
2. BIOMETRY: the testing and implementation of solutions for payment permission based on the recognition of a person's biometric features is one of the main innovation fronts with which we are confronted on a daily basis. The smartphone becomes a tool of identity. In fact, fingerprint or facial recognition could in future allow people to pay by proving their identity.
3. ARTIFICIAL INTELLIGENCE enters our homes without us being aware of it. For example, the voice recognition system that helps us to simply the

relationship with objects, integration with payment is a further element in simplifying and speeding up the provision of services.

4. INTERNET OF THINGS are intelligent objects connected to the network that can initiate remote payment. For example, one of the most important applications is payment for fuel and parking via the car, or to make an appointment with the garage for maintenance, the car will take care of it. In household appliances, for example, manufactures are typing to produce washing machines that can order their own detergent, of fridges that can do their own shopping.
5. BLOCKCHAIN is an innovation platform that introduces a number of innovations in the area of traditional payments. Cicle is one of the main international start-ups aiming to simplify Blockchain technology for its users, making money exchange as easy as sending a message.
6. URBAN MOBILITY is increasingly accompanied by digital payments. According to research by “the Nexi purchasing observatory”(2021), in 2020 Italians spent 246 million euros through digital payment system to purchase car&bike sharing services, taxis and private transport, public transport and parking.
7. P2P (person to person) is an online technology that allows users to transfer sums of money for free private people, in real time and with immediate availability on the recipient's account. The transfer can be made using a

smartphone. These payments are the ideal solution for splitting a restaurant bill or collecting money for a gift while avoiding exchanging money for cash, wire transfers or giro transfers.

3.2 DEVELOPMENTS OF TRADITIONAL BANK:

“TRADITIONAL BANK” VS “ONLINE BANK”

Traditional banks may operate under different business models and offer a variety of financial products and services, such that some banks may even be focused on becoming a one-stop shop (bank) for their customers. Traditional banks may be geared toward retail or commercial customers, other institutions operate under the universal bank model. In addition, the primary source of funding for traditional banks is their core deposits held by individual savers or commercial entities and the primary source of profitability is their interest income while they also generate non-interest income from their secondary activities and services. Another important feature of the traditional business model is that banks have a developed network of branches that allows for face-to-face interaction with their customers. The presence of an employee who is willing to assist the most common transactions makes the traditional bank the most suitable option for "non-digital" people, such as elderly or people that find difficulties in using a computer, smartphone or are finally illiterate. Having a widespread branch network means that traditional banks have high operating costs due to the large number of branches as well as the costs associated with the need to maintain an established network of ATMs. The digitization process of banking services has led to changes in the way banks communicate and serve their customers. The digital bank model considers potential changes in the structure of traditional banks with the application of innovative financial technologies.

Since the emergence of the banking industry, the number of products offered by these financial institutions has expanded. The most important changes have occurred in terms of how banking products and services are delivered to the end customer and the types of institutions that provide them. The key differences can be seen in terms of the period in which products are available, the time it takes to serve a customer, the costs, the geographic availability of services and so on.

Distinguishing features	Traditional model	Digital model
Customer service time frame	Limited. Service is carried out only at a clearly defined time	Unlimited. Possibility of round-the-clock access
The speed of customer service	Depends on the qualification and experience of the Bank employee	Immediate
Approach to service	Flexible, however, is limited to a small variety of service channels	Flexible and carried out through any convenient channel for the client
Maintenance cost	High, taking into account the bank's costs for the personnel and maintenance of departments	Low, often services are provided free of charge
Scope of service	Limited branching of the branch network and staffing	Unlimited, can go beyond the geographical location of the banking institution
Status of the operator in the service process	Functions of the operator is performed by an employee of the bank	Functions of the operator are performed by the bank's client
The procedure for learning new services and promotions	Requires time and cost	Carried out quickly, via SMS and e-mail newsletter
Consumable component of the operation of the service system	The key models are articles on the staff and maintenance of departments	The key articles are articles for the purchase and maintenance of servers and software package

Figure 4: Differences between traditional and digital models of banking

Source: Galazova and Magomaeva, 2019

From Figure 4, it is evident that customers can use the services provided by the digital bank 24 hours a day, while they can only access the services of a traditional bank during defined business hours. In addition, the speed with which the customer will be served is closely related to the knowledge and skills of the bank employee when going to a traditional bank, while the customer will be served almost instantly in the digital bank. In addition, the physical presence and organizational structure of the traditional bank means that it has much higher costs for staffing and maintenance than the digital bank. Another significant difference is in the geographic coverage of the bank, where the traditional bank is able to cover the places where it has opened a branch, while the services offered by the digital bank do not face physical limitations and are available almost everywhere. moreover, Online banks use data in a way that allows them to better understand the needs of customers and adapt existing products and services or create new ones and define themselves as customer-centric banks. Traditional banks lack the ability to fully explore their data and are product-oriented because they want to experience economy of scale and fully use their expensive infrastructure and capabilities.

Further differences lie in the economics of operations. According to the study conducted by sostariffe.it, using the online platform to manage online account and make online transfers enables a cost saving between 40% and 60% compared to operating only in the physical branch.

By switching completely to an online bank, the costs tend to zero and the savings can reach up to 99%.

To conclude, the physical branches of banks are undergoing a downsizing that has led, on the one hand, to bank offices in medium-large cities becoming increasingly crowded, and on the other, to a gradual emptying of offices located in small provincial towns. In the last seven years in Italy more than 6,000 physical branches have disappeared, about 400 municipalities have been left without a bank (Capasso, 2019).

In the future, more bank branches will close as the distinction between traditional and online banks are becoming softer.

3.3 OPPORTUNITIES AND CHALLENGES OF ONLINE BANKING: CASE OF ILLIMITY BANK

The Illimity bank is an Italian startup born in 2018, owned by the Illimity group and founded by Corrado Passera.

Illimity bank was created with the aim of going beyond the traditional concept of banking, but also going beyond the services of other online banks currently on the market.

Illimity is a direct bank, it has no physical branches scattered throughout the territory. Everything is done online, from a smartphone or PC. Among the main services offered by Illimity are: current account without charges, MasterCard debit card with support for Google Pay and Apple Pay, deposit accounts with a rate of up to 3.25% gross, with the ability to set the amount to invest and choose the solutions that best suit customers' needs among those offered. It is possible to send and receive bank transfers, instant payments, giro accounts, bill payments and telephone recharges.

Through the app, customers can discover their spending habits, check their monthly outgoings and set spending plans by setting goals, which Illimity helps to achieve.

Customers can put their savings in two types of account: Illimity Smart or Illimity Plus. The Illimity Smart account basically has the only advantage of always being free. It is recommended if plan not to use the Illimity Bank as the main current account, but mainly as an account card.

Illimity Smart does not charge for SEPA (single euro payments area) transfers or for payment of bills or utilities. Transferring money between other Illimity accounts is also free.

The Illimity Plus account adds a number of advantages to the Smart account. First of all, it offers a zero-fee credit card, with a customizable limit of €1,500.

It also eliminates various bank charges, for example on withdrawals of more than €100 throughout the eurozone and beyond. Instant transfers are also free.

The cost of the Illimity Plus account is €8.50 per month (free for the first 12 months if a customer open the account online), it may become free if the customer credits their salary or pension to the account or an amount of at least €750 per month, if they activate at least two direct debits on the account, such as household bills or other recurring payments or if they spend at least €300 per month.

Eventually, it is possible switch to the Illimity Smart account at any time, with zero charges.

To open an account with Illimity bank is very easy. To do so, one can download the app on his smartphone or go to the website and click on Open Account. The registration process involves entering email address, name, surname, mobile phone number, tax code, scanned ID and health card, and recording an identification video following the system's instructions.

In the next step, the customer obtains a device PIN that allows them to access their account and confirm the various operations.

The next step is to indicate the address to which the debit card should be sent. Then the documents are signed with a digital signature and the confirmation code is entered.

At this point, the customer must set a secure password for the account, choose the theme to be used on the platform and wait for confirmation of account opening.

After receiving the SMS notifying the activation, the customer can start using Illimity via app or browser.

There are many advantages to joining an online bank.

The Plus Account allows for a great deal of flexibility in handling transactions, thanks to the handy App and the ability to send money immediately, and the cost conditions for transactions are convenient. A customer should be able and willing to circulate a reasonable amount of money to keep it free. The Illimity account makes available on the platform the service of aggregation of accounts from several banks, making visible in one place the home banking of Illimity, but also the balance and movements of all current accounts held with other intermediaries in order to have an orderly and complete view of personal finance and portfolio.

The advantages for the customer are certainly the cheapness as the expenses are extremely reduced and the simplicity of using bank services thanks to the application, through which all the movements and payments are available.

Although Illimity Bank is a fintech account, there is a quality customer support that is always available to give information and solve any technical problems.

In addition, the Illimity Bank account is innovative and provides not only a high level of security in terms of access with double code, but also the certainty that money is covered by the bank guarantee fund.

Obviously, next to the advantages there are also disadvantages that with the passing of the years and the evolution of online banking will disappear.

New customers who have approached the bank show mixed opinions. Based on some reviews that customers have expressed on the official site of Illimity bank it can be said that some do not appreciate the customer support entirely by phone and ask the management to receive them in the office in Milan. Others, on the other hand, have found many difficulties in opening the account and delays in its validation, which is 100% digital and must be done independently.

These negative opinions, however, need to be weighed. A forward-looking online bank targets customers who are very familiar with technology. Digital natives who open an unlimited account encounter no problems; they can optimize their time and access unique features. On the contrary, those who are not sufficiently familiar with technology and have a low level of financial literacy may find some difficulties in opening a fully online account and precisely understanding the products and services offered by the bank.

Some have pointed out the impossibility of depositing cash or checks; some have pointed the finger at the fees for small withdrawals and others at the Plus account fee, considered high and difficult to reduce.

In addition, some users criticized the fact that there are only three free withdrawals per month with the Smart account, while there is a cost to open an account at a branch.

Despite some disadvantages compared to other banks, Illimity is a great bank account, smart and full of features. Hard to complain about what is offered by this innovative online bank. Only those who have specific needs or prefer to invest large amounts of capital, may need different services.

REFERENCES

Bauer K. and Hein S. E. (2006). *The effect of heterogeneous risk on the early adoption of Internet banking technologies.* Journal of Banking & Finance,

Beattie A. (2015). *The history of money: From barter to banknotes*. URL: http://www. investopedia. com/articles/07/roots_of_money

Bezovski Z. (2016). *The future of the mobile payment as electronic payment system*. European Journal of Business and Management 8.8: 127-132.

Capasso A. (2019). *Online vs traditional bank: advantages and disadvantages of the digital current account.* From the Mobile transaction : https://it.mobiletransaction.org/tag/conto-corrente/

Chakravorti S. and Lubasi V.(20016). *Payment instrument choice: The case of prepaid cards*. Economic Perspectives, Second Quarter.

Chakravorti S. and To T. (2007). *A theory of credit cards*. International Journal of industrial organization.

Chavan J. (2013). *Internet banking-benefits and challenges in an emerging economy.* International Journal of Research in Business Management.

Corselli L. (2020). "*Italy: money transfer, money laundering and intermediary liability*." Journal of Financial Crime.

Dalton G. (1982). *Barter*. Journal of Economic Issues 16.1: 181-190.

Davies G. (2010).*History of money*. University of Wales Press.

Giordano P. & Mckenna C.(2017). "*Citicorp Diners Club*". Reasonable Accommodation Routledge, 57-65.

Jonathan W., Cribb J and Errington E. (1997). *Money: a history*. New York: St. Martin's Press.

Laukkanen T.(2017). *Mobile banking*. International Journal of Bank Marketing.

Mazzoli L. (2013)."*Il consumo di informazione degli italiani: nuovi media, nuovi divide*." Sociologia del lavoro.

Mielberg E. L.(2019). *Digital Bank*, osf.io.

Padoa-Schioppa T. (1992). *La moneta e il sistema dei pagamenti*. Soc. Ed. il Mulino.

Rocco G.(2019). *L'utilizzo del contante in Italia: evidenze dall'indagine della BCE Study on the Use of Cash by Households*. Bank of Italy Occasional Paper.

Sienkiewicz S.J. (2001). *Credit cards and payment efficiency*. Federal Reserve Bank of Philla Payment Cards Center Discussion Paper.

Tessa M.(2018). "*Google Pay: il mobile payment di Big G*". From Wall Street Italia: https://www.wallstreetitalia.com/google-pay-il-mobile-payment-di-big-g/

Wagner P.(2018). *Topic Overview*. From the Statista : https://www.statista.com/chart/15069/number-of-internet-scams-in-the-us/

Weber, Rolf H., and Darbellay A.(2010). *Legal issues in mobile banking*. Journal of Banking Regulation 11.2: 129-145.

Williams D. (2007). *Pro PayPal E-Commerce*. Vol. 230. Apress.

Wolters, P. TJ, and Jacobs B. PF.(2019). *The security of access to accounts under the PSD2*. Computer law & security review 35.1: 29-41.

SITOGRAPHY

www.bancaitalia.it

https://www.bancaditalia.it/pubblicazioni/qef/2019-0481/index.html

https://inoxoft.com/what-is-mobile-banking-advantages-and-disadvantages-of-mobile-banking/

https://www.bancamediolanum.it

https://www.ecb.europa.eu

https://ec.europa.eu/info/business-economy-euro/euro-area/euro/use-euro/euro-legal-tender_en

https://www.ecb.europa.eu/paym/html/index.en.html

https://www.ilsole24ore.com

https://www.bancobpm.it

https://www.pagamentidigitali.it

https://www.paypal.com/it/home

https://economiapertutti.bancaditalia.it/pagare/carta-di-credito/

https://www.bancaditalia.it/compiti/sispaga-mercati/strumenti-pagamento/

https://www.mastercard.it/it-it.html

https://www.visaitalia.com

https://www.americanexpress.com/it/carte-di-credito/tutte-le-carte/?ieep=08PS8524&cpid=100127979&dsparms=dc_pcrid__kword_american%20express_match_e&gclid=ac67a11b2cfd1086326fc1dbf9381575&gclsrc=3p.ds

https://www.dinersclub.it

https://bancomat.it/it

https://www.unicredit.it/it/privati/internet-e-mobile/tutti-i-servizi-internet-e-mobile/pagamenti-digitali.html

https://www.nexi.it/privati/offerta/nexipay.html

https://www.apple.com/it/apple-pay/

https://www.samsung.com/it/services/samsung-pay/

https://www.pagamentidigitali.it/payment-innovation/con-le-commerce-crescono-i-sistemi-di-pagamento-digitale/

https://www.repubblica.it/economia/diritti-e-consumi/banche-e-assicurazioni/2019/10/25/news/nuovi_pagamenti_digitali_la_guida_ecco_cosa_cambia_per_gli_utenti-238953084/

https://my.mooney.it/main-sisalpay

https://pay.google.com/intl/it_it/about/

https://www.osservatori.net/it/home

https://www.osservatori.net/it/ricerche/osservatori-attivi/innovative-payments

https://www.facile.it/conti/guida/home-banking-cosa-e-come-funziona.html

https://www.thebalance.com/the-future-of-mobile-banking-apps-4585112

https://www.osservatori.net/it/ricerche/osservatori-attivi/innovative-payments

https://www.illimitybank.com

https://www.contocorrenteonline.it/2021/05/04/opininioni-illimity-bank-conti-correnti-carte-offerte-clienti/#:~:text=Carta%20di%20debito%20Illimity%20Bank%3A%20come%20funziona%3F%20La,altresì%20personalizzabile%20in%20termini%20di%20limiti%20di%20spesa.