POLITECNICO DI MILANO

Scuola di Ingegneria dei Sistemi

POLO TERRITORIALE DI COMO

Master of Science in Management Engineering

A STUDY OF ELECTRONIC PAYMENTS IN B2C ECOMMERCE

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Master Graduation Thesis

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Academic Year: 2013

"First of all, I would like to thanks God for guiding me in this path, all my saints and my father Sóstenes Zabaraín that always protect me from heaven and of course my motor: my family, my mother Luz Myriam García and my grandmother Ligia García, without your support and your love, nothing of this would have been possible. Both of you were always there, even in the distance, encouraging me and saying that I am able to do everything I dream of; thanks a lot and you two will be always be my motor and the main reason of my success.

Special thanks to my Uninorte and Polimi family, to all my co-workers in Lindt & Sprüngli SP A, for the great memories and your contribution to my professional and personal life and for being always there in the right moments to cheer me up, to support me and to give me meaningful advices.

Universidad Del Norte, sincerely thanks for the opportunity of doing a double degree with the Politecnico di Milano, for supporting the continuous learning and promoting the excellence; thanks as well to Colfuturo for the contribution and the financial support .

I would like also to thank my thesis partner, Ricardo Alcalá that more than my partner is like a brother, for his patient, perseverance and friendship during this experience.

Special thanks to the professor supervisor Riccardo Mangiaracina and the assistant supervisor Valentina Pontiggia for their guidance during this process.

To sum up, I am very thankful for all the people, not only from this experience but also all the people from Colombia that believe in me, that crossed my way and helped me to grow as a human being and as a professional person."

Melissa Andrea Zabaraín Garcia

“First of all, I want to thank my mother and father, Cecilia Consuegra and Mario Alcalá for never losing faith in me, trusting in my potential and for the economical support during the first steps of this amazing experience. Thanks for always being there when I sought support, comfort and guidance throughout this learning process.

Thanks to two wonderful women who accompanied me since I was a little kid and filled my life with unconditional love. Ana Cecilia Hernández and Aurora Iranzo. My two grandmothers.

Aunt Candida, you showed me that a short family in numbers is worth a tone of siblings when you bond as much as we did. Thanks supporting me in this long journey. Thanks to the rest o my family and friends who supported me even in the distance.

My Uninorte-Polimi family, you were the pillars and the strength I needed to endure this long trip and carry out all the challenges of this experience. Thanks to professor Riccardo Mangiaracina and Valentina Pontiggia for enrooting our thesis work into a more clear path.

Thanks to Universidad del Norte and Colfuturo for encouraging me in this amazing experience.

Finally, I am really thankful for crossing path with Melissa Zabaraín at the beginning of my professional carrier, amazing friend and awesome thesis partner. Melissa may life put us in the same road in the near future, so we can work together again.”

Ricardo Antonio Alcalá Consuegra

Abstract

In this thesis work will cover the B2C e commerce phenomenon mostly the e payments methods that are now used in the market. First of all, it will provide a brief but complex literature review in which the ultimate objective is to depict the classifications given by the authors regarding electronic payment systems. Since one of the ultimate goals is to draw a clear line between what is called traditional and innovative payment systems, it will be also defined each of these categories and to specify classification that is going to be assumed for the development of this thesis analysis.

Subsequently, it will be presented two chapters independently in which will be discussed in detail the most important characteristics about the traditional and innovative payment mechanisms nowadays. The analysis will be mostly descriptive to what concerns the way these payment mechanism work, their actors, benefits, drawbacks, differentiating factor and diffusion around the world so far.

Later on it would present a comparison between these two big categories, highlighting the most important characteristics that make one class superb than the other. Also, a comparison from within each class and confront what they offer to the customers.

Since the thesis aims to confront the theoretical knowledge gathered through research with a real scenario, it will be assessed the Colombian level of knowledge about the topic and best match the characteristics with Colombian's expectations respect the topic. To do so, it will be developed a survey research, thus it could be procured with the data needed for this study. Conclusions represent the analysis from which it is evaluated the most adequate solution for customers according to their profile.

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Chapter

I

Chapter I – Executive Summary

1. 1 Introduction

The technology is changing every 4-5 years and where these changes can be noticed, is primary in medicine and in the way of paying for merchandise. According to our background we decided to make a research of the payments that are now available for customers. Saying this, traditional payments are being eclipsed by the innovative ones, the contact between merchant and seller is now barely face-to-face, now the innovation not only includes paying with credit cards but also e-tokens, e-cash, and digital mobile devices. Each new payment available in the market has their own benefits and their own drawbacks, some of them are only used in determined countries and some of them are worldwide accepting all type of currencies.

The B2C system is a system were the relationship between the business and the client should be very strong but very easy to manage. It means that for the client making a connection in order to buy a service or product should be as simple as a "click". Nowadays, this issue is no longer a " it is wanted by the vendor" but a "it is STRONGER needed by the vendor". As the vendor, the customer is always asking for a better purchase experience that does not incur in a high fee but it should be grateful after considering complete the buying order.

The new payment systems are not all worldwide; this can be a consequence of no information diffusion so it happens that some countries are more *"Open-minded"* to new experiences and to take risk. So, taking as an advantage the survey we can make conclusion about how the innovative methods of payment are perceived by the Colombian market and its experience in online purchasing.

1.2 Assumptions for the analysis

Electronic commerce is playing a remarkable role in the way purchases and transactions are being done nowadays. It is inevitable that in a close future, customers would change their mindsets and migrate from conventional payment mechanisms into more innovative ones. As a matter of fact, multiple studies point out the visible growth of global e commerce transactions in the last 4 years. For instance, in the World Payment report 2013, it was measured around 17.9 billion transactions at the end of 2010 and for the end of 2014 it is forecasted a total of 34.8 billion transactions (World Payments Report, 2013). This is a clear picture of the huge phenomenon that is taking place before the eyes of customers and merchants, which is a great advantage and new sources of competitive advantages for a close horizon.

For years, electronic commerce has been carried out through the adaptation of conventional means into the growing and always changing internet. Though, credit, debit cards and direct debits, among other, has been the first choice for thousand of customer when doing any online transactions, accomplishing at least the non cash satisfaction, they are limited to the new challenges and needs customer are actually seeking. On the other hand, a new generation is rising up providing customers with all the commodities they might find in the market, making it easier to do purchasers or any kind of transactions online. Recent studies shows that what customer are more interested in is the security factor, the chance of scalable payment mechanism, flexible and the possibility to maintain anonymity to a higher extent. These and many more are the advantages that new payment systems focus on so they can provided a top of the edge services to customers who will eventually recognize the value and end up on this new side of the phenomenon.

This so called migration might be also influenced by unique characteristics that are typical from the region we are taking into account, for instance, the innovation ratio in some regions is relatively high in comparison to other regions, since they are not lumbered with existing payment infrastructures which are difficult to build on. Innovation is a factor that

directly impacts on the level of acceptance of new payment systems by the customers. (The payments Innovation Jury Report, 2013)

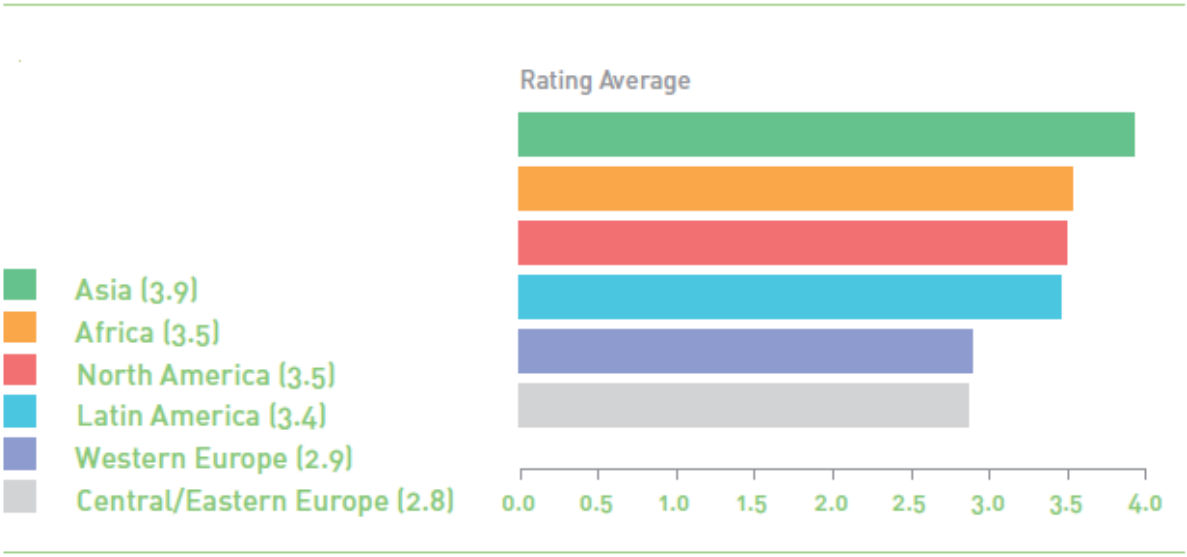


Figure 1 : Payment innovation per region (Payment innovation Jury Report, 2013)

Through the innovation path, came along new technologies and applications that allow customers to satisfy his/her needs when it comes to electronic commerce. Mobile commerce and electronic wallet solutions. Once again, in the Payments Innovation Jury Report was pointed that the usage of smartphones and tablets was the biggest technology trend that is driving innovation in payments because they create the potential to replace the traditional clearing and settlement networks of the schemes and banking via a global network where every individual is a node. (The payments Innovation Jury Report, 2013)

In the advanced payments report, it was mentioned the smooth and practical customer experience as the most important key factor for mobile payment solutions. The promise of proximity and the possibility to undergo any kind of transaction from a simple mobile device is what customers seek at the moment. Electronic wallets were also included within the mobile commerce report and were considered as a new payment mechanism

that is not limited to only payment functionalities but other added value services such as couponing, loyalty and self managed wallet, etc. (Advanced Payments Report, 2013)

Another delicate matter is the growing scenario of the mobile commerce situation. Recent studies has published that in the past 4 years, the number of transactions has been increased drastically to such extent that in 2010, it was recorded a total of 4.6 billion mobile transactions and for the end of 2012 the number has increased to 11.1 billion. A forecast was done over the same analysis, predicting a total increase to 17.8 billion for the end of 2013 and 28.9 for the upcoming 2014. With growing use of the mobile devices for almost everything in our society, it is possible for people to consider a safe way to undergo transactions through their mobile phones.

1.3 Objectives

This research means to understand the differences between the traditional payment systems and the innovative payment systems in a business to customer, B2C framework. Thus, the idea is to research and to gather all the information or scientific documents that explain the new payment systems, the fall of the traditional and their own benefits, drawbacks, barriers to B2C and their innovation or improvement.

Furthermore, this work aims to make a confrontation of the factors found in the literature review that move the customer to keep using the new payment systems against the real factors that the customers perceive as the more influencing by applying a survey in a Colombian sample.

Hence the work seeks to:

- *Present a literature analysis of traditional and innovative payments*
- *Submit differences between payments regarding specific factors*

- *Conduct a survey to analyze the coherence between the factors of the literature and the customer perception of them.*

The development of the dissertation aims to answer the following research questions:

1. *What is electronic payment system according to the literature?*
2. *What are the traditional payment systems? (Characteristics and categories)*
3. *What are the innovative payment systems? (Characteristics and categories)*
4. *What can offer the innovative payment systems in order to improve the traditional ones?*
5. *Which are the differences between different payment systems according to the literature?*
6. *What are the benefits of the innovative payments considered by the customers?*
7. *Which are the differences between the literature and the customer perception about payment systems in the Colombian context?*

1.4 Methodology

This thesis work was started basically with a descriptive section in which the main intentions was to picture the whole phenomenon more clearly. To do so, we developed a literature review and a detailed analysis of the most important payment systems these days. Subsequently, we delivered a survey research to a random Colombian population in order to assess the level of knowledge of the participants regarding electronic payments.

This following figure displays in a very summarized way, the steps followed for the execution of this thesis work.

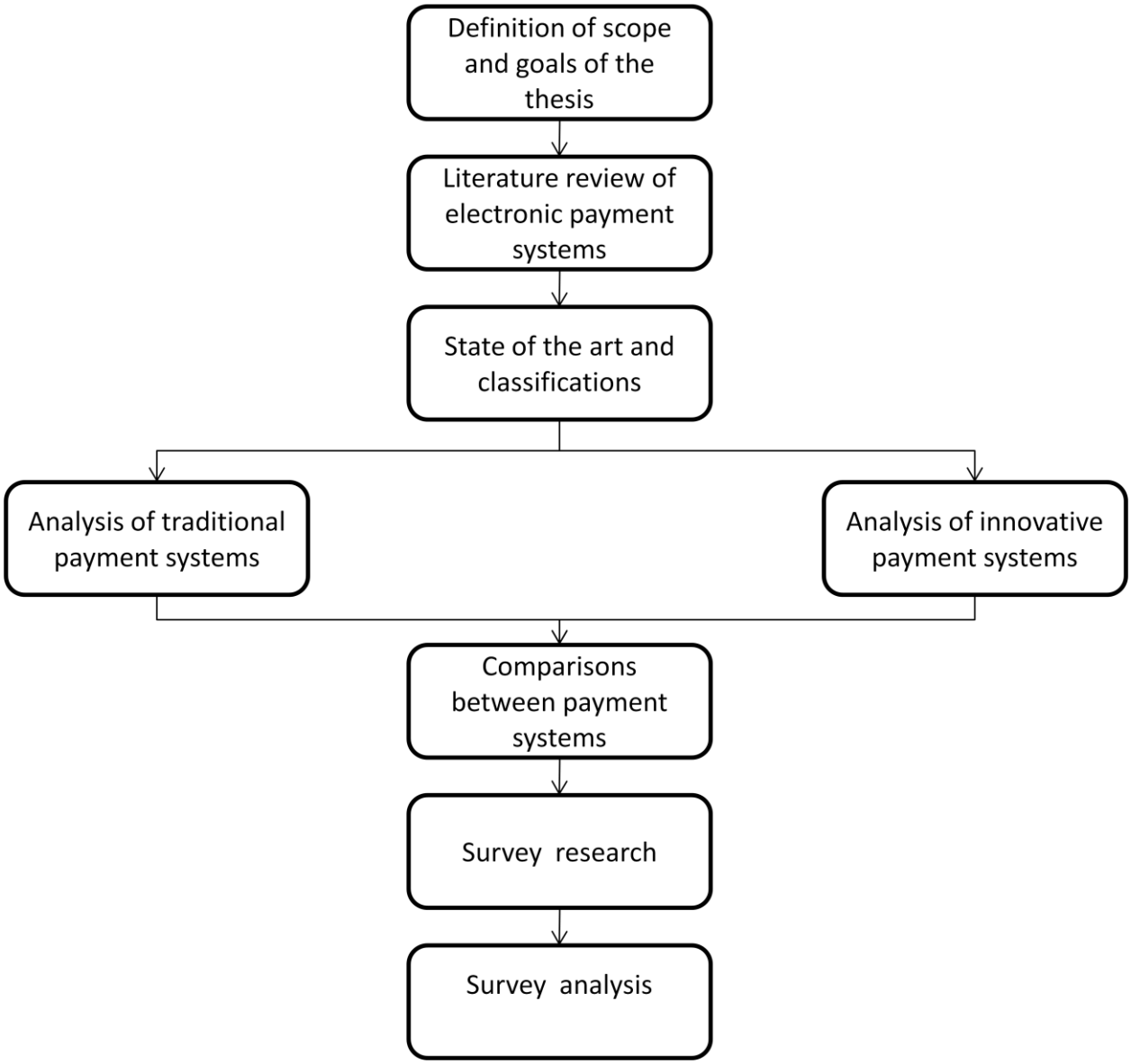


Figure 2. Methodology and steps.

Definition of scope and goals of the thesis.

in this first phase of the thesis work, the main intention was to highlight what we expected to achieve after delivering this work. This sections was structured through challenges questions that pretend to identify what electronic payment systems consist of.

Literature review of electronic payment systems.

This part of the study aims to review the most popular models proposed by different authors that include the categories through which payment systems can be classified. We also focused on the evolution for the different payment systems across the years and the way the money is conceived for each classification.

State of the art and classification.

Since our intended point of reference was to have a clear distinctions between which payment systems were traditional and which were innovative, we proposed a more visible classification of what could be conceived as traditional and new payment mechanism. Then, we proceed to establish a state of the art to the classification we proposed.

Analysis of traditional/innovative payment systems.

In this section, we developed a detailed description and analysis about both categories of payment system. Regarding traditional payment, we took into account the mechanism people has been using in the last decades that could have been adapted to electronic payments. At the same time, we selected the most popular innovative payment systems and carried out the proper analysis according to degree of innovation, actors involved in the process, benefits and drawbacks and costs that either customer and merchant are charged with.

Comparison between payment systems.

This sections aims to identify the advantages and leverages that may have one class of payment system in comparison with the other. Our intention in this section is to display all the characteristics that we assessed in the previous step (for example: benefits, actors involve, innovation degree, etc.) into a matrix with two different axis, thus position the different payment mechanism into different quadrants. Once all the payment systems are located in their proper positions, it is easier to make comparison and identify their former categories or type of mechanism they belong to, for instance mobile payment, electronic wallet or cash or if they just classify for conventional systems.

Survey research.

In this phase we establish the goals f the survey, the population and the was the instrument survey was going to be distributed.

Survey analysis.

We carried out a survey research, taking advantage of the social network commodities in order to spread the instrument throughout the participants. We chose Colombia as our target population and the main intention was to assess the level of knowledge by the Colombian regarding the topic of study. The survey was intended to identify how familiar, potential customers are with respect the new terminology about new payment systems. We wanted to identify, as well, a customer profile and what they really look for from a payment service provider. The idea behind it all was to match the customer profile ,that we gathered after the analysis and compare it with different offerings in terms of benefits, innovation , costs, time and structure of the value chain.

1.5 Results

The results of the work were oriented to answer and to give an explanation of the research question previously stated in item 1.3.

1. The first research question concerns the meaning of electronic payment system, in the literature we found different perspective of electronic payment systems, but some of them were similar to other ones, the principal ones that are useful for the developing of this work are 4, each of them considered the electronic payment as a subdivision of payment systems.

a) Every conventional payment model is composed by two relevant participants such as the payer and the payee. When it comes to electronic payments, two more actors are included. They are divided in two categories, which are determined by the way the money

moves from one participant to the other. The first category is called cash like payment system (prepaid systems) and those payments methods in which money is debited right away at the moment of the payment. Smart cards, electronic pursed and banks checks, fall into this category. On the other hand, the second category specifies the card based systems which are those pay later models in which the payee account is credited by the amount of the sale before the payer's account is debited. Credit cards fall in this category. (Asokan, 1997).

b) A classification based on the type of currency that was being transferred from one participant to the other. He proposed that electronic payment systems should be categorized into two big groups, electronic cash and account based systems. The former group refers to those systems that allow users to have their money in different forms such as electronic bills or coins, tokens and certificates. (Abrazhevich, 2004)

c) They are classified into two groups: cash based and account based systems. In the first category, we can find electronic cash and prepaid cards. While in the second category, it is included credit card, debit cards and electronic checks. According to the authors, each payment system can be used as a complement of the other, in fact, payment systems such a credit/debit might come expensive for purchases of small amount, while it might come really cost effective when implementing a electronic cash system.(Kim, Tao & Shin, 2010).

d) Another classification is referring to 5 layers, Bleyen et al. classified the electronic payments in 5 layers. The first layer, contains the different types of money (currency, viral money, electronic currency o private currency). In the second layer, it is established the core payment mechanism, which involves the direction of the flow in which the transaction is initiated. Layer three, involves the channels and networks. Channels are the technology used for device terminal communication and network is the proper infrastructure to allow transactions to be performed. Then, in layer four, it is included the form factor which refers to the carrier that can store the money or the authentication device, in order to ensure safe transactions. Finally, layer 5 refers to the generic method

that will carry out the transactions. Cheques , credit transfers, credit/debit cards, electronic fall into this definition. (Bleyen, Van Hove & Hartmann, 2010)

2. The second research question after defining the classification of electronic payment systems is to define each category, first the definition of the traditional payment systems. The offline payments refer to no contact with third parties during the payments, this means that the only participants are: Payer and payee. The need for e-payment services appeared immediately after the introduction of Electronic Commerce, thus, in the beginning of this period the traditional cash based and account-based payment methods were used as a model. Of course there are always new needs to fulfill and PayPal™ in 1998 made its first appear (Dahlberg, 2008).

The payment systems that in this research are considered traditional are mainly the ones that are known and used worldwide, the ones that helped the new payment system to be born making improvements to the traditional ones.

The main traditional payment systems are:

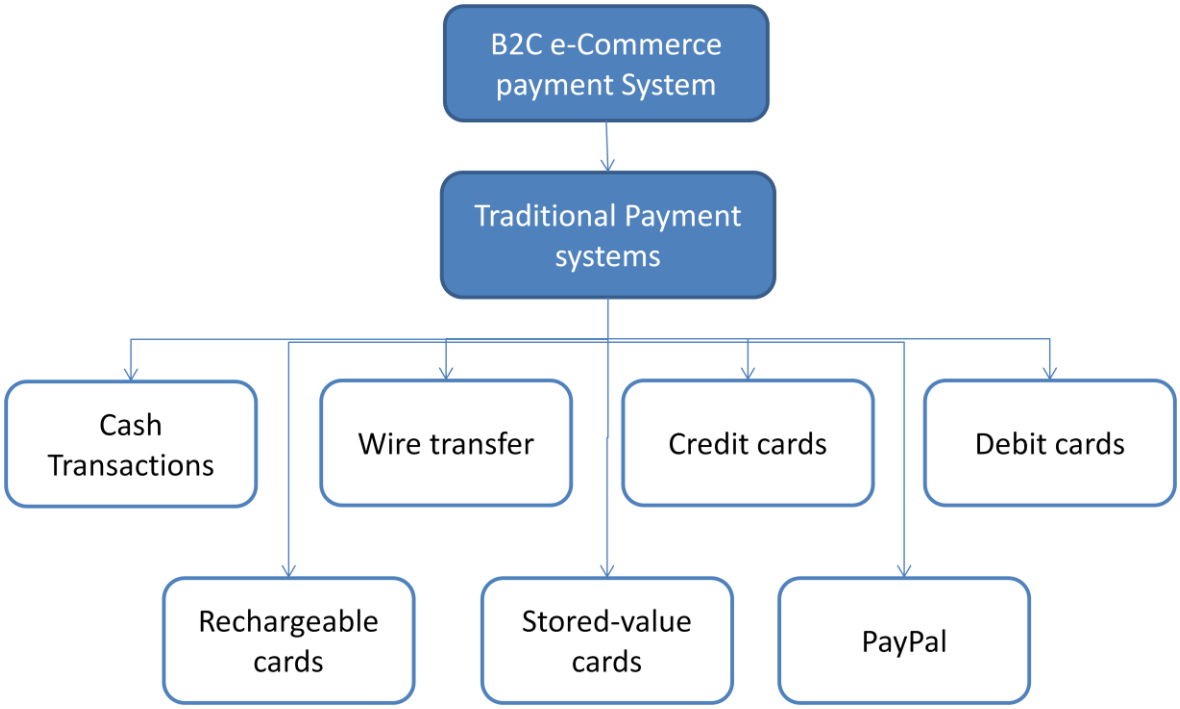


Figure 3. Diagram of traditional payment system

3. The innovative payments are the ones that are revolutionizing the way of purchasing merchandise. The simplicity and innovation are very important in the daily life, with the whole researches of technology and the new discovers, the payment experience has been also improved from many different points of views (also regarding the security). Not only the cards are having different kind of use but also the wireless payment, the mobile commerce and the new devices used for purchasing are in the vanguard of the payment market. The electronic payment systems are divided in traditional and innovative, a better explanation is shown in the next figure, where we can see that the main classification of the Innovative systems are Mobile Commerce, electronic wallet, ecash and micropayments. In each category there are many different payment systems worldwide or working in a specific area. (Asokan, 1997) (Barnes, 2002)

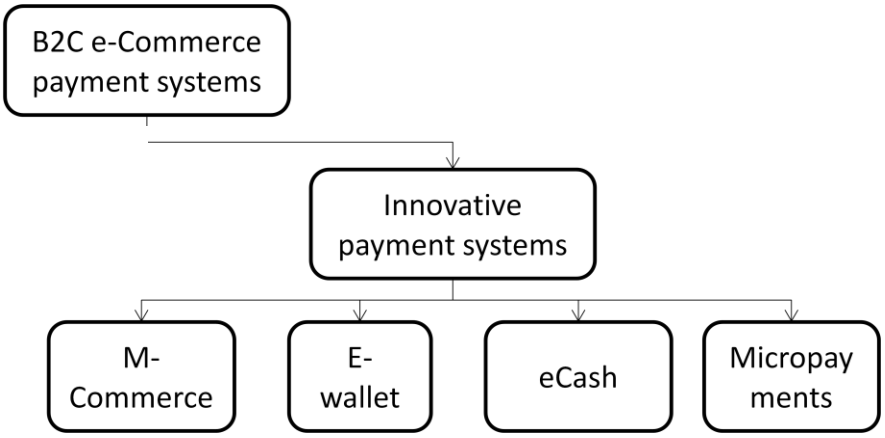


Figure 4. Diagram of Innovative Payment systems

4. The forth question refers to what the innovative payment systems can offer in order to improve the traditional payment systems; in order to summarize what it is found in the literature analysis and the comparison table in Chapter V, this table is a helpful tool.

Barriers of Traditional	**Improvements from Innovative (Customer's perspective)**
High prob. Of robbery	Reduction by not having any physical money transaction
Lack of product knowledge	Availability of reading online the characteristic of the product before buying it; online consultancy not only from experts but also from friends
Long time from choosing the product until purchasing it	Philosophy of purchasing by just one click. The products can be filtered by reference, color, type and so on.

Insecurity of personal data	The personal data is registered just once at the beginning of the registration. Reduction of personal data needed.
Higher cost (debt)	No debt or interests
No availability of the wanted product	It is easy to find anywhere the product wanted or needed. Customer does not have to buy the ones that are "just" available physically in the store.
No opportunity to compare different products in different stores at the same time	With a PC or a mobile device, products can be compared from different stores.
No fraud alerts	Fraud alerts in case of a strange purchasing not related to previous behaviors.
No social connection	Blogs, social commerce, advices, ratings in order to give advices before shopping
No multicurrency support	It can make the change of currency immediately or by buying ecoins that have a worldwide price.
Limit range of purchasing	No limits between countries or continents.
Limit time for making purchases	24/7 availability

Table 1. Barriers of traditional vs. Improvements of non-traditional

5. The research question is referred to the differences between different payment according to the critical factors established with the literature review and the customer perception, it has to be noticed that normally the payments have a high bank dependency, unless we are referring to smart cards or some other way of static currency that is stores somewhere else besides normal bank accounts or any kind of wallets, for

example Octopus card, Ukash and Paysafecard. Those payment methods, who present medium-high bank dependency and a low system flow, usually fall into the category of electronic wallet system which requires a previous registration into the payment system and a bank to manage the fund transfers. For instance: Google wallet, Amazon payments, Paycash, Skrill, etc.

The traditional payment systems in terms of costs are lower for the customer as for the merchant, because there are no factor related during the transaction because are mainly face to face. For example: direct cash transfer and stored-value cards. The innovative payment system incurs in cost while transferring money from one account to another account and of course the users accept to pay while receiving an optimal service. They are relatively not so high for the customer or the merchant but some of them are relatively cheap, for instance: Octopus card, Ukash, spaysafecard and bitcoin are located as low for the customer and merchant because they are very independent from banks so the cost of transferring of paying via banks are not related to payments.

Other critical factors are security and privacy, it should be noticed that innovative payments are developed to be endowed with high security protocols to protect our money. Nevertheless, we yet find payment systems, mainly traditional, such as stored value cards cash transfers and direct credit transfers which can be manipulated and endanger the money within just by having few information about it.

The type of devices that the innovative payment systems use are related to the easiness of use (friendly to the user) and of course to improve the shopping experience, the majority, use as devices the PC's, so in a future, they can develop an application for mobile devices in order to improve the use and the service.

6. The research question number six seeks to find the benefits of the innovative payment systems that the customer perceives the most; this question was formulated in order to verify the coherence between what the customer is looking for in a payment system and

the innovations that are being developed in the Colombian area. The result according to the survey analysis with 602 Colombian respondents exhibits that the main benefits they perceived are (in order of importance):

Factors	Faster method	Easiness of use	International purchases	Short Cycle Time	Range of payments and multicurrency support	Security	Privacy	Token based
Importance	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**

Table 2. Influencing factors in the first online shopping

Consequently, the main benefits of the innovative against the traditional and critical factors that influence in the first online shopping experience are that the innovative are a faster method to complete a transaction, it is friendly to the user (by using a computer or a mobile device) and because with these payment systems it is easier and available to make international purchases.

7. The difference between the literature analysis and the customer perception is that the innovative payments are developing new features that in some cases are not perceived by the final user. In the survey, it was decided to confront two questions; the first one is referred to the factors that interfere in the first electronic payment and the second one, the factors that the customers are looking in an electronic payment system.

The table displayed in item 6 shows that the customers started using electronic payments mainly because it is a faster method; it is easy to use and to purchase internationally. The security is in the 6^{th} place and privacy in the 7^{th}.

The second result that shows the factors the customer is looking for, and in the first place of importance there is the factor: security.

Factors	Security	Easiness of using it	Faster method	International purchases	Privacy	Multicurrency support	Short Cycle Time	Token based
Importance	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**

Table 3. Critical factors from customer perspective

Thus, this two results show that the customer is more aware of using a payment that has a higher support in the area of security and friendly- user. However the security is a critical factor in the literature review but it is not well "advertised" because the Colombian customers are still resistant to make electronic payments fearing that their money can be stolen, that is why it is not a factor that influences in their first experience of electronic payments.

We can appreciate the Colombian behavior, the information to highlight is the favoritism towards traditional payments systems such credit and debit cards with more than the 80% against other kind of payments. It is true that the Colombian population is open minded and willing to try new kind of payments experiences but the facto of easiness and user friendly is the constrain for this step (42% of the respondents have their credit/debit card registered in a innovative payment system but they declared that the experience was limited by the non friendly user platform).

Something to be taken into account is the fact that the factor "security" was considered as the most important by 64% of the respondents , thus, this the main factor they are looking in a payment method when they decide to sign up for one of them.

Chapter

II

Chapter II – Literature Review

2.1 Key concepts

2.1.1 M- Commerce

M- Commerce or Mobile Commerce is known as the possibility of purchasing goods anywhere using a wireless Internet- enabled device. In other words, Mobile commerce refers to any kind of money transaction that is conducted via a mobile network. This model allows customers to buy products over the Internet without using a PC. “Within five years, individual e-commerce services will be primarily delivered by wireless and the wireless terminal will become the window of choice to the transactional e-world,” (Hoff-man, 2000). This phrase of wireless capability has created an emerging opportunity for the business referred to e-commerce in order to expand beyond the traditional limitations of the fixed-line personal computer. (Clarke III,2001)

2.1.2 S-Commerce

S- Commerce or social commerce is the new trend that helps to create spaces online where people can collaborate, get advices of shopping, finds goods in order to buy them. (Beisel, 2006)

2.1.3 B2C System

B2C system is known as a form of commercial transactions; this transaction involves business and customer (B2C = Business-to-Customer), it is a process for selling goods or services directly to the consumers.

2.1.4 NFC

NFC stands for Near Field Communication, it is a new technology of wireless communication, with short range but high frequency; it allows the exchange between different mobile devices. The protocols are based on RFID or Radio Frequency Identification (NFC Technical specifications, 2011). In 2011, NFC got the certification of MasterCard in order to start making payments by using it, there are many pilot projects using this technology, for example purchasing store items, airplane data, and so on. (Giaretta M, 2011).

2.1.5 Mobile devices

They are also known as handheld computers; the actual models have touch screen or a small keyboard. The scope of these devices is how compact they are, they run an operative system known as OS, which helps with the well function of different apps (applications downloaded online with multipurpose). The mobile devices are also equipped with Bluetooth, Wi-Fi and GPS.

2.1.6 Internet Gateways

It is a node in the web that its role is to serve as an entrance to another network. For example: the gateway is a computer that routes the traffic of information from a workstation to the outside network that is serving the web pages. It can also works as the proxy server and the firewall. (web-o-pedia, 2011)

2.1.7 Tokens

The tokens were the definition of the plastic coins used in the machine slots, at present, after the boom of the online payments and gaming, tokens became a type of currency online which is used to buy items without thinking in the exchange of currency. (Free Dictionary, 2013)

2.1.8 Codes QR

Codes QR stand for Codes of Quick Response; these types of codes are two-dimensional and they can be read or decoded by using Smartphones or tablets equipped with code readers. The codes QR are a trend tool to marketing to a product, because the whole concept is that after reading the code the mobile device will transfer you immediately to a webpage that is coded in the "code QR" and with this the customer can have more information about what he/she is looking for. In other words: with just one click the user is connected to the dynamic world of the Web.

2.2 Methodology

The methodology of the work implies the "*How the research was done", "Which were the filters considered".*

The first step was using the internet tool and search for scientific documents in the website: "**Google Scholar"**, which provides the users to a database with different documents based in real literature or in case studies, by using this technological tool the research becomes easier in sense of filtering and in sense of researching according scientific journals.

The main step was using the word: traditional payment systems. (Of course we used as well combinations of words like: fall of traditional payments and the real name of the payment system; example: credit cards).

After collecting all the pertinent documents that could help us in the development of the dissertation we made different kind of filters for example: for years, for countries and for scope of the scientific document.

After collecting the documents related to the traditional payment systems, we used the same methodology for the innovative ones but in this research we were also very aware in the innovation that the new payment systems were developing or had developed.

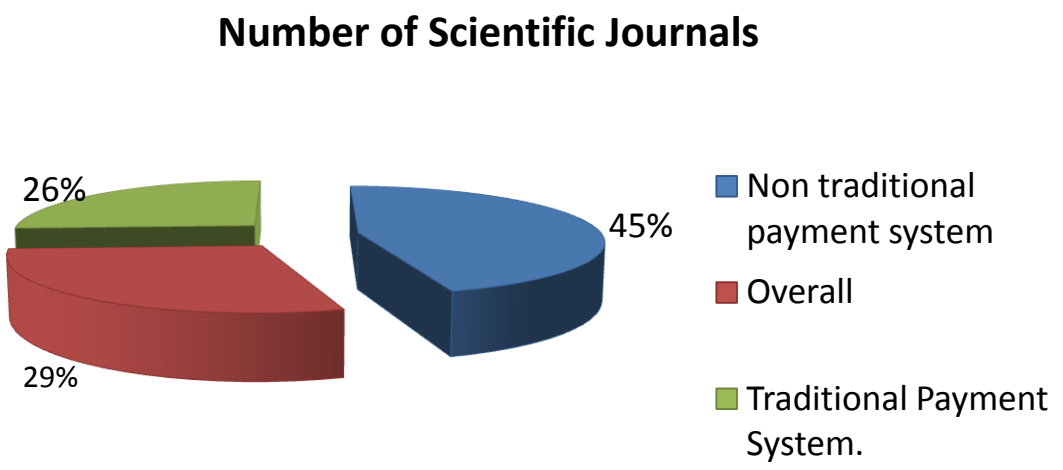


Chart 1. Number of Scientific Journals

In order to have a better vision of the documents found we decided to categorize them by the scope, in that way this work was about to highlight the main benefits, drawbacks and innovated systems (See tables)

Table 4. Articles sorted by Benefits as the scope.

Classification	Name	Author	Year	Type of document	Publisher specified	Main focus	Country	Scope
Traditional Payment System	Costs and Income in the Norwegian Payment System. An application of the Activity Based Costing framework	Olaf Gresvik and Grete Øwre	2003	Working Papers	Norges Bank	Development of giros, payment cards, ATM withdrawals and Cheques used in Norway. Benefits of modernization	Norway	Benefits
Traditional Payment System	Payment transactions, instruments, and systems	Diana Hancock a,, David B. Humphrey b	1997	Scientific Journal (Descriptive/Operational)	Journal of Banking & Finance	Benefits and technological influences in cash payments, non-cash and electronic payments	United States	Benefits
Non traditional payment system	CASH OR NON-CASH: THAT IS THE QUESTION – THE STORY OF E-PAYMENT FOR SOCIAL WELFARE IN IRELAND	Csaba Csáki, Leona O'Brien, Kieran Giller, Kay-Ti Tan, JB McCarthy, Frederic Adam	2012	Scientific Journal	Iseing	Development of giros, payment cards, ATM withdrawals, Cheques and new electronic payments. Benefits of modernization	Ireland	Benefits
Non traditional payment system	A Low Computational-Cost Electronic Payment Scheme for Mobile Commerce with Large-Scale Mobile Users	Jen-Ho Yang, Chin-Chen Chang	2012	Scientific Journal	Springer	New methodology for mobile commerce and the impact in the relationship Business - Client	Taiwan	Benefits
Traditional Payment System	Credit Card Transaction Security	Jonathan M. Graefe, Laurel Lashley, Mario A.M. Guimaraes, Eghosa	2007	Scientific Journal (Descriptive)	ACM	Security In Electronic Commerce Transactions	United States	Benefits
Traditional Payment System	Comprehensive study on methods of fraud prevention in credit card e-payment system	Dr. Saleh Al-Furiah & Lamia AL-Braheem	2009	Scientific Journal (Descriptive)	ACM	Security In Electronic Commerce Transactions	Malasya	Benefits
Traditional Payment System	Priceless: The Role of Payments in Abuse-advertised Goods	Damon McCoy, Hitesh Dharmdasani, Christian Kreibich, Geoffrey M.	2012	Scientific journal (Operational)	ACM	Payment card ecosystem	United States	Benefits
Overall	The state of the art in electronic payment systems	N. Asokan, Phillipe A. Janson, Michael Steiner & Michael Wadner	1997	Scientific Journal (Descriptive)	IEEE	Security In Electronic Commerce Transactions	Switzerland	Benefits
Non traditional payment system	Second generation micropayment systems: lessons learned	Róbert Párhonyi, Lambert J.M. Nieuwenhuis, Aiko Pras	2005	Worshop paper	University of Twente	Key characteristics for mcro-payments to suceed in the future	Netherlands	Benefits
Non traditional payment system	Smart card evolution	Katherine M. Shelfer and J. Drew Procaccino	2002	Scientific Journal (Descriptive)	ACM	Outline the different types of smart cards and their utilities	United States	Benefits
Non traditional payment system	Mobile Payments: A Tool Kit For A Better Understanding Of The Market	Jan Ondrus	2003	License Thesis	University of Lausanne	Understanding the structure and benefits of the mobile payment protocols	Switzerland	Benefits

Classification	Name	Author	Year	Type of document	Publisher specified	Main focus	Country	Scope
Non traditional payment system	*Octopus: An E-Cash Payment System Success.*	**Chau, P. and Poon, S**	2003	Magazine article	ACM	Evolution of electronic commerce in Japan	United States	Benefits
Overall	*Electronic Payments — The Smart Card: Smart Cards, e-Payments, & Law*	**Dr Simon Newman, Gavin Sutter**	2002	Scientific Journal (Descriptive)	ELSEVIER	Security In Electronic Commerce Transactions	England	Benefits
Traditional Payment System	The Joy of Cheques: Trust, Paper and Eighty Somethings	John Vines, Paul Dunphy, Mark Blythe, Stephen Lindsay, Andrew Monk, Patrick Olivier	2012	Scientific Journal (Descriptive)	ACM	Cheques	United States	Benefits

Table 5. Articles sorted by Benefits - Drawback as the scope

Classification	Name	Author	Year	Type of document	Publisher	Main focus	Country	Scope
Non traditional payment system	Study on the Electronic Payment Technology in E-Commerce	Qidong Wang, Jun Zhu	2013	Scientific Journal	GCN	Benefits of the new Electronic Payment Technology in E- commerce	China	Benefits - Drawback
Traditional Payment System	*CONSUMER MISUNDERSTANDING OF CREDIT CARD USE, PAYMENTS, AND DEBT: CAUSES AND SOLUTIONS*	Jack B. Soll, Ralph L. Keeney, Richard P. Larrick	2013	Scientific Journal (Descriptive)	Journal of Public Policy & Marketing	Benefits and drawbacks of using Credit Card	United States	Benefits-Drawbacks
Overall	The Evolution of the Payments System: A U.S. Perspective	Thomas M. Hoenig	1996	Scientific Journal (Descriptive)	ECONREV	Benefits and drawbacks of the payment systems	United States	Benefits-Drawbacks
Overall	Electronic payment systems, analysis and comparison	Hsiao-Cheng, Kuo-Hua Pei-Jen	2002	Scientific Journal (Descriptive)	ELSEVIER	Analysis	United States	Benefits-Drawbacks
Overall	An empirical study of customers' perceptions of security and trust in e-payment systems	Changsu Kim , Wang Tao , Namchul Shin , Ki-Soo Kim	2010	Scientific Journal (Descriptive)	ELSEVIER	Benefits and Drawbacks perceived by the customers	South Korea	Benefits-Drawbacks
Overall	The concept of security and trust in electronic payments	Theodosios Tsiakis , George Sthephanides	2005	Scientific Journal (Descriptive)	ELSEVIER	Concepts of security	Greece	Benefits-Drawbacks
Traditional Payment System	Electronic Payments — The Smart Card: Smart Cards, e-Payments, & Law — Part I	Simon Newman , Gavin Sutter	2002	Scientific Journal (Descriptive)	ELSEVIER	Concept of Smartcard	London	Benefits-Drawbacks
Non traditional payment system	A Hypercube Novelty Model for Comparing E-Commerce and M-Commerce	Raj Gaurang Tiwari, Mohd. Husain, Vishal Srivastava, and	2011	Scientific Journal (Descriptive)	ACM	Mobile commerce	India	Benefits-Drawbacks

Classification	Name	Author	Year	Type of document	Publisher	Main focus	Country	Scope
Non traditional payment system	Mobile Commerce: Framework, Applications and Networking Support.	UPKAR VARSHNEY, RON VETTER	2002	Scientific Journal (Descriptive)	ACM	Mobile commerce	Netherlands	Benefits-Drawbacks
Non traditional payment system	Security Framework for Mobile Banking	Dasun Weerasinghe, Dasun Weerasinghe,	2010	Scientific Journal (Descriptive)	ACM	Mobile commerce	France	Benefits-Drawbacks
Non traditional payment system	Mobile Banking Overview	Mobile Banking Association	2009	White paper	ACM	Mobile commerce	Sri Lanka	Benefits-Drawbacks
Overall	Electronic Commerce 2010	Efraim Turban, Jae K. Lee,David King, Ting Peng Liang, Deborrah Turban	2010	Book	Prentice Hall Press Upper Saddle River	Description of electronic commerce and different kind of payments	United States	Benefits-Drawbacks
Non traditional payment system	A study of B2B e-service development in China: e-service capability and customer segmentation perspective.	Cuixiao Fu, Lihua Huang (Fundan University, Shanghai city)	2010	Scientific Journal (Descriptive)	ACM	Drawbacks of B2B e-commerce because of the lack of information	China	Drawbacks
Overall	FACTORS INFLUENCING E-COMMERCE ADOPTION BY RETAILERS IN SAUDI ARABIA: A QUANTITATIVE ANALYSIS	Rayed AlGhamdi, Jeremy Nguyen, Ann Nguyen, Steve Drew	2012	Scientific Journal	International Journal of Electronic Commerce	Drawbacks of B2C e-commerce. Key Issues to adopt online channels	Saudi Arabia	Drawbacks

Table 6. Articles sorted by Contribution as the scope

Classification	Name	Author	Year	Type of document	Publisher	Main focus	Country	Scope
Traditional Payment System	Secure money transfer techniques using smart cards	David M. Claus	1995	Patent	United States Patent	Improvement of the money transfer by using smart cards. Between customers and merchants.	United States	Contribution
Traditional Payment System	Bank-based international money transfer system	Dale H. Allred	2002	Patent	United States Patents	Contribution to facilitate money transfer between different countries and different currencies.	United States - Latinamerica	Contribution
Traditional Payment System	Electronic Payments of Small amounts	Torben P. Pedersen	1997	Scientific Journal (Descriptive)	Computer Science Department, Aarhus University	Contribution to the electronic cash when there are many small transaction from the same client.	Danmark	Contribution
Traditional Payment System	The nature and Management of payment system risks: An international perspective	C.E.V Borio and P. Van der Bergh	1993	Economic Paper	Bank for International Settlements - BIS Economic Papers	Contribution to the trustability of transactions with cash and non-cash	Switzerland	Contribution
Traditional Payment System	Optimal card payment systems	Julian Wright	2003	Scientific Journal (Strategical)	ELSEVIER	Contribution to diminish the surcharging for merchants during transactions	New Zealand	Contribution
Traditional Payment System	The Efficiency and Integrity of Payment Card Systems: Industry Views on the Risks Posed by	Julia S. Cheney Robert M. Hunt Katy R. Jacob Richard D. Porter	2012	Scientific Journal (Strategical)	SSRN	Contribution to the trustability of transactions using payment cards	United States	Contribution
Non traditional payment system	YOUNG AUSTRALIANS' PRIVACY, SECURITY AND TRUST IN INTERNET BANKING	Supriya Singh, Clive Morley	2009	Scientific Journal (Strategical)	ACM	Contribution to the trustability of transactions using internet banking	Australia	Contribution
Traditional Payment System	Network structure and reliability analysis of a new integrated circuit card payment system for hospital	Jing Zhang 章 菁, Xi-tao Zheng 郑西涛, Ye-hua Yu 俞夜花, Yong-wei Zhang	2013	Scientific Journal	Journal of Shanghai Jiaotong University	Contribution and new technology for identifying and doing payments	China	Contribution
Non traditional payment system	AN EFFICIENT ELECTRONIC CASH SCHEME WITH MULTIPLE BANKS USING GROUP SIGNATURE	Ming-Te Chen1 , Chun-I Fan1; , Wen-Shenq Juang2 and Yi-Chun Yeh2	2012	Scientific Journal	International Journal of Innovative Computing, Information and	Contribution to the security problems and to the communication costs	Taiwan	Contribution

Classification	Name	Author	Year	Type of document	Publisher	Main focus	Country	Scope
Overall	Electronic payment architecture and trends in Europe	Ingenico Corporate Communication and Arne Trapp, grintsch communications	2012	White paper	ingenico, beyind payment & easycash	Payment systems in nowadays transactions	Germany	Contribution
Overall	SURVEY OF ELECTRONIC PAYMENT METHODS AND SYSTEMS	Paul J.M. Havinga, Gerard J.M. Smit, Arne Helme	2002	Scientific Journal (Descriptive)	ACM	Payment systems in nowadays transactions	Netherlands	Contribution
Overall	Classifying Payment Instruments: A Matryoshka Approach	Valérie-Anne BLEYEN, Leo VAN HOVE & Monika HARTMANN	2009	Scientific Journal (Descriptive)	IDATE, COM&STRAT Department	New classification for electronic payment systems	France	Contribution
Overall	Electronic Payment Systems: a User-Centered Perspective and Interaction Design	Dennis Abrazhevich	2001	Doctoral thesis	J.F. Schouten School for User-System Interaction Research	New classification for electronic payment systemsand impact on user behavior	Netherlands	Contribution
Overall	Money in electronic commerce: digital cash, electronic fund transfer, and Ecash	Patiwat Panurach	1996	Magazine paper	ACM	New electronic payment options	Thailand	Contribution
Non traditional payment system	An Interconnection Architecture for Micropayment Systems	R. Párhonyi, D. Quartel, A. Pras, L.J.M. Nieuwenhuis	2005	Scientific journal (Operational)	ACM	Outline a new interconnection between micro payments methods	China	Contribution
Non traditional payment system	NetPay: An off-line, decentralized micro-payment system for thin-client applications	Xiaoling Dai and John Grundy	2007	Scientific Journal (Descriptive)	ELSEVIER	A new protocol for micropayment systems	Netherlands	Contribution
Non traditional payment system	Portal-NetPay Micro-payment System for Non-Micro-payment Vendors	Shymal Chandra & Xiaoling Dai	2009	Scientific journal (Operational)	ACM	A new protocol for micropayment systems	Malasya	Contribution
Non traditional payment system	What is money?	Ray Byler	2004	White paper	Mid-South College Computing Conference	A new definition of money in nowadays electronic transactions	United States	Contribution
Non traditional payment system	PayWord and MicroMint: Two simple micropayment schemes	Ronald L. Rivest and Adi Shamir	1996	Scientific Journal (Descriptive)	ACM	A new protocol for micropayment systems	England	Contribution
Non traditional payment system	PayCash: A Secure Efficient Internet Payment System	Jon M. Peha and Ildar M. Khamitov	2003	Scientific Journal (Descriptive)	ACM	Outline the goals and scope in order to provide a effective payment system in term of security and privacy	United States	Contribution

Classification	Name	Author	Year	Type of document	Publisher	Main focus	Country	Scope
Non traditional payment system	Bitcoin: A Peer-to-Peer Electronic Cash System	Satoshi Nakamoto	2009	White paper (operational)	Bitcoin official website	Explains the correlation between all the nodes present during the transaction. The importance of the network regarding the servers	United States	Contribution
Non traditional payment system	Double spending Fast Payments in Bitcoins	Ghassan Kareme, Elli Androulaki, Srdjan Capkun	2012	Scientific Journal (Descriptive)	ACM	Detecting double spending of single coins during transactions	United States	Contribution
Non traditional payment system	*BulaPay - A Web-Service Based Third-Party Payment.*	**Weiqiang Liang, Xiaoling Dai.**	2009	Scientific Journal (Strategical)	ACM	Comparison between different payment methods I the Pacific area	Malasya	Contribution
Overall	*Internet payments in Germany: a classificatory framework and empirical evidence*	Karsten Stroborn Annika Heitmann, Kay Leibold, Gerda Frank	2004	Scientific Journal (Descriptive)	ELSEVIER	New classification for electronic payment systems	Germany	Contribution
Overall	Emerging value proposition for m-commerce	I Clarke	2001	Scientific Journal (Descriptive)	Journal of Business Strategies	Concepts of M-commerce	United States	Contribution
Non traditional payment system	Paypal, the legal status of c2c payment system	Andrés Guadamuz González	2002	License Thesis	University of Edinburgh	Legal Status for c2c system	Edinburgh	Contribution
Non traditional payment system	The mobile commerce value chain: analysis and future developments	Stuart J Barnes	2002	Scientific Journal (Descriptive)	ELSEVIER	Mobile commerce	New Zealand	Contribution
Non traditional payment system	Wallet databases with observers	D. Chaum and T. Pedersen	1993	Scientific Journal (Descriptive)	ACM	Electronic wallet	England	Contribution
Non traditional payment system	On-Line E-Wallet System with Decentralized Credential Keepers	STIG FRODE MJØLSNES and CHUNMING RONG	2003	Scientific Journal (Descriptive)	ACM	Electronic wallet	United Kingdom	Contribution
Overall	Analysis of factors affecting electronic payment options and evaluation of satisfaction of the payment	XIE NA	2012	Scientific Journal (Descriptive)	Journal of Henan Institute of Engineering	Analysis of customer perception	China	Contribution

Classification	Name	Author	Year	Type of document	Publisher	Main focus	Country	Scope
Overall	An empirical study of customers' perceptions of security and trust in e-payment systems	Changsu Kima, Wang Taoa, Namchul Shinb, Ki-Soo Kima	2010	Scientific Journal (Descriptive)	ELSEVIER	Analysis of customer perception	United States	Contribution
Non traditional payment system	New and efficient conditional e-payment systems with transferability	Chen, X., Li, J., Ma, J., Lou, W., & Wong, D. S.	2013	Scientific Journal (Descriptive)	ELSEVIER	Contributions to the e-commerce	Hong-Kong	Contribution
Overall	Priceless: The Role of Payments in Abuse-advertised Goods	Damon McCoy, Hitesh Dharmdasani, Christian Kreibich,	2012	Scientific Journal (Descriptive)	ACM	Roles of electronic payments	United States	Contribution
Traditional Payment System	Analysis of the Risk Relieving Factors for Chinese Online Shopping Behavior	Baoling Li & Qi Li	2010	Scientific Journal (Descriptive)	ICEC	Internet shopping	United States	Contribution

In the other hand, the flow of the payment was not easily found out in this kind of documents, thus for this information we referred to the official website of the payment.

According to the documents found to complete the dissertation we based our work mainly in scientific journals found in different journals, the subsequently graphics show the contribution of the journals to the Traditional Payment System development, the Non Traditional Payment System development and the Overall.

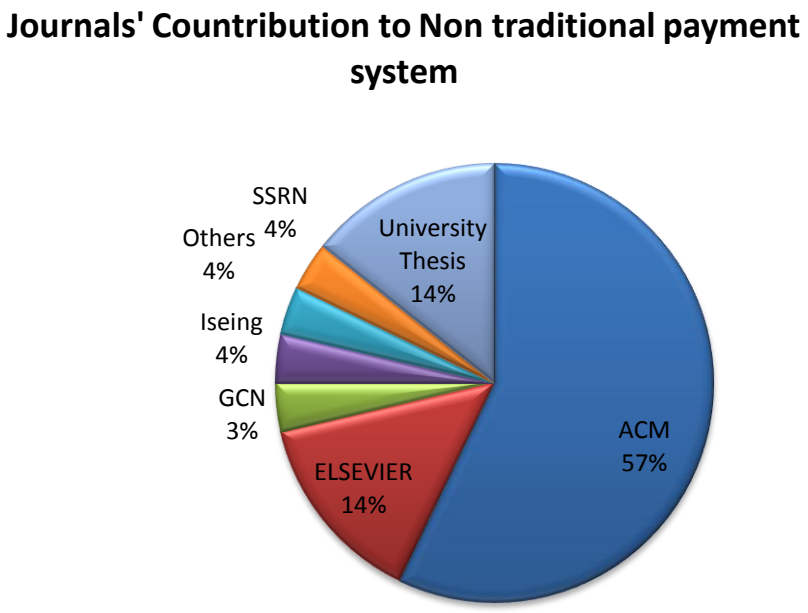


Chart 2 Journals' Contribution to Non Traditional Payment System

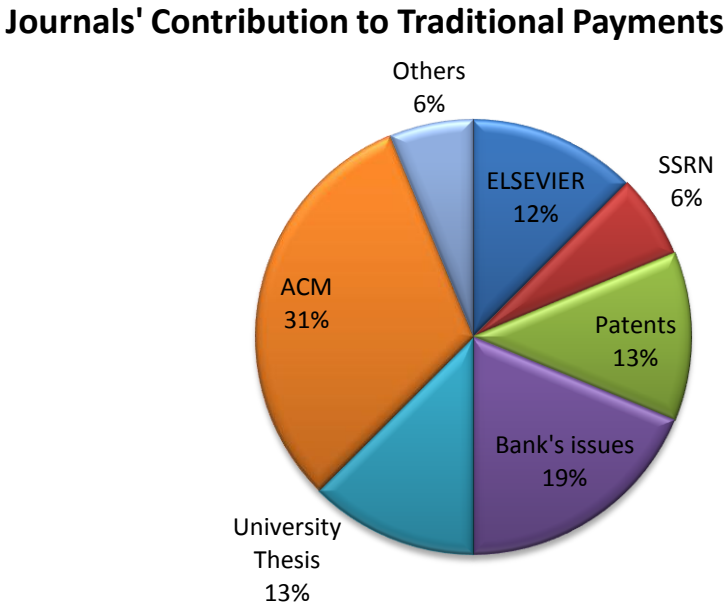


Chart 3. Journal's Contribution to Traditional Payments

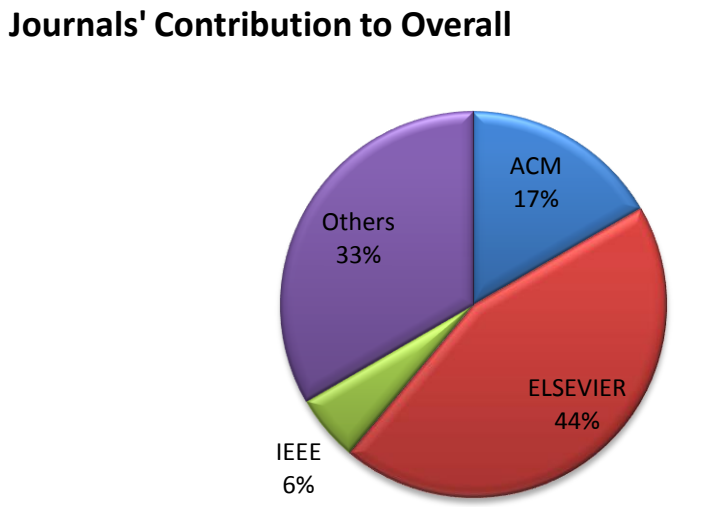


Chart 4. Journals' Contribution to Overall

The summary of the entire scientific journal that contributed to the development of this work is:

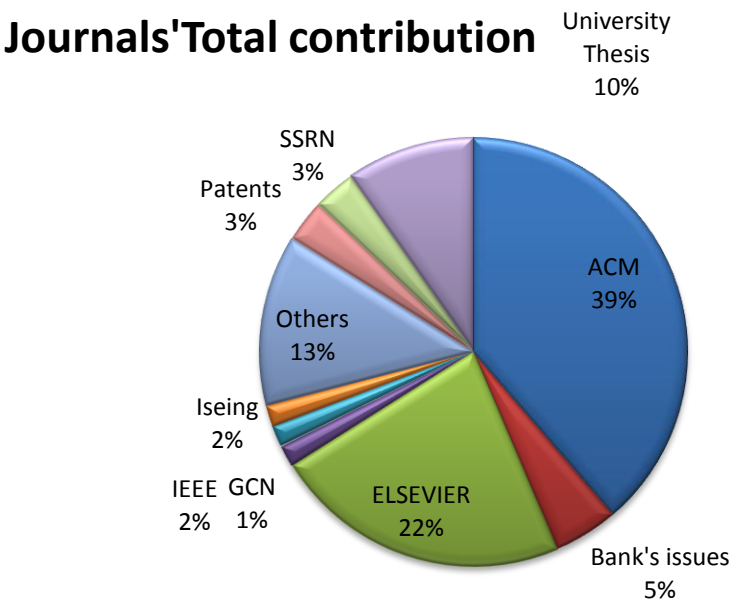


Chart 5. Journal's Total Contribution

To add in this chapter of methodology, it has to be noticed that in order for the analysis of the payment system, traditional and innovative, it was also needed to research by country to have a more clear perception of the authors' point of view.

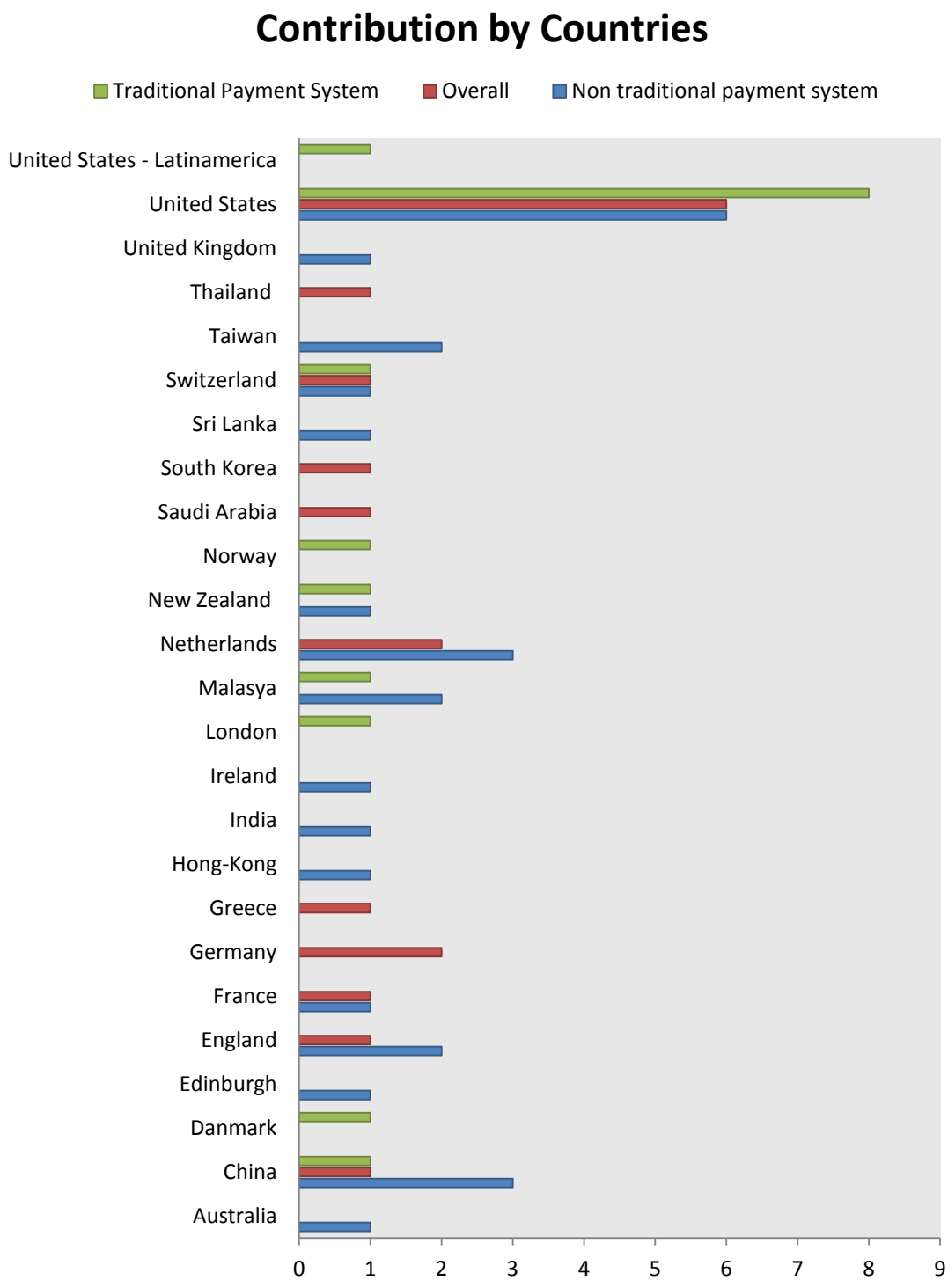


Chart 6. Contribution by Country

2.3 Literature Review

E- Commerce technology faces different types of challenges, because every day the quality of life of users has to be better and better from different points of view, as global reach, interactions business – consumer, information accuracy and customization. The Electronical payments take a roll in this issue, the Electronic Commerce is based in the trustable system of payments, and this work is based on showing the advantages and disadvantages of the traditional payments and also a research of the new systems that are taking the vanguard of the market and/or possible improvements of the traditional ones.

In this new culture full of internet the electronic payments have a really important role, because is the way in which customers can interact with companies (making purchases) without a "real" face to face meeting. From many years, all the companies are trying to call the attention of clients by making new technological improvements which are focused on showing a trustful process and a short process time without leaving aside the good service level concept.

The payment systems have been studied for a long time, explaining and pointing out the benefits and drawbacks of traditional and new payment systems. The next matrixes are a compilation of some of the works before mentioned classified by their scope: Benefits, Drawbacks – Benefits and Contribution to the field.

2.3.1 Methodology of the literature review

In this section we shall cover the theory given by different authors regarding the classification and evolution of Electronic payment systems in the past decades.

To do so, we will present the assumptions and categories proposed by different authors, so that, we might have a broader knowledge of how the specialists in the topic have been considering the whole phenomenon. Since, one of our goals is to differentiate and compare the traditional payment systems with the innovative ones and there is not a

clear distinction in the literature, we might propose a classification of our own and then proceed with a detailed review for each.

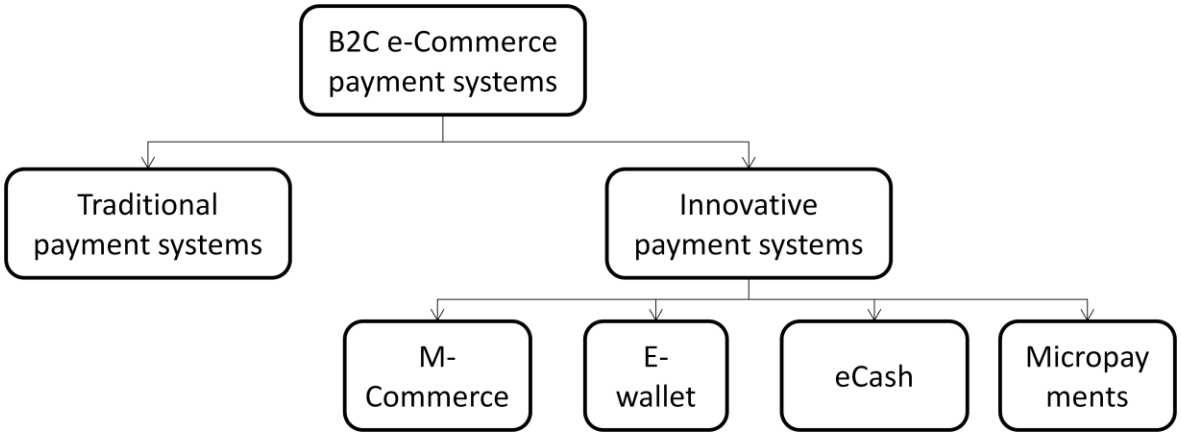


Figure 5. The proposed Classification of the Lterature Review

In this order of ideas, we present a brief state of the art, considering some popular classifications by renown authors and then, our own classification to make easier the review of the literature in this regard.

2.3.2 State of the art: Electronic payment systems

This review will start with the definition given by Asokan in his "State of the art in electronic payment systems". According to Asokan, every conventional payment model is composed by two relevant participants such as the payer and the payee. When it comes to electronic payments, two more actors are included. They are the entities that permit the transfer of electronic money. The issuer and the acquirer, that being said, Asokan provides a simple electronic payment classification of two categories, which are determined by the way the money moves from one participant to the other. The first category is called cash like payment system and it comprehends prepaid systems and those payments methods in which money is debited right away at the moment of the payment. Smart cards, electronic pursed and banks checks, fall into this category. In this category, the actual flow of money does not occur physically between the payer and the payee, but internally between the issuer bank who withdraws the money from the payer

account and sends it to the bank acquirer (payee). On the other hand, the second category specifies the card based systems which are those pay later models in which the payee account is credited by the amount of the sale before the payer's account is debited. Credit cards fall in this category. (Asokan, 1997)

Abrazhevich, then provided a classification based on the type of currency that was being transferred from one participant to the other. He proposed that electronic payment systems should be categorized into two big groups, electronic cash and account based systems. The former group refers to those systems that allow users to have their money in different forms such as electronic bills or coins, tokens and certificates. Abrazhevich identifies another distinction amongst the electronic cash system that regards those that use smart cards to store the money and those that implement computer networks to do the same.

Account based systems is described by Abrazhevich as the methods that undergo "exchanges of money between accounts that is maintained by a payment service provider". In this payment mechanism the user authorizes the electronic payment system to use the funds stored within it. There is also a subdivision regarding this category and distinguishes generic online payment systems, credit/debit payment systems and specialized payment systems. (Abrazhevich, 2004)

A similar classification was used at Kim, Tao and Shin study about customers' perceptions of security and trust in e-payment systems. They categorized the payment systems into two groups: cash based and account based systems. In the first category, we can find electronic cash and prepaid cards. While in the second category, it is included credit card, debit cards and electronic checks. According to the authors, each payment system can be used as a complement of the other, in fact, payment systems such a credit/debit might come expensive for purchases of small amount, while it might come really cost effective when implementing a electronic cash system.(Kim, Tao & Shin, 2010)

Another classification such as the one proposed by Stroborn, sorts the payment systems according to the time in which the customer is really charged. Thus, his classification is basically related to Prepaid, Pay now and Post paid systems. Prepaid cards include those systems in which the user account is recharged in advance and the amount is debited at the moment of the purchase. Pay now systems involve those payment methods in which the transfer of money is done as the same moment of the purchase. Finally, Post paid systems regards that group of payments in which the transaction is done due to the crediting of the acquires bank during the purchase, but later the amount should be repaid through invoice. Credit cards and billing fall into this category. (Stroborn, 2004)

On the other hand, Newman and Sutter, in their analysis about electronic payment systems, did not present a classification as we have been seeing. On the contrary, they treated the different payment methods separately such as; credit and debit cards, secure socket layer protocol, secure electronic transaction, proprietary online systems, credit card information databases, digital cash systems, smart card systems, mobile payments and micropayment systems. (Newman & Sutter, 2002)

Electronic payment systems, according Cheng Yu, Hua His and Jen Kuo, can be divided into online credit card payments, electronic cash, electronic checks and small payments. Unlike the other categories, small payment systems are also called micropayments and are dependent on the size of the transaction and not on the type of it. In this study the four payment methods are compared simultaneously, taking into account anonymity, current degree of popularity, the actual payment time, mobility , limit on transfer amount, etc. The focus on micropayment systems remarks its importance in comparison with the others payment systems since the value of information is increasing but not cost effective if it wants to me acquire by traditional means. This study remarks the creation of a system that sets a reasonable price to this kind of transactions and that it is not connected to financial organization or other payment mechanism, whatsoever. (Cheng Yu, Hua His & Jen Kuo, 2002)

A recent study has demonstrated to be a good recompilation of previous studies in its pursue to build a proper classification for the electronic payment system. This study is called the Matryoshka approach and it was proposed by Bleyen, Van Hove and Hartmann. The Matryoshka approach, as it was said before, is based on different classifications but the starting point was the approach proposed by the Institute for Banking Innovation at the University of Regenburg. (IBI, 2006). The IBI approach involves different layers in which the first one include types of money that can be manipulate via three primary payment methods that belongs to the second layer, such as, credit transfer, Payments from a purse and direct debit. The third layer of this classification includes the derivative payment methods such as; Mobile phone based methods, Cheque based methods, Collection and billing methods, Prepaid card based methods, E mail based methods and Credit card based methods. The whole model itself represents the interaction among the three layers where the primary payment methods work for both making a direct payment into the merchant terminal or for funding derivative payment methods.

That being said, Matryoshka approach gather the previous set of knowledge and propose a new classification by covering 5 layers. The first layer, just like in the IBI approach, contains the different types of money (currency, viral money, electronic currency o private currency). In the second layer, it is established the core payment mechanism, which involves the direction of the flow in which the transaction is initiated. In this layer, the concepts of push and pull are once again taken into account. A push models regards those transactions that are initiated by the payer who sends instructions to the issuer to start a fund transfer into the acquirer. On the other hand pull models define the scenario when the payment is started by the payee who request a fund transfer to his acquirer bank, who at the same time, requests a fund transfer from the payer issuer bank. The payer is notified at the end about the transactions.

Layer three, involves the channels and networks. Channels are the technology used for device terminal communication and network is the proper infrastructure to allow transactions to be performed. Then, in layer four, it is included the form factor which

refers to the carrier that can store the money or the authentication device, in order to ensure safe transactions. Finally, layer 5 refers to the generic method that will carry out the transactions. Cheques , credit transfers, credit/debit cards, electronic fall into this definition. (Bleyen, Van Hove & Hartmann, 2010)

2.3.3 Literature review: Traditional payment systems

Electronic Payments are defined as a transaction using electronic value with electronic methods; this payment methods exist as interfaces that allow users to access and manage bank accounts and any kind of transaction (Weir, 2006)(Lim, 2008). The offline payments refer to no contact with third parties during the payments, this means that the only participants are: Payer and payee.

The need for e-payment services appeared immediately after the introduction of Electronic Commerce, thus, in the beginning of this period the traditional cash based and account-based payment methods were used as a model. Of course there are always new needs to fulfill and PayPal™ in 1998 made its first appear (Dahlberg, 2008).

There were many classifications for the electronic payment one of them was by categorizing in 5 groups: 1-Electronic Cash, 2-Prepaid Cards, 3-Credit card, 4- Debit cards, 5-Electronic checks. (Lawrence,2002)(Guan and Hua 2003).For the traditional payments were divided into: Cash, Cheques, Giro (Direct credit transfer), Wire transfer, Payment cards (credit cards, charge cards and debit cards) (D. OḾahony, 1997). This subdivision of the traditional payment system was made in order to have a better definition for each and the evolution of each.

Prepaid cards, credit cards, rechargeable cards and debit cards are the most frequently used as a payment system in the B2C e-commerce, and in the other hand, the electronic cash or e-cash operates as a complement to them. The electronic cash is more appropriate for small- value transactions but the credit, debit and prepaid cards can be used in any situation, taking into consideration that for small payment the cost for transaction can be a little bit high.

In 1995, the use of smartcards started to increase and the issue of security became a problem for the users, so there were many techniques to improve the transactions by using smartcards issued by Banks, by improving the flow of information between cards' holders and merchants. (Claus, 1995)

The trend in U.S.A in the earliest 1996 started by having a noticeable progress in the development of its large-dollar payment systems or foreign exchange transactions, but in the other hand there was the small- dollar payment that were continued to be made in cash. Based on value, almost 90% of all the transactions in U.S were made electronically. Based on the volume of transactions, the 90% of all transactions were still made by cash or check (Hoenig, 1996).

The credit card and debit card business found a new market, children; Stephen Fleming introduced methods and credit or debit card systems that allow the card issuer to set a limit on the number of expenditures that can be made. Also, it can provide a method of supervising the cards usage. (Fleming, 1999).

During 2000 and 2002, the online payments were having an increasing slope but the main concern with the electronic payment was the factor: security, the customers were concern about this issue in each step of the transaction, all of this because money and merchandise were transferred while there is no direct contact between merchant and client. (Hsiao-Cheng, Kuo-Hua Pei-Jen, 2002).

From 2002 to 2004; PayPal after being under the legacy of eBay, had a value of transactions of $47.98 billion USD in 2002 **(**Guadamuz, 2004) and for the 2009 it was of $71 billion USD. With the appearance of PayPal ™ in 1998 until now it is still one of the electronic payments more worldwide known and used (250 millions of active accounts) PayPal™ is now consider as a traditional payment system. It is a fact that some of the innovative payment systems have some similarities with PayPal™, but they are not as known / popular as it is indeed.

Returning to the payment by using credit or debit cards, there are some standards that The European Standardisation Organisation (CEN), as well as Europay, MasterCard, and Visa are working in order to improve the experience of security in the smart-card based electronic payment system. At the beginning there were two proposals, STT that stands for Visa's Secure Transaction Technology and SEPP that stands for MasterCard's Secure Electronic Payment Protocol, both of them were for credit-card based online payment schemes. The next proposal was SET, designed by MasterCard, Visa, GTE, IBM, Microsoft, Netscape, SAIC, Terisa and Verisign; this proposal replaced the previous two ones. SET was created in order to be adopted for credit card payments all over the Internet. "*It is a pragmatic approach that paves the way for easy, fast, secure transactions over the Internet. It seeks to preserve the existing relationships between merchants and acquirers as well as between payers and their bank. SET concentrates on securely communicating credit card numbers between a payer and an acquirer gateway interfacing to the existing financial infrastructure"* (Asokan, 1997)

2.3.4 Literature review: Innovative payment systems

Though, for many years, traditional payment systems had represented the formal and preferable payment method by customers, a new era in the e commerce context shall begin, bringing with it, new payment mechanisms and facilities for users that trespass the barriers of the former generation.

In this section, we shall provide a literature review regarding the classifications that has been proposed by different authors and how it has been changing in the passing years. Moreover, characteristics and diffusion that remark this new generation of payment systems will be pointed out, thus we can have a big picture of the whole electronic commerce growing phenomenon. It will be also exposed all those features that that has caused migration from the old payment methods into the new ones and what is the value added to the customer once in this new side of the phenomena.

First of all, before starting with our detailed analysis, we will consider all the actors involved in the transaction during the electronic commerce. In this order of ideas and following the classification for this new generation of payment systems, we shall be able to understand the whole supply chain and interconnection along the whole process; between customers and merchants, as well as, the in between nodes that are not visible for users.

2.3.4.1 Supply Chain Analysis

The fact that the descriptions of the supply chains are only limited to the 4 types of payment systems is only for a matter of generalization and facilitates the understanding of the whole phenomenon. Given the broad quantity of payment systems, we had included all the categories among our classification, which means that while analyzing each type of supplies chains, we might present some other variations of the supply chains in order to cope all the important actors and instruments present in processes, even though they belong to same category.

2.3.4.2 Mobile Commerce

Barnes, in his value chain analysis of mobile commerce, refers that just like products and services demand a clear value chain and the combination of diverse inputs and activities for a particular output, mobile commerce also requires a well defined structure. His models provide a value chain composed by six core processes divided into two categories: content and infrastructure. (Barnes, 2002)

Content is defined as “information, transaction, or other products that are delivered over the network (Tiwari, 2011). Barnes remarks three activities in the content section which are: content creation, packaging and market making. The first activity involves the creation of digital material such as video, audio and textual information. Content packaging involves the editing, formatting and customizing of packages of information, in order to, different types of demand. At last, marketing making activities, regard the selling of the content and packages through internet portals. (Barnes, 2002)

Barnes divides also the infrastructure section intro three more activities such as; Mobile transport for networking and transportation of data. Mobile services and delivery support that allows the connection to internet, servers or any kind of platform. Mobile interface and applications that centers on integrating the infrastructure with support hardware and software for communications. E.g. smartphones. (Barnes, 2002)

Mobile commerce is a really particular payment method among the innovative generation because it allows operability and accessibility to user from any location without restrictions such as fixed broadband connection or lacking of computers, etc.

Varshney & Vetter, proposed a framework for mobile commerce where they focus only on the mobile financial applications that allows customer to do mobile banking, brokerage, mobile money transfer and one of the most used nowadays, micropayments. The study showed the architecture of a mobile banking service figure !@#!@#!. In this kind distribution, the customer has access to the banking service via his/her mobile operator's network or any known protocol over the internet. In order to initiate the whole process the customer is required to have a SIM card that will allow him/her to have contact with the bank. The SIM card is usually deployed with a security application called, Security Capsule that works as a authentication authority to the bank. This application works under a three steps protocol that registers, authenticates and authorizes any transaction the customer is seeking to. (Varshney & Vetter, 2002)

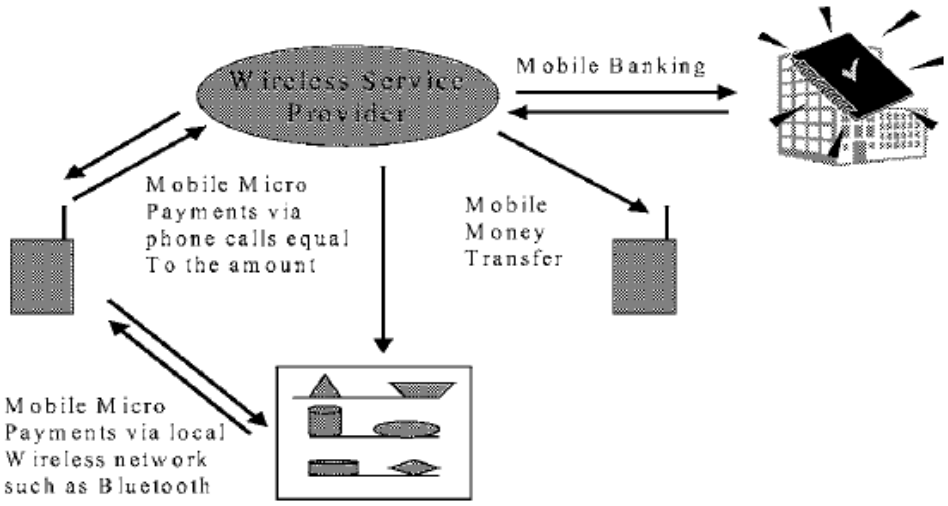


Figure 6. Several mobile financial Services[1]

Among other application in the m commerce content, we found the mobile banking service. According to Weeransinghe, Rakocevic and Rajarajan, mobile banking is a utility that is growing fast amongst users thanks to the penetration of the mobile phones industry. They that mobile banking as a value adding service that will allow user to perform banking transactions from anywhere and anytime. They considered that to do so, the mobile service structure most be composed by three well defined actors: consumer, mobile operator and the bank. (Weeransinghe, Rakocevic & Rajarajan, 2010).

To carry out a good mobile banking service, the mobile banking association highlighted the four most delicate security issue that should be taken into account. Data transmission, control over application and data access, data integrity and the limited impact of losing a device. (Mobile Banking Overview, 2009)

Literature offer different alternatives for the m commerce transactions, such as mobile money transfer or micropayments in static terminals. In the former type, the user can do the money transfer either by getting online to his/her mobile provider's network or using some proximity payment mechanism such as NFC or the traditional Bluetooth. Note that

[1] Taken from: Mobile commerce: Framework, Applications and Networking Support. 2002 Kluwer Academic Publishers.

the arrows in the first case are just one direction in the second half of the model, the only dual flow is presented in the first half where the user asks the service provider to “bridge” him/her to the other mobile device and the reverse arrow when no mobile is device is available for the transactions. Micropayments also operate in a similar way, sharing the structure as the mobile money transfer, being the amount to be transfer lower by far. (Varshney & Vetter, 2002)

2.3.4.3 E wallets

Asokan defines the electronic wallet as a smart and secure device that can protect user’s credential and secret keys to perform operations. Though, a smart is a simple way to put financial information to safety, it lacks a graphical interface to interact with. (Asokan, 1997)

The CAFÉ project was the first electronic wallet prototype ever used and it was proposed by Chaum and Pedersen. The architecture of this system simply needed the wallet and the terminal. The wallet is composed by an observer, usually a smart card, and a purse which is the device in charge of interacting with the observer. The communication between the wallet, itself and the terminal is done by an open network. (Chaum & Pedersen, 1993)

A new architecture for electronic wallet was proposed once decade later that consisted in wallet assisted by keeper who takes care of users credentials. This new architecture allows customer to perform online transaction with no need of physical contact between smartcards and a specific device. As a matter of fact, smart cards are no longer required whenever a digital card is being used. Keepers could be the issuers that just provide the credential only upon request. (MJØLSNES, Rong, 2003)

In recent studies, it was assessed the possibility of self administered wallet via mobile devices and then Olsen, Hedamn and Vatrapu came up with a clear definition of what m wallet could be: “An m-wallet is a personalized digital artifact that contains electronic payments instruments such as virtual currencies and payment cards, repository for

receipts and tickets, identification cards such as passports, drivers' licenses and insurance cards, and personal items such as pictures and shopping lists"(Olsen, Hedman & Vatrapu, 2012)

their intention of mobile wallet was to define a new mind set in which the mobile transactions are deducted from existing accounts, that payments should be done by a different mean than text messaging and that the mobile phone could work as a storage device for transactions done.

2.3.4.4 Electronic cash

Electronic cash (Ecash), according to Abrazhevich, represents a substitute for conventional cash on the internet or other information systems. It is a clear form of value and could be in forms of bills, coins or tokens. Electronic cash can be purchased from the issuing banks with conventional money or different payment system and it can be stored on either smartcards or computer networks. (Abrazhevich, 2004)

Manipulating electronic cash brings about serious issues regarding security problems such as confidentiality, authentication , integrity, anonymity and detection of double spending. Since the generation and transport of this type of money can be easily done through text messaging, email packages or via bank authorizations, several techniques should be implemented when it is used this volatile form of cash. (Havinga, Smit & Helme, 2001)

Panurach in his analysis of money in electronic commerce, compares the conventional form of cash and electronic cash and concludes that e cash has many advantages the other form. First, cash can be rob and the sum is almost impossible to be refunded. The space required for storing the conventional cash is directly proportional to the sum that is pretended to be stored. For instance, the more cash the bigger and more expensive to store and move. Last, counterfeiting phenomenon makes the storing of conventional cash insecure for every participant during a transaction.

On the other hand, electronic cash allows users keep their sum safely inside prepaid card or other purely electronic systems that are protected with encrypted protocols that diminish the risk of robbery and counterfeiting. (Panurach, 1996)

2.3.4.5 Micropayments

Newman defines the micropayment systems as digital cash systems that are utilized where the information/product/service cost less than a cent. He proposed a classification according to the way this products or services are paid for: Token based or upon subscription. (Newman & Sutter, 2002)

Parhonyi, Pras & Nieuwenhuis defines two main groups of characteristic of micropayment systems. Technical and non technical. Among the technical characteristics, we can find: the medium of value exchange (token based or account based), convenience, anonymity, scalability, validation, security and interoperability. Non technical characteristics refers to the trust level, coverage, privacy issue, pre paid or post paid and range of payments and multicurrency support. (Parhonyi, Pras & Nieuwenhuis , 2005)

PayWord is a simple micropayment scheme that has been used by other micropayment systems and it was the first to introduce the term “payword chain”. A payword chain is a certificate initially issued by the broker, in which is referred all the main important details about customer and broker and the information regarding the customer accounts and keys to allow the transactions. The main goal of the payword chains is too quicken the purchasing process from one vendor to another, in terms of sharing the relevant information of the IP addresses and certifications without going all the way back to the starting point. Netpay is a micropayment protocol that is supported by Payword scheme, as a result, it is a decentralized micro payment system that allows fast payments. (Dai & Grundy, 2007)

A study about the different architectures that could be present in a micropayment system showed that the categories are defined upon the way the transaction is initiated. That being said, three alternative are generated: payer initiation, payee initiation and a jointly

initiated payment. The first category regards those transaction where the payer is the only one who provides information. In the second category, though, it is the payee who provides the information. Not many micropayment systems fall into this category. At last, a jointly initiated payment is the most common micropayment structure and both payer and payee provides information to start the transaction. From the payee side, it supplies with content, descriptions, prices and the availability of the product. From the payer side, he/she provides financial information to sort the payment out. Paysafecard and Click&Buy fall into this category.(Parhonyi, Pras & Nieuwenhuis , 2005)

Chapter

III

Chapter III – Analysis of Traditional Payment Systems

The electronic payment system has started to be more and more popular when for the consumers the easiness became a principal variable in the life equation. By now, the electronic payments are the major choice for individuals, businesses and governments alike.

The payment systems that in this research are considered traditional are mainly the ones that are known and used worldwide, the ones that helped the new payment system to be born making improvements to the traditional ones. The main traditional payment systems are:

- Cash transactions
- Giros, wire
- Credit cards
- Debit cards
- Rechargeable cards
- Stored-value cards
- PayPal

The aspects considered during the analysis are: - Brief Description of the payment – Principal actors – Transaction Flow – Cost for the customer – Cost for the merchant – Benefits of using it – Drawbacks – Barriers to B2C system – Devices used.

3.1 Cash Transaction

The cash transaction as the name said it is referred to “Cash”. These kinds of transactions involve money immediately after the service or product is received. In case one of the parties does not pay immediately, it is not more considered as a cash transaction. As usual, the principal actors are Customer and Seller.

The following figure is the representation of a simple cash transaction with no time in between the received product or service and the seller receiving the cash.

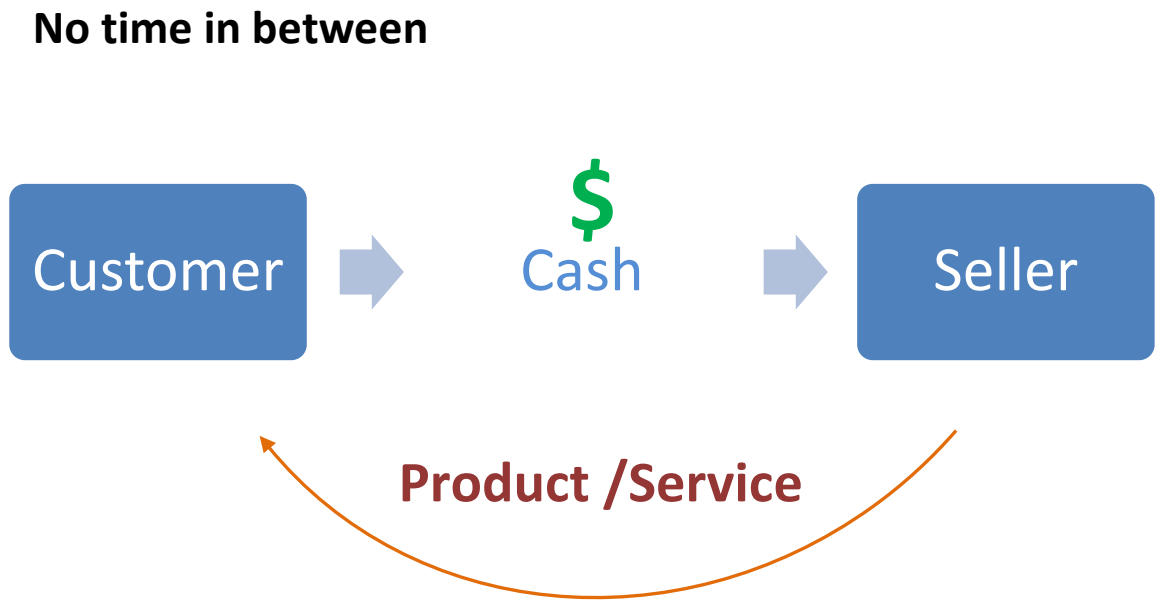


Figure 7. Transaction flow of Cash

A very simple example of this payment system is when a customer buy a random article in a store, he or she first choose the product, take it and pay to the seller in order to take it with him/her. It is a side 2 side win → both parties are receiving “something” in the same lapses.

As a matter of fact all the payment systems have benefits and drawbacks. The main benefits of Cash is that the seller will always has a cash flow or cash circulation, another main benefit is the fact that the seller receives the contribution immediately without any

worry about settling a payment date or customer debts. Regarding that the merchant has cash flow he/she can always use it to get involved in another type of businesses or transactions.

By the other hand, the drawbacks are considered mainly when the transaction is a large one, it means that the quantity of money is almost not easy to handle, so the risk of robbery rises. The easiness for the merchant became also a disadvantage since it is also an advantage for thieves or fraudulent people. There is a high risk of being involved in fake money or in "Laundry Money" (1). Normally, large cash transactions are made with illegal money that in order to make it legal, people buy big stuff paying with cash.

The cash payment system in the evolution of systems has been left behind because everyday new types of payments are being developed; payments that take into account the easiness, the security (for customer and also merchant), the reduction of time transaction and the issue that implies the benefit of doing purchases without interaction or without going physically to the store. Summarizing this kind of payment has no an evolution in technology there is no "window" for a technology expansion or improvement.

3.2 Giro – Direct credit transfer.

Giro payment system is a type of payment that simply means "Circulation of Money" (as the meaning in Italian = "Circle"). This payment is used through bank accounts. It can be realized by two different ways; one of them is when the customer goes to the bank and makes the transfer of money to another account (vendor's account)(3). Actually, with the help of internet the transfer of money or giro can be completed easily from the computer; in order to be able to do it the bank of the customer must have a platform for Banking-Online, which without having the cash physically, the transaction can be successfully done. It is important to highlight that in order to make the payment it is

highly needed the seller bank details as name of the bank, SWIFT number (unique identification code of a specific bank), name of the account's owner and account number.

The principal actors involved in this transaction are the customer, the seller, the customer bank and the seller bank. (In some cases the bank can be the same).

The initial action for a business man in order to receive payments from a customer is providing the correct bank name, account and name of the account owner and SWIFT number. (An easy way to offer these details is by using a bank transfer slips). The second step is made by the customer who makes the giro/bank transfer (the time for the merchant to receive the payment can vary from bank to bank or can be even longer if it is an international transfer. If it is the same bank the transfer can take only one working day but in case it is another bank it can take between 3-4 days.

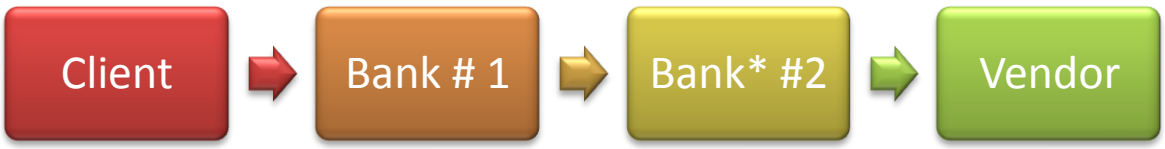


Figure 8. Transaction flow of Direct Bank Transfer

By the other hand there is also the issue of the cost, for this payment system the cost is variable from country to country, but in general it is between $3,40 and $3,50 (2). Nevertheless, there are different ways in order not to pay the commission; one of them is by having a long term product in the bank or by being subscribed to Banking-Online.

Some of the benefits related to giro or bank transfer is the accuracy of the bank in transferring to the right person with the bank details asked in the moment of the transaction. Another benefit considering the vendor is that the money arrived to the bank account so in case of large amount of money it is safe in bank with no probabilities of being robbed. Taking into account the banking-online, it is also an easy way without going out from home to make different payments as electric bill, rent among others.

The main weakness is TIME because the transaction takes many days in order to be complete, so in this case the money does not arrive fast to the final destination. In the other hand without considering the Banking- online, the transaction takes even longer because the client has to go physically to the bank office in order to send the money.

As a drawback it can be also consider the issue of going to the bank to transfer (case of transfer by bank office) with all the bank details of the person you want to make the giro to, because in case of a mistake the transaction cannot be complete. For the case of Banking online the need of a internet connection and the need of a computer is also a weakness.

3.3 Credit cards

Payments that involve credit cards means mainly that the cost of the product or service will be paid later on, it means that the customer is able to create a balance of debt that it will be subjected to a percentage of interest depending on the time promised to pay the whole amount. In other words, the client is paying with “no existing” money. In comparison with debit cards the money is not subtracted from a real account, but the amount paid will be a debt for the client. The before mentioned “no existing money” is money that belongs to a revolving account of the card issuer that grants a line of credit (Debt) to the user, from this account he/she can take money for any kind of payment to a vendor and also as a cash advance.

The card issuer can be a bank or a credit union, this entity has to approve a specific limit of money that the card holder can spend (This limit is set depending in the customer’s details and economical stability including: Income and Credit History)(6).

The principal actors in this transaction are the consumer, that is the credit card holder; the bank or credit union, that issues the card; the merchant, who receives the money; merchant’s bank, who accepts payments with credit card.

The interaction between these parties is quite simple: the consumer has the credit card that has been issued by “x” bank or “x” credit union (which previously has already approved a specific amount of money to lend to the client); in the moment of the transaction the client agrees to pay in a lapses of a determined time. The merchant’s bank, this party is the one that accept the payments on behalf of the vendor and accepts transactions from the client’s bank and finally through this merchant’s bank the money enter to the merchant’s account.

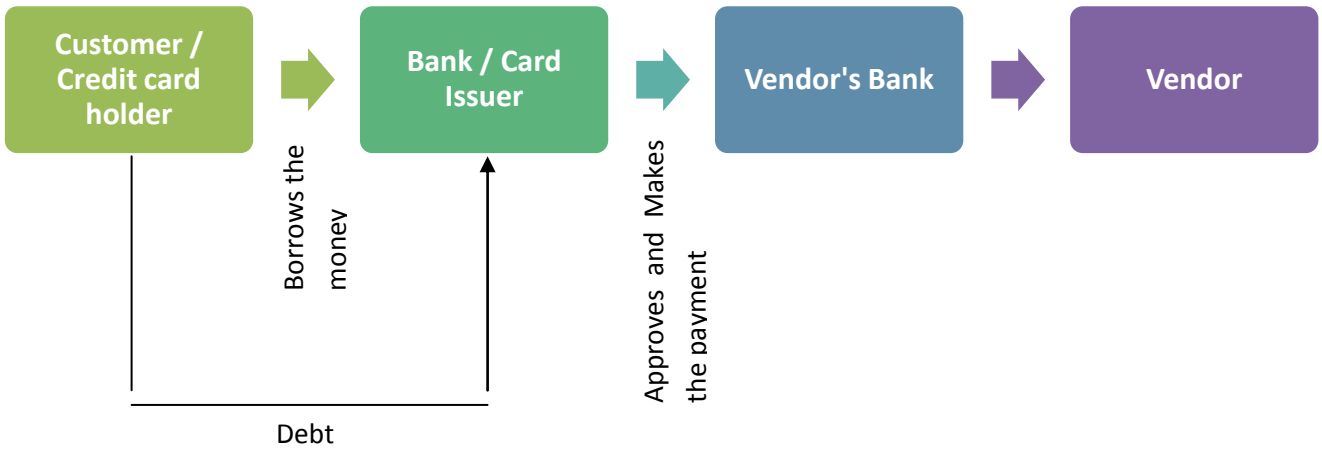


Figure 9. Transaction flow with credit card payment

The debt is agreed to be paid in a “x” period of time, depending of this time the interest for the customer increased. Theses interests related to the debt of the cardholder can vary from bank to bank. In fact some banks have different plan of payments where the interests are really low and the fee of using the card is free.

From the merchant’s view, the bank asks for a commission of every transaction that it receives from credit cards of 1% to 4% of the value of the amount purchased; according to this the acquisition of a low value are not profitable for the vendor.

The main benefit regarding the customer is the simplicity of lending money to the bank, that afterwards it can be paid by dividing the amount monthly. For instance, if the customer does not have the amount of money in his/her account, he or she still can make the purchase agreeing with the bank that they will pay by signing a paper that compromises them.

The benefit regarding the sellers is that the payment of credit cards is really common so giving the possibility to the customers "opens the door to whole new market segmentation".

By the other hand, as every payment system the credit card one also has drawbacks, the main drawback regarding the point of view of the customer is the higher cost he/she will pay for the purchase. Including the interest of the bank card issuer, every month the total amount to pay will increase so at the end of the period established to pay, the customer will disburse a higher amount of money. From the seller's point of view as it is explained before, the main drawback is the fact of paying approximately 1% -4% of the transaction to the Bank.

For the B2C system the barriers are the drawbacks that were explained previously, but also the time that the transaction takes to be completed: 1. Authorization – 2. Batching (all the authorized transactions) – 3. Clearing and Settlement and 4. Funding. According to a concept of a not face-to-face purchasing the customer would have to give personal data in order to accept the payment as a matter of fact it is not so convenient from the point of view of security.

3.4 Debit Cards

The payment with debit cards is very similar to the credit card one, (explained previously), the main difference is the fact that when the payment is made the money is taken from the customer account and in this case the customer does not have any debt with the card

issuer. This payment consists of having an account in a specific Bank, this bank issues the card that it is use for any payment, another difference between debit cards and credit cards is that with the debit cards the user has a password and with this password the payment is approved.

The principal actors in this transaction are the consumer which is the credit card holder; the bank or credit union, which issues the card; the merchant, who receives the money; merchant's bank, who accepts payments with debit cards.

The interaction is basically described as: the consumer has the debit card which has been issued by "x" bank or "x" credit union (where the client has his money in an account. When the transaction is made, the money from the account is moved to the business or merchant account. The merchant's bank, this party is the one that accept the payments on behalf of the vendor and accepts transactions from the client's bank and finally through this merchant's bank the money enter to the merchant's account.

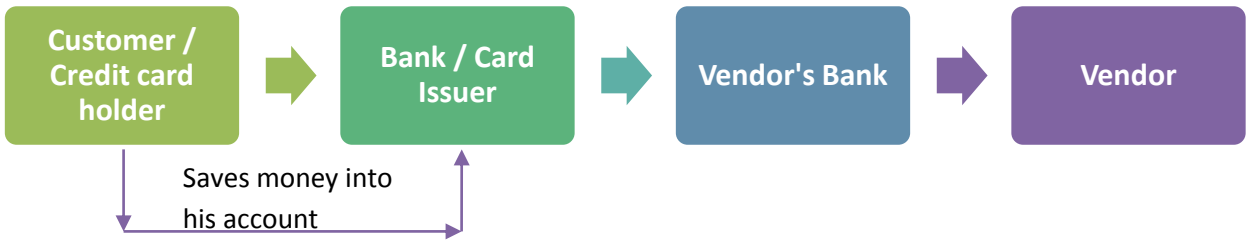


Figure 10. Transaction flow with debit card payment

From the merchant's view, the bank asks for a commission of every transaction that it receives from debit cards of 1% to 4% of the value of the amount purchased; according to this the acquisition of a low value are not profitable for the vendor.

The benefits for the customer are no more cash handle, so it reduces the probability of being robbed also it is more easy and simple to make payments which debit cards because it is quite similar to the payment with cash. From the vendor's point of view it raises the sales, because for it gives another possibility to the customer to make

payments. The vendor does not handle cash, so it is the same as the customer the reduction of the probability of being robbed.

From the point of view of the client the weaknesses of paying with a debit card is losing the notion of how much he or she is spending because there is no a "material" sensation. (This issue of course is a benefit for the vendor). In the other hand, considering the vendor, the main weakness of this payment is the fact of paying the 1%-4% to the bank in order to accept the transactions with cards.

The barriers that this kind of payment may have are mainly related with the insecurity of pressing the personal password of the card in the store. Also, it can be consider that some of the card issuers in order to prevent the falsification of the cards via online or a false online transaction they set different personal question and another password that has to be verified in the bank page, this issue of course can be a disadvantage because for online thieves it can be a way of creating a fake web page to get the personal information required to make any kind of transactions. Regarding the key word of "*simplicity*", the debit and credit card payment has to be done with a secure internet connection, preferably a home internet connection to prevent any kind of falsification.

3.5 Rechargeable cards

The rechargeable cards are mostly related to the credit cards. They purpose is mainly to be able to make easy online payment. The way that they work is: the customer recharges the card in the bank with cash, with a specific amount of money. Then, it can be used to make online payments, without using any password. When the online transaction is done the money is transferred to the vendor's account. The main difference between using this card and no the credit or the debit card is that the customer does not have the need of having an account with the bank, thus the bank does not have any implication in the

payment. (In case of withdrawing it is also possible by using the password that is printed in the envelope where the card came).

The actors involved during a transaction is the card issuer /bank, the client, the merchant's bank and the merchant (as a final receiver).As it is explained before the bank does not have a real interaction but it is the one that makes the transaction even if the customer does not have a real account, but still has the product itself: the rechargeable card.

The flow as the previous payments is mostly the same, including the fact of the customer which has to make a deposit in the card ("*recharge the card")* to start using it. Normally the customer has to go the bank and make the deposit, but there are some banks that take into account the fact of having a saving account plus the rechargeable card, and in this specific case it is able to do the deposit online. After having the card recharged with enough money to make the purchase, the customer pays for the article or service, the card issuer makes the transfer and the vendor's bank receives the money on behalf of the vendor.

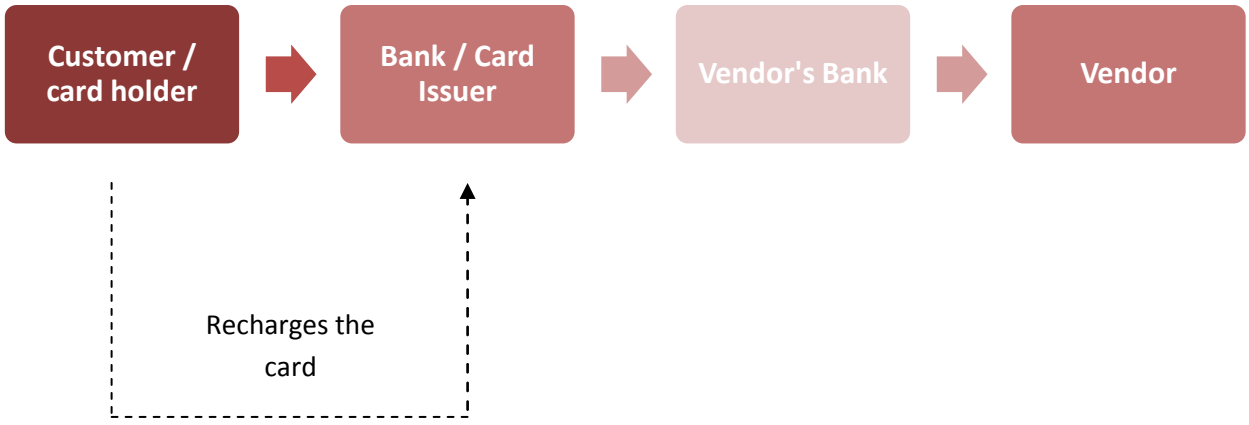


Figure 11. Transaction flow with Rechargeable card payment

The cost for the costumer is related to the amount of money that the card demands to leave as a deposit; it means that there is a really small amount of money that cannot be spent. In the case of the vendor there is always the percentage of receiving payments with cards, which can vary from 1% to 4% of the purchase.

The strengths that this payment has is the detail of not having any kind of debt with the bank (no bank account), being able to control the expenditures because the customer can spend only and just only what he/she deposit in the card without the possibility of exceeding the “budget”.

The weaknesses related to this payment are also correlated to the benefits, because it is a fact that the customer cannot spend more than what he/she deposited in the card, but in case of needing, the time to go to the bank and make the deposit is too much, also considering that the bank is not open 24/7 but only certain hours during working days. So it is a constraint that every purchase has to be planned in order to deposit the right amount. In the case of the vendor there is always the percentage of receiving payments with cards, which can vary from 1% to 4% of the purchase.

The barriers to B2C system is the fact of having a limit of money in the card that does not let the customer to make the purchases that he/she wants.

3.6 Stored-value cards

The stored- value card is a payment system that works in a specific store (that is why it is called stored- value). The card is issued by the store, and there is no need to give any name of the issuer, because it can be anonymous. This type of payment has more or less the same functionality of the rechargeable card, where there is an exact amount in the card but it has to be deposit in the store where the purchase is going to take place.

Normally, this stored- value card has an expiration date, thus the purchase has to be made in that lapse.

In this system, the actors that are involved are mainly the card holder and the vendor's bank on behalf of the vendor. The card is as any card with the black stripe where the card number is encoded and with this encoded number the client has access to his/her money.

The flow by using a stored-value card is when a store issues the electronic card to the client (who is not necessarily the one who has to use it to buy), the card is loaded with a specific amount of money, during the transaction the vendor uses a terminal that deducts the cost from the card at the same time of the purchase.

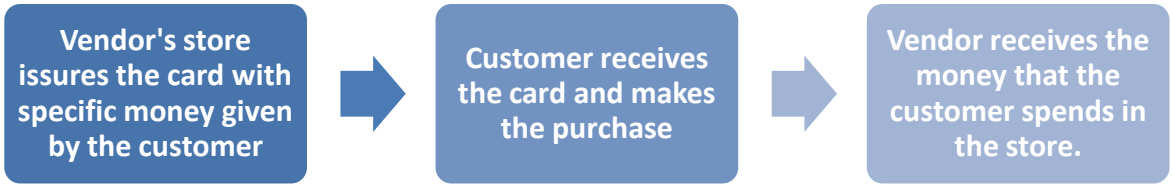


Figure 12. Transaction flow with stored-value card payment

The cost related to this kind of card are considered minimum because the client can use all the money that the card holds, and for the vendor it is a card that only can be used in his/her store. In other words this kind of card made the replacement of gift certificates to make purchases in stores.

One of the most important benefits, considering the client, is the fact of being able to spend all the money that the card has. Additionally, the customer does not have any risk of giving personal data in the moment of issuing the card. The card can be used by any person; this is the principal reason of why it can be a gift to a friend or family member.

The card can be only use in the store where it was issued, so the vendor in this case already knows that the customer Y will make a purchase sooner or later. If a business is using this kind of cards it is an advantage and a point of comparison because it is an alternative for the customer to give a good present to a friend without spending too

much time in choosing the perfect present, thus the card holder will be able to buy whatever he/she like (Of course with a price equal or lower to the money that holds the card). In case the purchase has a higher price the customer can give the difference to the vendor by using another type of payment.

The drawbacks found during the research are: the customer has no opportunity to choose another store but the one that issued the card; in case of losing the card, another person can use the card with no problem because there is no name related to the card; the need of going to the store to issue the card and loading it with money and no possibilities to make the purchase using the card online.

3.7 PayPal™

PayPal™ is not the standard traditional payment system but from the innovative payment, this one is one of the most popular that nowadays (and in this research) it is considered as a traditional way of payment. This payment was founded by Peter Thiel and Max Levchin in December 1998 under the name of Confinity as a result of merging the words confidence and infinity. BY the end of 1999 the first PayPal™ demo came out, allowing people to email payments. On the upcoming year, the revolutionary PayPal™ took over most of the users, becoming the mainstream way of online payments. Consequently, the company changed the name into PayPal™ as a result of its popularity. By October 2002, PayPal™ attracted the attention of one of the most popular auction websites; eBay, after being the chosen method of payment by the whole buying community. It was such a big impact that Billpoint, eBay's currently payment system, was phased out for the commerce operations of the website.

By using PayPal™ the main actors that take part of the transaction is the customer, the PayPal™ server, the eShop Server and vendor's bank account.

The flow of a transaction using PayPal™ as a payment system is really after customer and vendor have their account registered on PayPal™ webpage, the customer is able to make any online purchase if the store also has the alternative of PayPal™ payment. After those steps, the customer makes the payment, the PayPal™ server needs to verify the transaction, when the transaction is verified and approved, and the eShop Server processes the transaction and transfer the money of the purchase to the vendor's account.

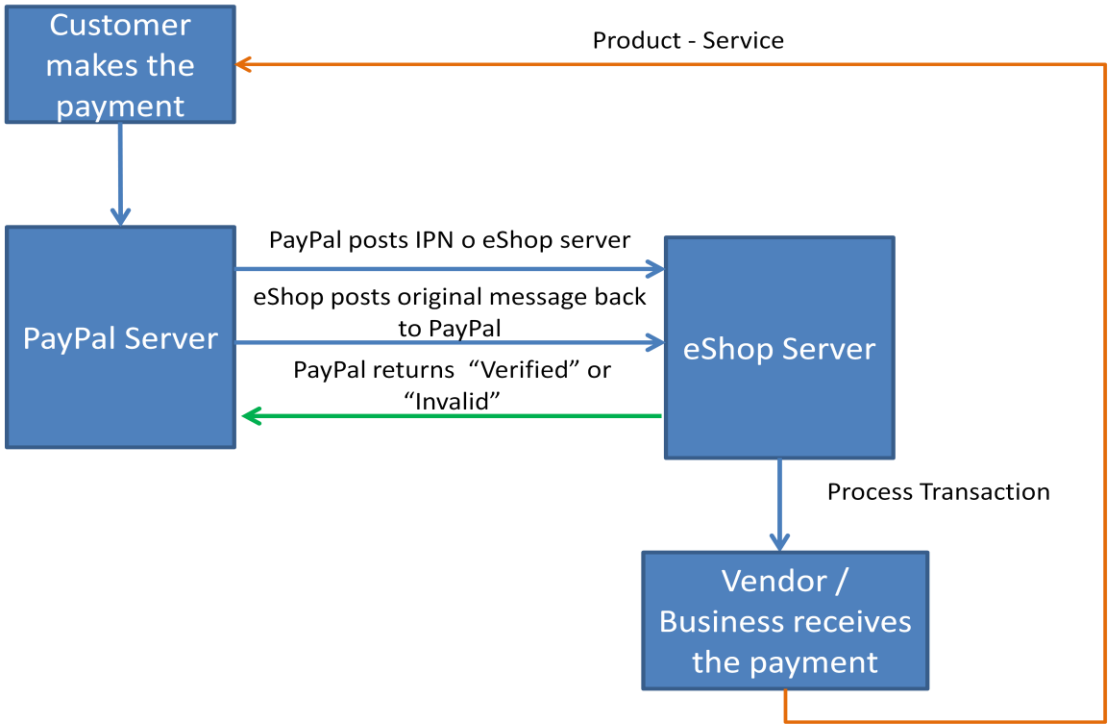


Figure 13. Transaction flow with PayPal

There are three PayPal merchant fees for business; **PayPal Payment Standards**, **PayPal Payments Advanced, PayPal Payments Pro.**

PayPal Payment Standards, This kind of settlement, if the basic package of PayPal which is simply the fact of accepting credit cards from customers, online sales, invoicing, and in-person payments

PayPal Payment Advanced, with the advance package the merchant can get all the transaction online, invoicing and mobile payment tools, plus the extra advantage of allowing the clients to check out directly on the merchant site.

PayPal Payment Pro, the third and last one has the same features of the two previously payment explained, but the important feature is that the vendor can develop an unique payment processing solution, for example: Customizing the checkouts (Color, brand, layout) and the computer of the business turns into a credit card terminal.

The next table shows the different fees for different kind of transactions, each column belongs to the different payments that PayPal offers.

SOLUTIONS	PayPal Payments Standard	PayPal Payments Advanced	PayPal Payments Pro
MONTHLY FEE	$0	$5	$30
SETUP FEE	$0	$0	$0
TRANSACTION FEE FOR ONLINE PAYMENTS (based on monthly sales)			
$0 to $3,000	2.9% + $0.30	2.9% + $0.30	2.9% + $0.30
$3,001+ to $10,000	2.5% + $0.30*	2.5% + $0.30*	2.5% + $0.30*
$10,001 to $100,000	2.2% + $0.30*	2.2% + $0.30*	2.2% + $0.30*
$100,001+	2.2% + $0.30*	2.2% + $0.30*	2.2% + $0.30*
TRANSACTION FEE FOR CARD READER (Swiped and PayPal transactions)	2.7%	2.7%	2.7%
TRANSACTION FEE FOR CARD READER (Typed and scanned transactions)	3.5% + $0.15	3.5% + $0.15	3.5% + $0.15
TRANSACTION FEE FOR VIRTUAL TERMINAL PAYMENTS (based on monthly sales)			
$0 to $3,000	N/A	N/A	3.1% + $0.30
$3,000+ to $10,000	N/A	N/A	2.7% + $0.30*
$10,000+	N/A	N/A	2.4% + $0.30*

It will be discussed in Chapter III

Figure 14. PayPal Price Chart. Source: PayPal.com

PayPal is known mainly for the security of the payments, for instance with this payment the credit or debit card registered in the PayPal web page is not shown during any transaction. Another adjective that is related to PayPal is the simplicity, because in order

to complete a purchase is just needed the PC or mobile and log in with the email and password; it is also pertinent that for the customer it is available tracking the transactions . The benefits for the merchant are mainly the facts of being simple, the sales are really easy to make; it is also fast, because it accepts 25 different currencies and it is available in 190 countries **(PayPal ™, PayPal.com)**

Thought, the IPN allows PayPal to updates its records, there is a risk of saturation of the servers the more customers use PayPal, since PayPal resends the notifications four days after the first post of the IPN. Another consideration to take into account is that PayPal™ is an independent business, and unlike Banks does not have the same procedures and regulations, so it is autonomous for resolving problems or disputes with the users without the right for appealing. Another issue to consider is the fees that the seller has to pay in order to make or receive any kind of transaction.

Paypal™ is always searching for new ways of innovation, ways of making transaction more simple and available from anywhere and anybody. By now, it is also penetrating the market of M- Commerce. (Continue in Chapter III)

The revenues in 2012 had a growth of 25%, and an increment of 1,22% in the total Payment Volume. For the 2013, Q1, the revenues were growing by the 20% , for the first quarter of the year it finished with 128 million active accounts globally adding 5 million new active accounts during the same period.**(Forbes Magazine,2013)**

Chapter

IV

Chapter IV – Analysis of Innovative Payment Systems

The innovative payments are the ones that are revolutionizing the way of purchasing merchandise, as it was explained in Chapter II, nowadays the simplicity and innovation are very important in the daily life, with the whole researches of technology and the new discovers, the payment experience has been also improved from many different points of views (also regarding the security). The process of the transaction is every time getting shorter and shorter and the product or service is getting faster to the client. Not only the cards are having different kind of use but also the wireless payment, the mobile commerce and the new devices used for purchasing are in the vanguard of the payment market.

4.1 PayPal ™ Here

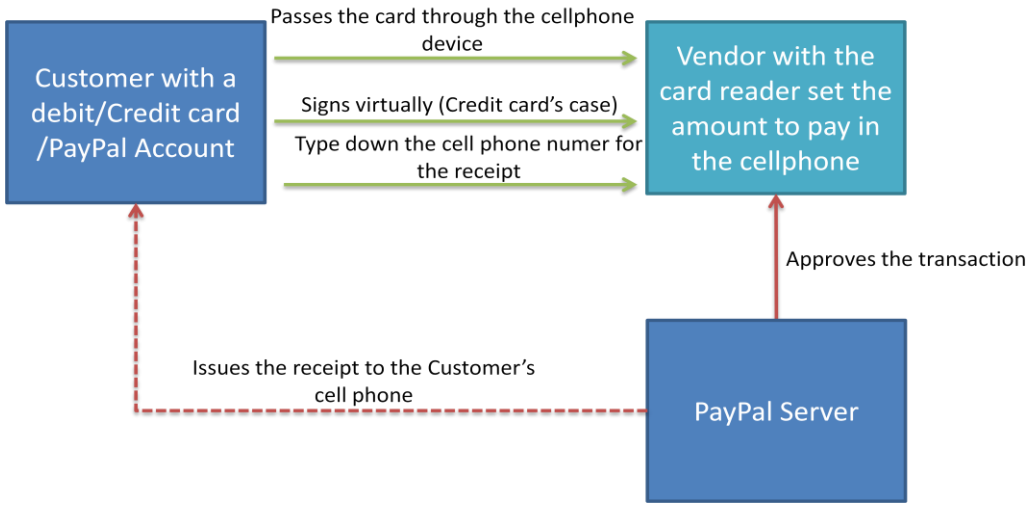


Figure 15. Transaction flow with PayPal Here

In *Chapter II – Traditional Payments* PayPal ™ was discussed, but in this Chapter – *Innovative Payments,* it will be discussed the new device introduced in the market, that is another benefit that the vendor can have in order to raise the sales by giving different alternatives of payments to the client. The new device is a card reader; it mainly works by plugging a small device in the vendor's cell phone, it accepts credit and debit cards, PayPal™ and also checks, the device can be used as many as 20 employees. The actors involved during the transaction are the client and the employee.

By using this device, the employee set the price to pay, then the customer passes the card through the device and signs virtually (In case of a credit card) and the transaction is finished.

The cost for the merchant is also different depending on the kind of payment that he/she has (**Standard, Advanced or Pro).** The next table gives the fee for each of them.

SOLUTIONS	PayPal Payments Standard	PayPal Payments Advanced	PayPal Payments Pro
MONTHLY FEE	$0	$5	$30
SETUP FEE	$0	$0	$0
TRANSACTION FEE FOR ONLINE PAYMENTS (based on monthly sales)			
$0 to $3,000	2.9% + $0.30	2.9% + $0.30	2.9% + $0.30
$3,001+ to $10,000	2.5% + $0.30*	2.5% + $0.30*	2.5% + $0.30*
$10,001 to $100,000	2.2% + $0.30*	2.2% + $0.30*	2.2% + $0.30*
$100,001+	2.2% + $0.30*	2.2% + $0.30*	2.2% + $0.30*
TRANSACTION FEE FOR CARD READER (Swiped and PayPal transactions)	2.7%	2.7%	2.7%
TRANSACTION FEE FOR CARD READER (Typed and scanned transactions)	3.5% + $0.15	3.5% + $0.15	3.5% + $0.15

Figure 16. PayPal Price chart. Source: PayPal.com

Of course this payment that is owned by PayPal™ includes the same benefits previously explained but what makes the difference is that the customer can also make the transaction without the need of a pc or a mobile with a payment application.

The main drawback is the fact of signing in a mobile device, that in case of the falsification, the sign of a client is very valuable. From the merchant's point of view the fees of transaction are quite elevated if it is considered a purchase of small amount (Profits will be very low).

Considering that PayPal™ already has different kind of product with different benefits as doing purchases really easy from a PC, now having the same philosophy but with a new approach to the m-commerce, it makes it even more profitable for the merchants.

4.2 Bitcoin

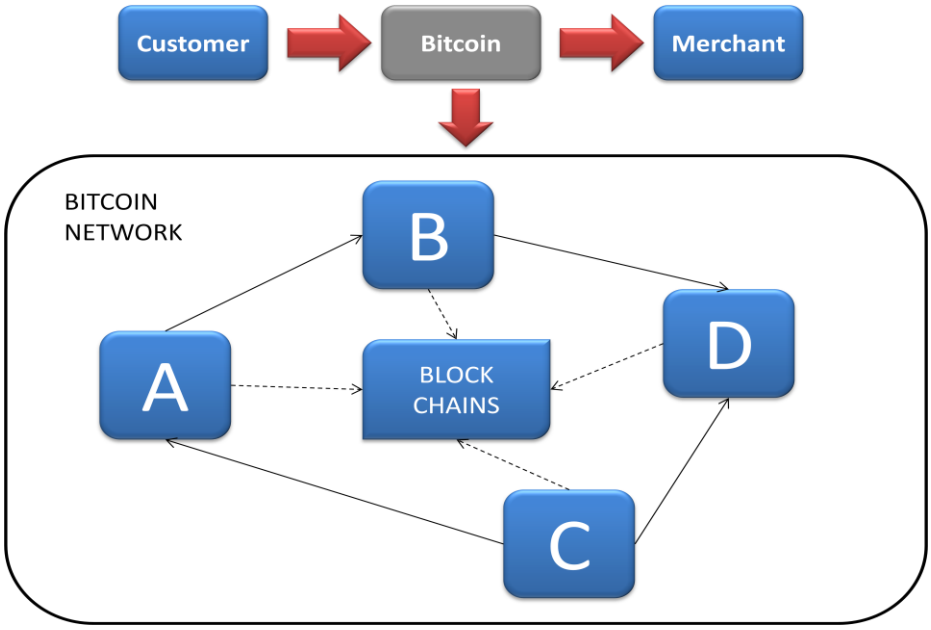


Figure 17. Transaction flow with Bitcoin

Bitcoin started as a pilot project in 2009, then managed to call the attention of the press to such extend that the expansion started. Up to this days over 25 millions of transactions have been done with different amount, being 2011 the year in which transactions took off at a higher speed.

Bitcoin is a peer to peer electronic system in which a digital coin is transfers from a customer's wallet to another. In this system, there is no such distinction as who is a merchant and who is a common customer, Bitcoin works exactly the same for any of the participants. The system is composed by three basic elements: the peers, the block chain and the Bitcoin network. In order to initiate a transaction between peers, for instance, it is needed A to have B's wallet address so the later can received the coins. At the moment

of initiating the transaction, A is requested to insert in the coins the recipient's public key, in this case, B and to confirm the transaction by introducing A's private Key. Each transaction creates a registry that is stored in the block chain, which gives visibility of what each user has transferred. Bitcoin network is in charge of verifying the validity of each coin transferred and making sure no double expenditure of coins is being done.

Bit coin is almost free to users, since there are no 3rd parties companies such as banks, interfering as intermediaries, there are no additional fees nor taxes associated to the transactions. The cost for the user can increase during a micropayment transaction or by paying a voluntary amount so that the priority of the transaction is higher. On the other hand, Bitcoin's high cryptographic security allows merchants to process transactions in a very efficient and inexpensive way.

Bitcoin is payment mainly digital, thus it only required the user to download the official Bitcoin wallet directly into his/her computer or mobile phone. The Bitcoin wallet is an application that stores the address for the customer to send/receive money and also to control the balance of coins for each customer's account. Hardware wallet for offline savings is still a pilot project of Bitcoin and it is intended to increase the security when storing the coins. Since no software is allowed to be installed inside this physical wallet, the risk of thieves is decreased. In case of losing the wallet, the backup of the coins is allowed. Bitcoin is still in a experimental phase and not being recognized by many markets, makes its economy volatile, so price might change all of a sudden until the it matures and stabilizes.

4.3 Paysafecard

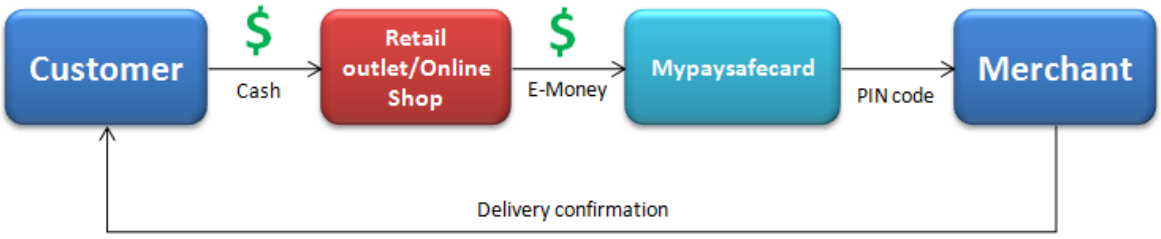


Figure 18. Transaction flow with Paysafecard

Over 4000 companies include Paysafecard as a payment option. 8 web stores only accept payments via paysafecard's PIN.

The structure of the Paysafecard system is very simple. It only has three main components such as the customer, the merchant and a connection to internet. Payments through Paysafecard can be executed through 4000 sites that nowadays permit the transactions via this platform. The operation starts when the customer goes to merchant site where Paysafecard payment is available. Then, the customer is supposed to introduce the PIN code of the card and if the amount stored inside the card is higher than the price of the item, the transactions is successfully completed.

My Paysafecard works as a electronic wallet in which individual Paysafecard cards can be stored together. It keeps a registry of every transaction done. Different pin code can be used together to pile up a higher amount. The platform automatically starts charging the money from the oldest PIN. The left amount can be reused in upcoming transactions. Storing all the PIN's in one place, allow customers to do transactions in a faster way without entering each of the PIN's . it just requires the username and password of the my Paysfecard account to validate the customer ownership

PINS have up to 12 month to be expended before a certain amount is charged. Though the quantity charged is minimal compared to the total amount stored.

And important advantage for those customers who want to go one hundred percent online is that they do not necessarily need to buy the scratch cards physically. They can buy the PIN directly from online and virtual stores. The payment method may vary from country to country, but once the PIN has been bought, the balance increases at the Paysafecard account. Moreover, Paysafecard is a secure payment system which does not need to expose personal data during transactions, it only requires the 16 digits of the card. Every movement done is recorded in the account and let the customer to check the balance afterwards.

On the other hand, If the card is lost before entering the ping, the money is lost as well. The only way to have back up and restoring the money is if the PIN's have been bought online through one of the virtual shops. It is not available for all the countries in Latin America. And for those in which is already functional, prices for Paysafecards could be really high, considering that Latin currencies are devaluated with respect to Euro which is the international currency for the cards.

4.4 Paybox

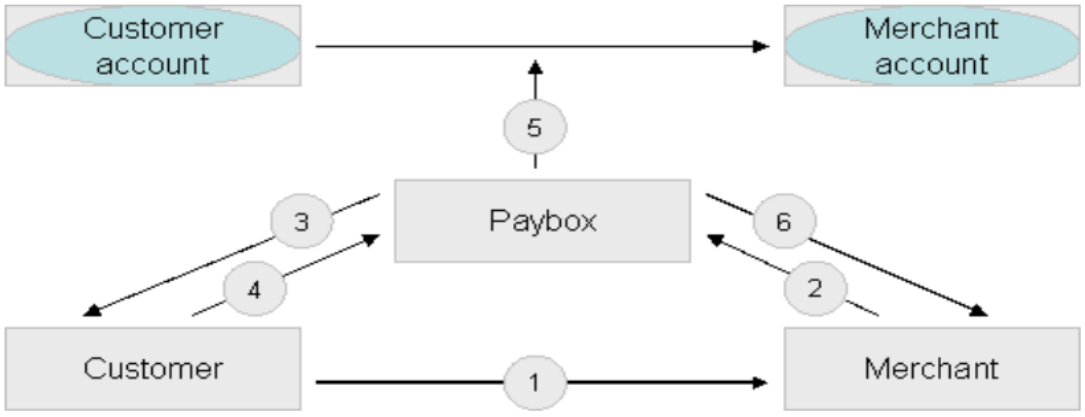


Figure 19. Transaction flow with Paybox

2

[2] *Mobile Payments:A Tool Kit For A Better Understanding Of The Market.* **Ondrus, Jan.** Lausanne : s.n., 2003.

Paybox has been in the market since 1999 in France as a multi channel operator, then developing some positioning; it opened to other 39 countries in Europe. Services are accepting over 15 payment methods nowadays with some potential for including more in the near future. Paybox belongs to the Point group.

Paybox is a trending micro payment system in the m-Commerce context that is also suitable for macro payment operations. The basic idea of this payment system is to do money transfer on behalf of the user, which means, it does not store user's money within the system, but it asks the permission of the customer in order to have a long term access to the customer's account at the moment of the purchase and do the payment.

Paybox's system is composed by five elements: the customer, merchant, Paybox and the account keepers of both participants. The flow of the transactions is very simple. Once the customer has successfully picked the item to buy, 1) the customer gives his or her phone number to the merchant. (2) The merchant immediately sends the phone number to Paybox. (3) Paybox contacts the customer and asks for the PIN. (4) Customer inserts the PIN. (5) Paybox Informs the bank in charge of debiting the money. (6) Finally, if the transaction is well processed, Paybox informs the merchant and thus the whole transaction is finished.

This payment system provides an easy-to-integrate solution that allows customers to have access to different payment systems. It also allows Paybox's users to have deposit and balance management. Since it is a multi channel operator and it is in between different platform and option when executing a transaction, it provides the services to guide and counsel during e-banking operations.

4.5 Payfair®

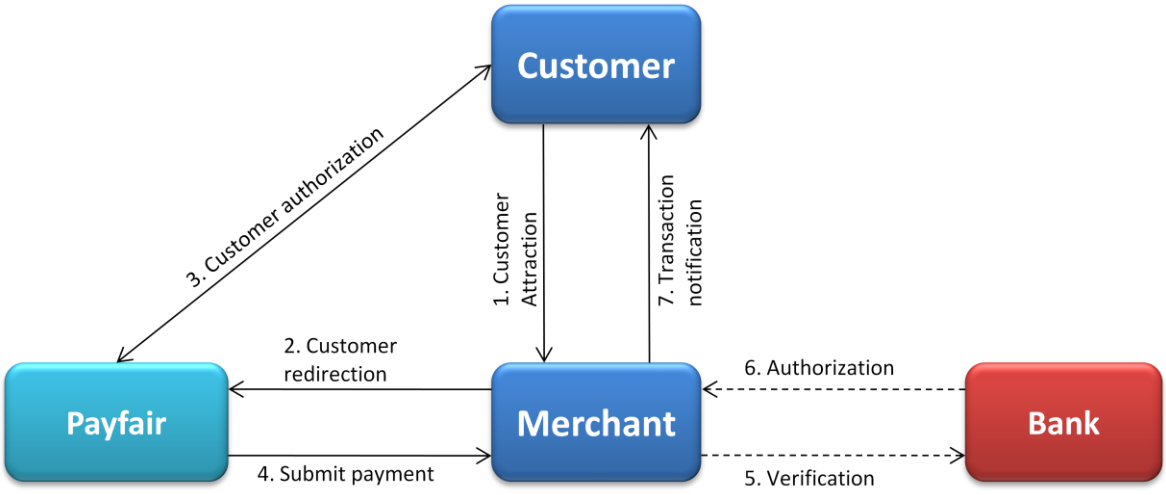


Figure 20. Transaction Flow with Payfair

Payfair was created in 2007 to compete with other card schemes provided by visa and MasterCard. 2008 was a year of further expansions since Payfair merged with Unisys. Nowadays Payfair is issuing over 2.5 million cards and many merchants are seeking to formalize the usage of Payfair accepted terminals.

Payfair is a top of the edge payment system which is characterized for being safe, fast and an incredibly easy way for the e-commerce. It no longer needs a physical card nor entering sensitive financial details every time during the purchases, because Payfair is registered in advance with a specific bank. To make purchases, customers only need a mobile phone and a computer with connection to internet. Purchases can also be done at points of sale or ATM, but it is extremely required to have some specific terminals to detect the unique encrypted signal generated y mobile phones.

First of all, customer visits the merchant website and once an article has been chosen, he/she selects Payfair as payment method. It is assumed that the customer has registered his/her Payfair account with a specific bank, where is hold his/her financial accounts. Then, customer is asked to enter a phone number and he/she is prompted to insert a PIN

number to make sure that the person is truly in possession of the mobile device. At last, in order to authenticate the customer, Payfair platform dials the customer' mobile phone and then he/she is requested to place the phone close to the computer so that, it can emit a unique encrypted signal that will be recognized by the system and automatically complete the authorization process. Subsequently, the payment is submitted and the merchant contacts, in a matter of seconds, the bank in order to check if there are sufficient funds. Finally, the customer receives a notification via SMS or e-mail confirming the details of the payment.

It takes no time to fully complete and authenticate a purchase. It a very secure way to execute transactions since it only requires to give in your mobile phone and no personal data. This payment method is also contactless in some sort of a way, because there is no need to slide the credit card or whatever other payment method into a terminal. This is very important because risks such a skimming or duplication of cards is decreased. Nevertheless, the whole system structure keeps being dependent from a bank which is the entity that retain the funds. Since such dependency still exists, any problem related to connecting to the bank, might interfere with the execution. Moreover, whenever there is a 3rd party, in this case, banks charges for banking services come along.

4.6 Octopus Card

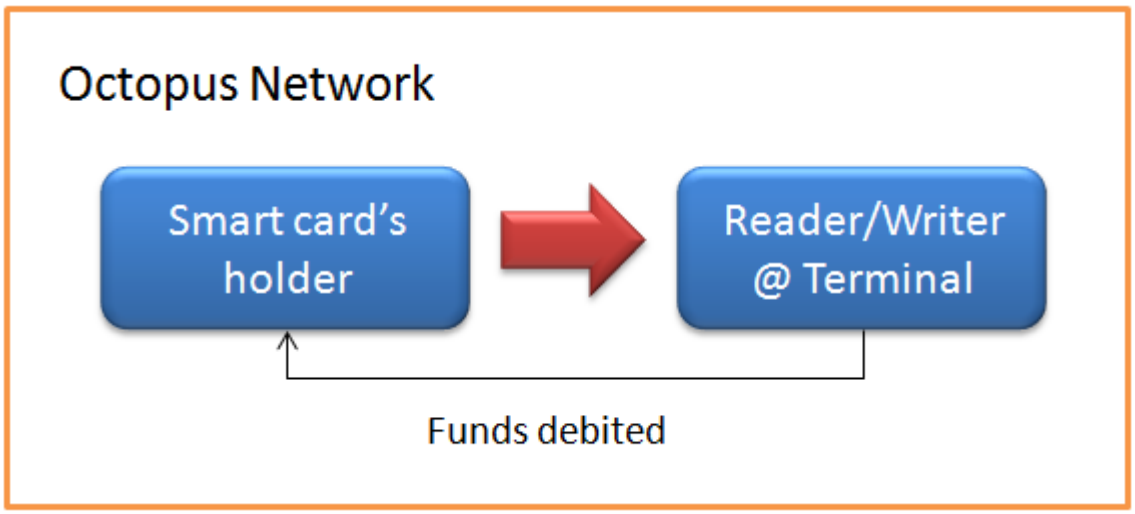


Figure 21. Transaction Flow with Octopus card

Octopus was launched in 1997 as a contactless smart card, initially as a solution to regulate and unify the payment system of the transportation sector in Hong Kong. In 2000, due to the high penetration and acceptance among customers, Octopus expanded beyond the transportation boarders to other payment sectors. Nowadays, this smart card represents over the 95% of the payables activities in the market in Japan.

Octopus smartcard is a very versatile way of payment whit only three components in order to power the transactions. The octopus smart card, the system and a reader or writer. The smartcard can be used at different places and for different purposes such as transportation, retail stores, self service machines, leisure facilities, parking, access control and online payments. To do so, the smart card holder is supposed to take the card to the reader which is going to control the amount inside the card and notify if the transaction can be performed. The whole transaction is performed by the Octopus Clearing House System that enhances operational efficiency while providing valuable insights into customer behavior.

Not only physical payment can be done at the end terminals, Octopus also allows its customer to do electronic payment over the internet after acquiring the Octopus PC Reader service. This service allows customers to start transactions from home with the possibility to track old records and keep the balance over the expenditures. Moreover, once the service has been used, the customer activates the reward system allowing him to take advantage of promotions and to earn fidelity points due his/her membership. In any transaction, the customer's personal data is not even required or managed, permitting a higher state of security and anonymity. On the other hand, since money is not stored in any different entity besides the card itself, means that by losing the card will take to losing the money in it without any chance of restoring it . Another drawback of this payment mechanism is the fact that it is limited only to those end terminals with the technology to support transactions via Octopus Smartcards.

The cost assumed by the customer is just determined by the value of the smart card, on an early stage. The cost can increase as the customer decides to assume some extras

facilities such as the Reader service, which will demand the acquisition of the proper hardware to do so. Regarding the cost for the merchant, it concerns the acquisitions of the platform in each of the touch points. Though it might represents a high investment at the very begging, the objective is to achieve economies of scales with all the participating operators by sharing a common infrastructure .

4.7 Google wallet

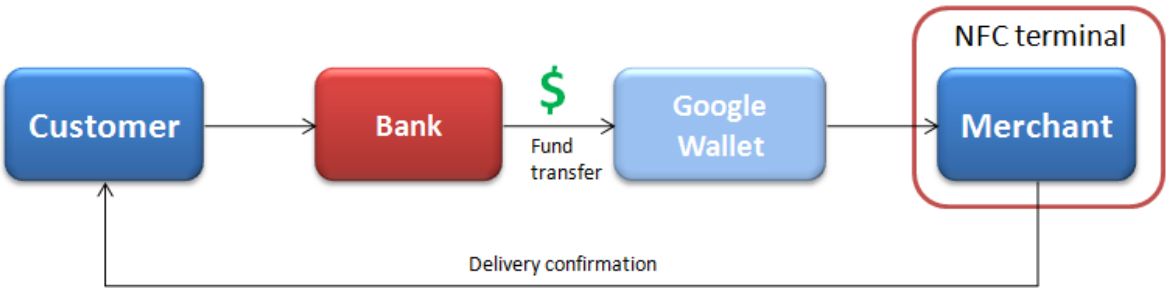


Figure 22. Transaction Flow with Google wallet

Google Wallet is the new core payment system powered by Google after merging with the original Google checkout which was a mechanism for just doing online purchases. Google Wallet is now assuming all the utilities that Google Checkout was meant for and also expanding the sector into the mobile commerce. Google Wallet will complete its taking over on November 2013 and Google Check out will be permanently disbanded after 7 years of operations.

It is a mobile application that let customer store their credit cards, loyalty cards, gift cards and Google coupons in the mobile phone. Almost any Smartphone nowadays is able to run this application to full potential and most of the mobile phones come with the NFC enabled so they can buy directly from the POS. since Google is linked with Gmail, Google Wallet allows sending money via normal e mails as if money was a common attachment. There the control and balance of the sent/received money is helped by a notification system at the e-mail.

Google wallet is really easy to implement. At PoS customers do purchases the way they usually do with traditional payment systems such as credit card or debit cards. The only difference is that this time, they will carry all of those instruments on their mobile phone and when requested, they will tap the device close to the terminal and finish the transactions. When the transaction is on internet, purchases can be done only if Google Wallet icon is present. In the meanwhile, as formal third party participants, banks instantly have to verify the funds and communicate both customers and merchants in order to finish the transaction.

It is a convenient way to pay and to make savings, at POS, with only the tap of the mobile phone. If the store is a single tap merchant, all rewards coupons and offers redeem automatically when the customers tap to pay. Google wallet is as safe as paying with credit or debit cards because the app is protected by both pin and optional screen lock and every detail of the stored card is encrypted inside the phone. On the other hand, Google Wallet might have some drawbacks and one of them would be the system limitations. This means that not all the participants of the system (customers or merchants) might be suited to do transactions via this payment method, for instance the user might not have a smart phones or the merchant might not have the proper terminal. Moreover, Google Wallet is just available in the United States where the new era of eCommerce is growing fast and a lot of competition would appear. Expanding the market could be a really important matter in the future.

Google wallet is a free application which charges no fees for mostly all of its utilities. Sending money to other users or doing wallet balance transfers is completely free except when it is done via credit cards. Receiving money is always free. Regarding merchants, they can keep on using their existing infrastructure, so there are no additional fees. Google wallet permits a lightweight integration which means that their current payment processor is still functional. On the other hand, merchants do have to acquire by themselves NFC readers that will allow to connect their terminal0,s at the POS, with mobile phones.

4.8 Amazon payments

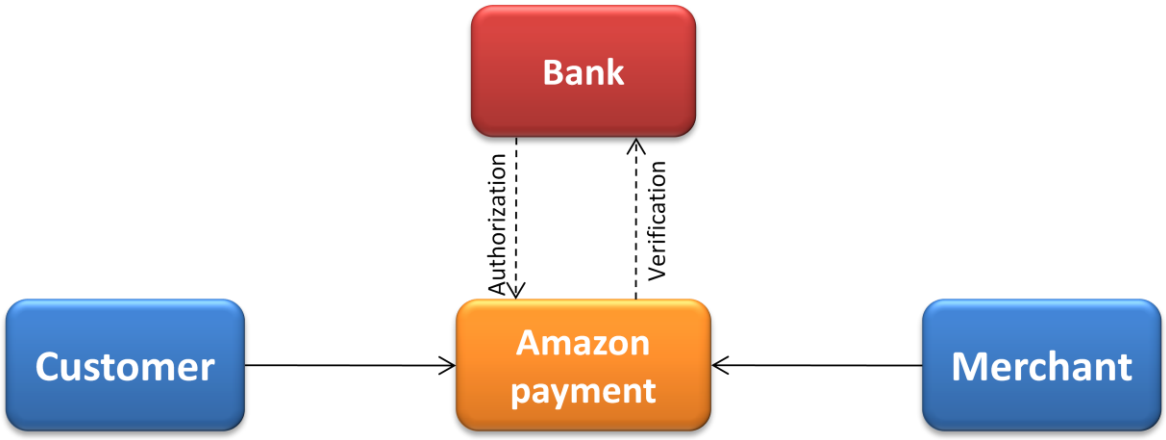


Figure 23. Transaction Flow with Amazon Payments

Amazon payment has had great acceptance by the online community since it is a brand new product from Amazon.com. Customers tend associate the quality and guarantee of Amazon services that are totally into using Amazon payments as their new predefined payment method when doing online purchases.

Amazon payments are a solution for customers that allow them to pay for purchases in other websites with their Amazon.com account. It is a quick way to do payments using the information stored in their Amazon account. So it is fast, secured and they do not have to register or introduce the same personal data every time they make a purchase. Amazon payment is now available for other platforms including tablets, kindles and smart phones.

Amazon payment is built on Amazon world class infrastructure, so reliability is not a matter anymore; it is as safe as Amazon itself.

Amazon payment is a service offered for both merchants and customers. The main idea is to offer a perfect customer experience while giving some credit to the merchant's brand. The structure of this payment method is very simple; customers can make purchases in any website through their Amazon account. Customers need to register for the first time into Amazon and include all the payment systems with the respective personal data.

Merchants need to procure the service from Amazon payment by requesting it beforehand via an online application. Finally, banks work as the money holder throughout the whole process. There is still the need of this 3rd party to confirm whether or not a transaction can be done.

Amazon payments for customers is completely free, they don't have to pay for acquiring it. Since it requires customers to include other payments systems, such as credit cards or debit cards, there might be an amount which can be charged from the bank entities controlling the cards. On the merchant side, they know up front what they are supposed to pay because there are no hidden fees or add-ons for monthly use, set up, cancellation or unused authorizations. Thus, merchants only pay when a transaction is done from their web site. Amazon payments fees for merchants is transaction based and the fee values are determined according to the transaction amount; 2.9% + $0.3 . Merchants can take advantage of economies of scales respect to the average monthly transaction volume so that the monthly fee reduces. Whenever a customer does a micropayment, the merchant's fee is also reduced. Those organizations that use Amazon payment as method to process donations, also get some discount in their monthly fee to a discount rate; 2.2% + $0.30

4.9 Paycash

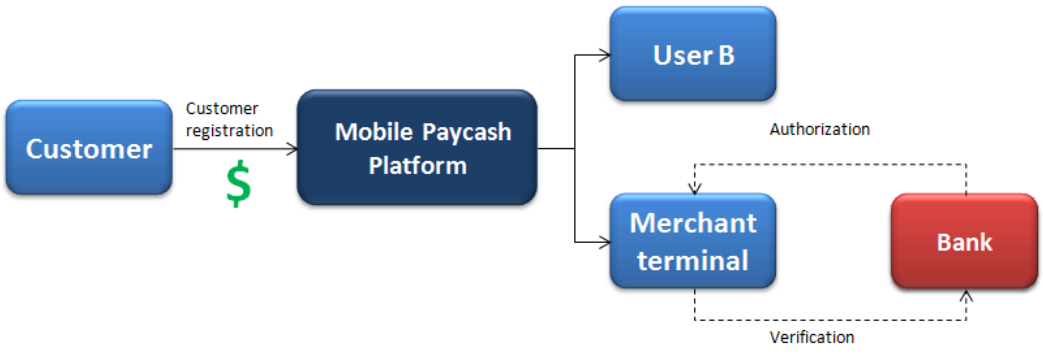


Figure 24. Transaction Flow with Paycash

Paycash is relatively new, it was initiated on March 2012 In Luxembourg and later that it has expanded to Germany. Paycash counts with around 19 partners in Germany and Luxembourg , mainly in the food and beverage sectors. Paycash is a commodity for all the users, that makes paying as easy as picking and eating a product.

it is a mobile payment solution for customers to use at points of sales. The customer just requires his/her mobile phone with the Paycash application which is going to generate a QR code at the moment of the payment. Then the mobile phone needs to be tapped into the Paycash terminal. If there is any coupon or promotion available, it is either stored or redeemed automatically by the app. The app is also suited for money transfers between users.

A Paycash user has the possibility for both sending money to other Paycash users or paying for product or services at points of sales. For both operations, a Paycash user A needs to do in advance a credit card or bank account registration in the mobile phone's Paycash platform. Furthermore, whatever the transactions type is (money transfer or payment at PoS), a QR code is generated and it is either scanned by the other user or tapped at the merchant terminal. Subsequently, money will be debited from the payment method registered at Paycash. Finally, merchants are supposed to do the authorization process with the bank and check whether or not funds are sufficient to proceed with the transaction.

It offers individual packages for business that are consumer oriented which make easier processing payments and to stay ahead of time. Giving the customer the possibility to store and keep their coupons or bonus cards in one place, impacts directly in their perception of the stores which makes really likely to earn a future sale. However, Paycash is still a new payment system that lacks of certain capabilities that are looked for by customers, such as payments from an online shop.

Paycash application is completely free for customers and it is available in every app store. Transactions and money transfers are free as well, nevertheless there are some costs that come upon requests for instance, and chargeback, account blocking and written summaries have to be paid by customers. On the other hand, merchants may assume a cost structure depending on the type of package they apply for and the size of their businesses. Note that the smaller the business, the less the cost out Paycash, though the higher the cost, the higher the benefits and utilities to customers.

4.10 Skrill

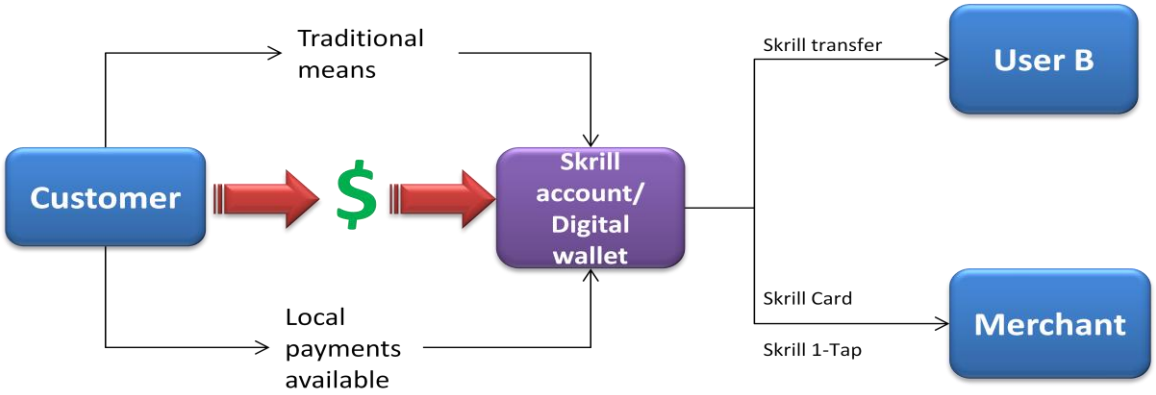


Figure 25. Transaction Flow with Skrill

Started by in 2001 as Moneybookers. In the course of the years, the company began cooperation with big enterprise such as EBay and worked it out to be the sixth fastest growing technology company in the UK. 2010 money bookers changed its name for Skrill. Nowadays, over 35 million customers possess a Skrill account, the send/receive money is available over 200 countries and 40 currencies and a wide number of payment options available for customer to charge funds.

Skrill is a innovative payment method that allows both customers and merchant s to pay and get paid globally. Skrill is a complex company that provides many products and commodities to customers such as, 1 tap payments via PCs, smart phones and tablet, digital wallets for online fast and secure payments and prepaid MasterCard Skrill card for online transactions or offline purchases where the MasterCard bran is accepted.

It is available in many countries around the world. It offers more than 100 local payment methods to charge the fund of the Skrill account, besides the traditional ones: Credit cards or bank transfers. The Skrill card is accepted is accepted almost everywhere and there is no 3rd party dependency, since all the money is store in a separate Skrill account.

Customers can charge their Skrill accounts or Skrill digital wallet by using traditional means such credit/debit card payment or bank transfers or local payment systems that are available depending on the country where the request comes from. Once the customer possesses an account with sufficient funds, he/she can send money to other Skrill users or go online to do purchases. Customers can make purchases by using their MasterCard Skrill card both online or offline wherever the MasterCard brand is accepted or from the commodities of their places thanks to Skrill 1 –tap that allows them to make only online purchases from PCs, Smartphones or tablets. Skrill, itself, is in charge of verifying if the stores funds are enough to both make the purchases an to pay for transactional fees.

Skrill is really cheap for customers, especially when it is about sending and receiving money. Sending money costs 1% of the total amount and it will never be higher thatn10 €, regardless. Charging and receiving money is always free. For the prepaid MasterCard Skrill card's holders there is a annual commission debited because of its usage and charges out from the cash retrievals from ATMs. Merchants, on the other hand, are charged by a standard initial fee to receive payments online; this amount may vary depending on the region where the money comes from. Additional monthly fees are charged to merchants when they implement the gateways service and occasionally due to chargeback for credit/debit cards and direct debits.

4.11 Sofort banking

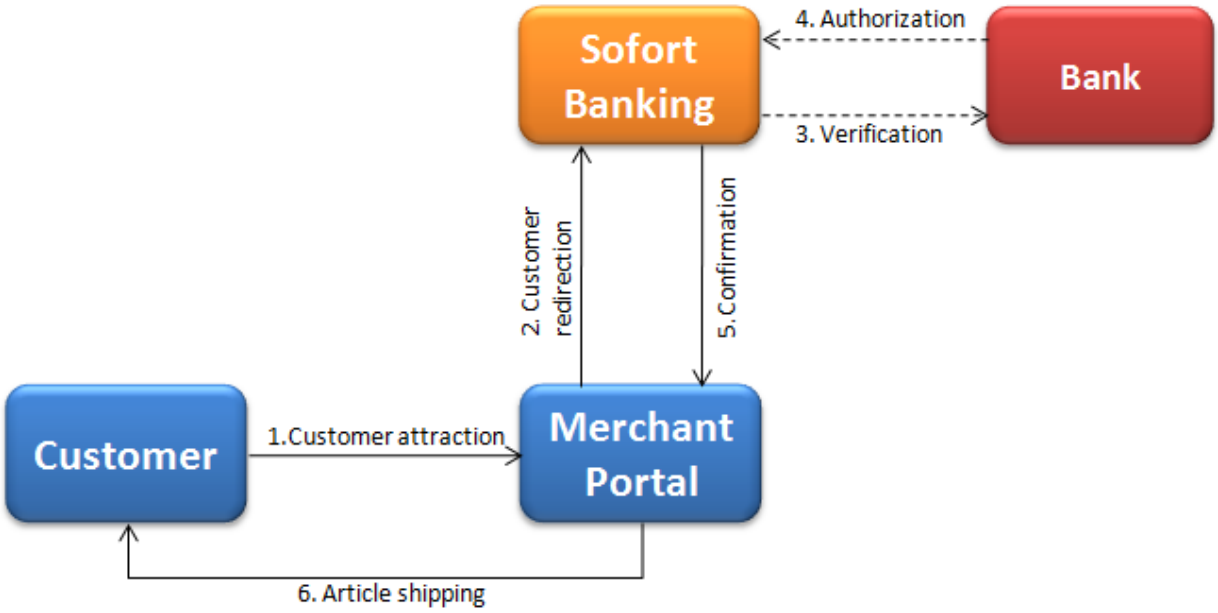


Figure 26. Transaction Flow with Sofort banking

Sofort Banking is very popular in Germany and it is now present in 10 more Europeans countries and over 25.000 eCommerce websites. It is a direct payment method that allows customer to make online purchases in a matter of seconds by triggering a credit transfer with his/her online banking information. Information is temporary stored at Sofort' servers and deleted once the transaction has been completed.

There is no need to register at the merchant's web site to do a purchase, Sofort is the intermediary that makes sure the payment go through the system and informs the merchant. Additionally, transactions are done in real time which makes the shipping even quicker On Though Sofort is relatively secure and carries the best practice in data security standards, there are still customer who are not willing to expose or leave their banking information in different servers rather than the ones that belong to the merchants.

Customer initially, through the merchant's portal, picks the article he/she wants to purchase. Then, by choosing Sofort Banking as the payment method, the system will automatically redirect the customer into Sofort's portal. There, customer is supposed to introduce the related account information from where the credit transfer will be

triggered. The bank verifies if there are sufficient funds to cover the purchases and eventual taxes, then authorizes Sofort that immediately sends a confirmation to the merchant. At last, once confirmed, merchants are ready to ship the articles directly to customer in no time.

It is commission free for the customer. On the other hand, merchants do have to pay an installation fee just for once and a commission equal to 0.9% +0.25 per transaction done via Sofort Banking. Additional cost might be incurred if the merchant decides to open a Sofort Bank Account. It should be noted that the opening of this account is optional to the merchant.

4.12 ClickandBuy

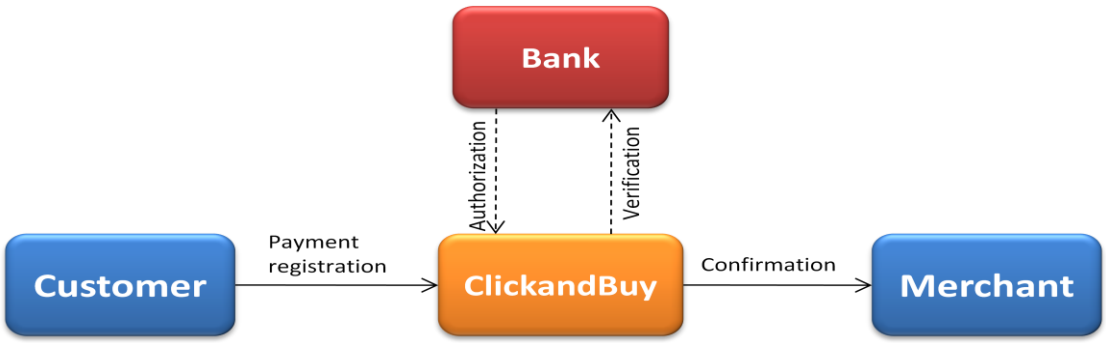


Figure 27. Transaction Flow with ClickandBuy

Initially established in 1999, it has been 14 years of growth all around Europe with London as the head office concentration. ClickandBuy offers 16000 online shops, over 50 local and international payment methods and billing in over 120 currencies worldwide.

ClickandBuy is an online payment system that allows customers to make purchases in a easy and safe way. All the financial information is stored in the ClickandBuy platform which means that customers no longer require introducing their sensitive data at online shops. ClickandBuy is now available for m commerce transactions and permits an easy platform adaption for mobile devices and tablets. ClickandBuy also allows customers to direct bank through its DirektÜberweisung system and to use Facebook to send/receive money to friends via Xbuster, recently pilot project of the company.

ClickandBuy has over 16000 online partners that allow customers to have access to a high number of shops all around the world. This payment method takes the burden of the online transaction while the customer focuses on purchasing; this is quietly perceived as a customer experience enhancer. Additionally, it accepts a great number of payment methods such as credit cards, debit card, bank transfer, etc. Since ClickandBuy stores all the financial information, it is forced meet the PCI DSS compliance to guarantee security of the data of the customers.

It is a very simple system in which basically the customer is always connected to the merchant. First of all, customer picks the item he/she wishes to purchase; thereafter customer picks ClickandBuy as the payment method. Automatically, the ClickandBuy platform will display all the payment methods registered inside. Once chosen, ClickandBuy is in charge of the interaction with the bank and finally confirming the merchant whether or not the transaction can be completed.

Opening, funding and retrieving money from a user account is completely free. Customer is only charged whenever there is a transaction with a foreign currency, withdrawing money from the account, a dormant account for more than 12 months and finally when the account funding has been done through credit card. ClickandBuy strongly supports the growth of the merchants using its platform, so it is flexible at scheduling the billing period for merchant in order to allow them reach short term liquidity.

4.13 Wirecard Mobile payments

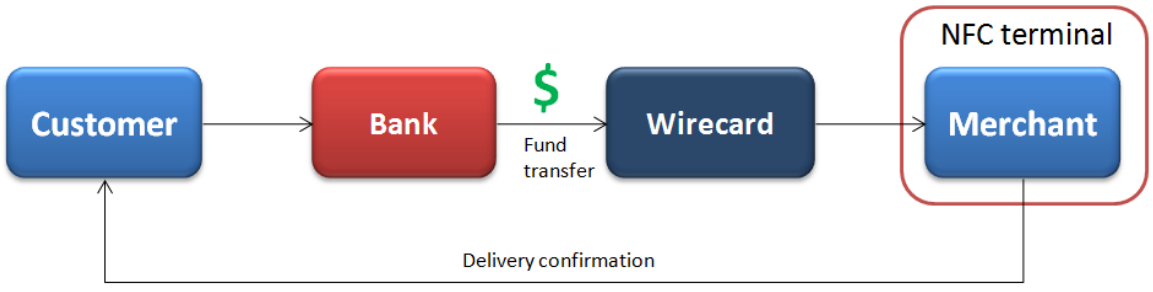


Figure 28. Transaction Flow with Wirecard Mobile Payments

Wirecard started in 1999 as an online payment service provider and then later as a well structure supply chain that includes a payment processing and multi channel platform. Nowadays the company offers over 85 payment solution for both consumers and merchants and it is available over 100 currencies. In 2012 was launched Wirecard mobile payment and mobile PoS solutions.

It is a mobile payment system that allows customer to integrate and manage their bank accounts, credit cards and other payment systems from their mobile devices. This new invention is up for operations such as ticketing, NFC payments, redeeming vouchers, promotions or coupons instantly and e-wallet services. For NFC payments, customers could either have a already NFC enable mobile phone or a Wirecard's NFC sticker, which allows any type of mobile device to store credit cards number or any other banking methods and do purchases at PoS terminals or online.

Wirecard mobile payment application is going beyond the boundaries and setting itself in consumer's normal lives routines. Wirecard terminal are available not only at points of sales but in the service sectors as well. New case studies, registered the fact that Wirecard is supporting a taxi application to allow customer to pay for the taxi services whenever the customer is out of cash. On the other hand, m commerce is on a higher stage which means that more competition is coming over in this regard and Wirecard might find some struggling while in other sectors of its complex supply chain might be doing really good.

In this system, customers use Wirecard as the commerce platform to interact with merchant. This will allow them to make purchases anywhere where a NFC is available. To do so, customer needs to register or transfer funds into the mobile device powered by the Wirecard platform. Subsequently the mobile device will be able to make online purchases and wherever there is promotions and coupons available the application will automatically redeem it.

Having the Wirecard application for mobile commerce is available for anyone and it is free. If the mobile device is not NFC enabled, customer may still get the external NFC

sticker which is functional regardless, though, it generates a extra cost. Costs for merchants are basically related to the amount charged because of the acquisition of the respective hardware to procure operations. E.g NFC terminals.

4.14 Ukash

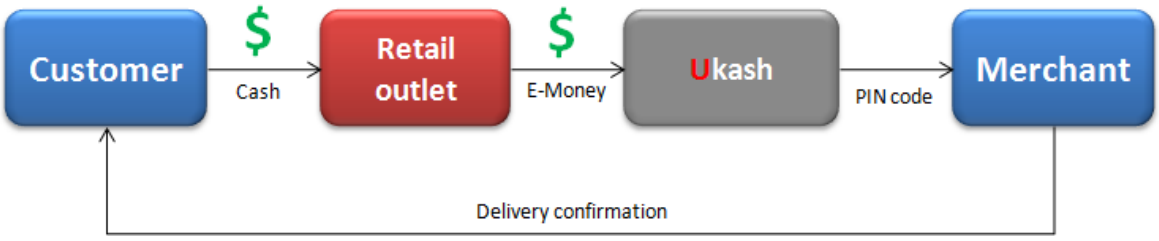


Figure 29. Transaction Flow with Ukash

Ukash established in United kingdom and it is now available in 55 other countries around the world. customers can exchange their cash in over 420.000 points such as retail outlets, shops, gas stations, ATM.etc.

Ukash is a new way of substituting cash for electronic money, it is simple, safe and customer only needs to buy a Ukash PIN with the value he/she wants to convert into digital cash. Ukash money can be used at the multiple online shops for purchases, as gift card for friends, to recharge prepaid cards and e wallets or simply to withdraw from ATMs.

Since no registration is needed, customer will never be prompted to give neither financial nor personal data. Ukash only requires registration whenever the customer Is willing to manage his/her electronic money and have access to some additional features such as combining different Ukash PINs into one, splitting a PIN into a smaller amount in order to spend just the right amount or convert the electronic money into different currencies. On the other hand, one of the main drawbacks of this system is the fact that PINs can only be bought at physical stores and not online. This clearly set a boundary in the e commerce, especially when it is needed a instant online payment and no store is available nearby. Furthermore, if the Ukash Pin get stolen before being redeemed, the money stored is automatically lost , unless the customer Is able to give in some precise data such as the

data of the purchase, the amount and the purchase reference, if not, PIN cannot be refunded.

Ukash is a 3rd party free model in which the interactions are basically between customer and merchant in an online environment. To do so, customer can acquire Ukash unique codes from any place where Ukash pins are available for distribution. There thousand of online places where Ukash is already accepted and customer is only prompted to enter the Ukash 19 digits PIN. If the amount stored in the PIN is sufficient, the transaction goes on without problem, if not; customer is required to enter an additional PIN code to complete the transaction.

Buying Ukash money at points of sale does carry any extra cost besides, the quantity to be paid. Though, there are some merchants that charge an additional fee when paying for Ukash PINs. Since there are no intermediaries in between, there are no monthly fees or any other bank associated transaction fee, the only amount that is needed to pay is at the merchant portal and it is quite a small value. Regarding the cost implicit for merchants, they are charged for the inclusion of Ukash at their gateways.

4.15 Entropay in association with visa

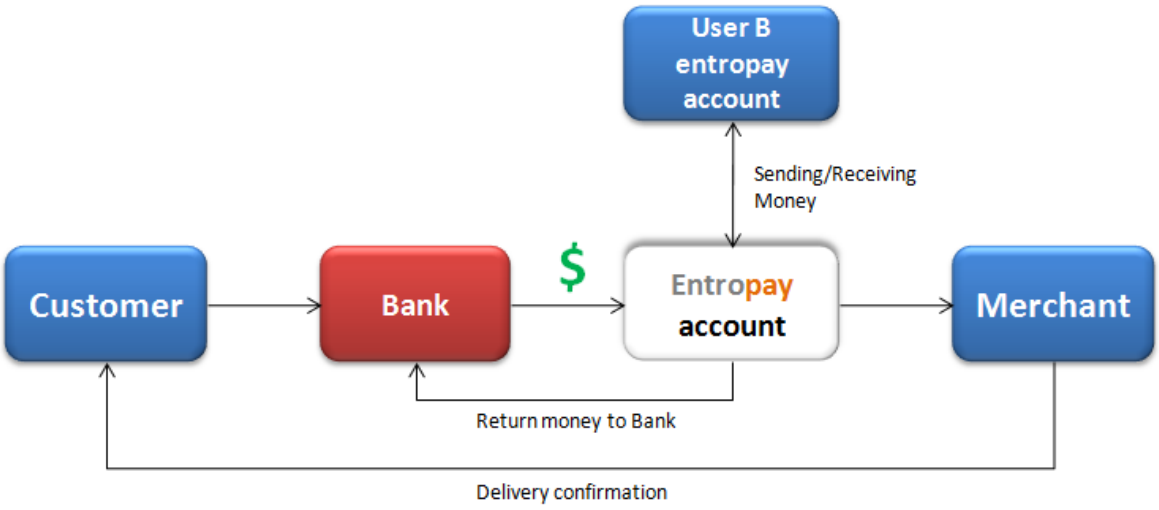


Figure 30. Transaction Flow with Entropay in association with Visa

Entropay was introduced for the first time in 2003 by Ixaris Systems, Ltd as a solution for online payments with credit card absence. Since that very moment, the growth of this payment system has been such that many customers already had chosen Entropay as the preferred payment method all around the world. Its virtual card accepted at millions of merchants worldwide, spanning a broad spectrum of industries and specialties.

Entropay provides its customer the facility to have a virtual Visa for online purchases and to have access to the thousands of online websites where Visa is accepted. It only requires the customer to have a Entropay account in which funds are share with the virtual card. The virtual visa card's balance is available for customer any moment he/she wants to use it and if it runs out, it can be recharged by conventional bank transfers, credit or debit card, and offline or online.

The fact that the virtual card is associated with Visa, makes it really easy o find place where to spend the money, it does matter if the merchant site does no accept "Entropay" itself, what matter is that the card can be processed as a common visa card. Entropay allows customers to open a Entropay account regardless the credit history because is a prepaid based system which means that customers can only spend what they have load and cannot get into debts with 3rd party participants.

Customer initiates the transaction by depositing money in his/her Entropay account. This operation is done through a bank and can be done with the traditional means such as credit or debit card and bank transfer. Once in the Entropay account, the customer can either send it to other Entropay account holders or directly at websites.

The fee structure for customers is affordable, for instance, opening the Entropay account with the respective Virtual Visa card is free, and customer is only charged for: loading the account, receiving money from a merchant, transfer between Entropay accounts, foreign exchange and putting the money back to the initial sources e.g. credit or debit card.

4.16 Alipay

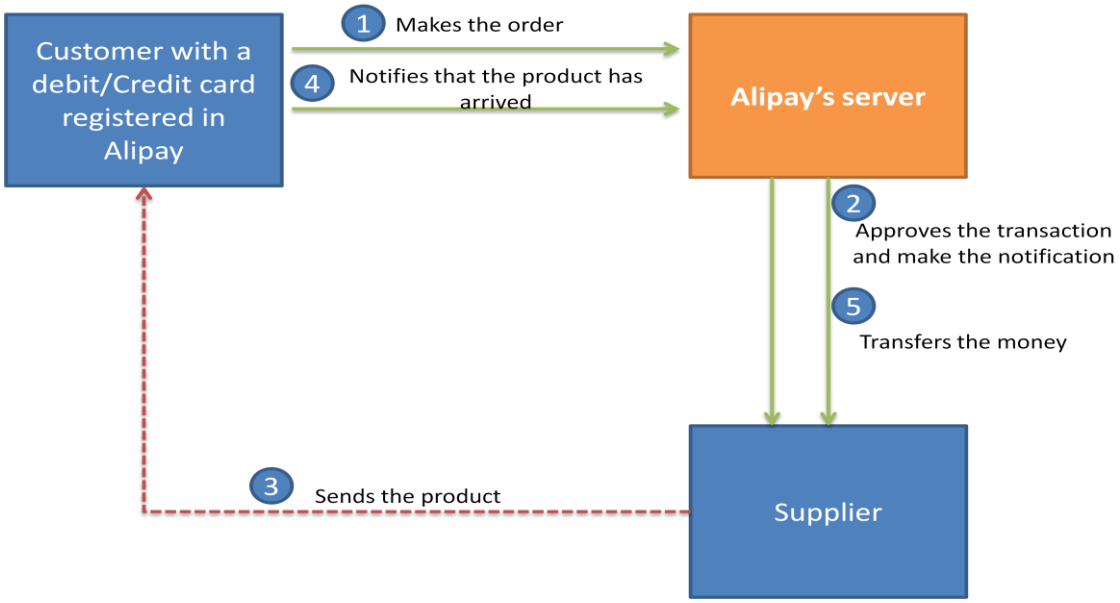


Figure 31. Transaction Flow with Alipay

Alipay is an electronic payment system property of Alibaba.com. Alibaba.com creates Alipay in order to give more reliability to the small and medium size enterprises in terms of payments. In this case, they only need minimum requirements of membership, having an online bank account or a credit card. Alipay is the China's biggest third party of electronic payments.

The actors that take place in the transaction is the customer, the Alipay's Server and the Supplier.

This popular online payment is really easy, the buyer chooses any kind of product and he/she pays it with Alipay, which keeps the money until the buyer has the product in his/her hands; when this is done, the buyer gives a confirmation to the system and Alipay immediately transfers the money. In the case this confirmation is not made, the system

has a tracking number and if the buyer makes no action in 7-14 days after receiving the product, the money is transferred automatically to the seller.

The cost depends on the transfer value, for instance there is no fee if the monthly transfer value is equal to RMB 500 (Approx $82 USD), in case the transfer value is higher, the fee is equal to 1% of the surplus. For example, if the monthly transfer value is RMB900, Alipay will charge 1% x 400 = 4RMB. For individual transfer charge, the maximum charge is 40RMB, the minimum charge is 1RMB.

In 2012, Alipay established a security alliance in order to make the transactions more secure for the consumers. It destroyed over 133000 phishing sites in the first half of 2012.

This electronic system has alliances between the most important banks of China, where the customers can use their accounts to send or receive money through Alipay; it only does not have alliances with banks but also with China Post in order to make the deliveries more reliable. As it was exposed before, Alipay is pioneer in the security of customers; their strategy is that the platform does not share any kind of personal information between the buyer and seller.

In order to start using this payment it is needed a bank account in specific Banks of China that allow transaction with the Alipay's server. Some of the banks are: **China merchants bank, Industrial and commercial bank of China, China construction bank, Bank of China, Agricultural bank of China, Bank of communications, SPD bank, Guangdong development bank, China everbright bank, China citic bank, China minsheng bank, Bank of Shanghai, Bank of Hangzhou, Bank of Ningbo, Pingan bank.** The next step for using the Alipay's account is to activate the function called e-banking.

The barriers for the B2C are the need of having an specific Bank Account in China what reduces the number of transactions abroad.

The popularity of Alipay in China is mainly because it provides an "*Innovative product technology, unique concept and large user base"* **(Alipay's Official Site, 2013)**

Figure 32Histogram of membership growth. (Graphic from Alipay's Official Site)

This E-payment is not only established in China and in order to use it is not necessary to have a company or a Chinese bank account, it has also developed "*Alipay Cross- Border E-Payment Service",* this system is the solution for customers to make transaction from abroad, and then it will remit the total amount in the specific foreign currency. The process behind this system is that after the customer has made the payment the amount is located to a partner settlement bank for currency exchange, and then this amount is reallocated into the seller's bank account.

4.17 BPAY

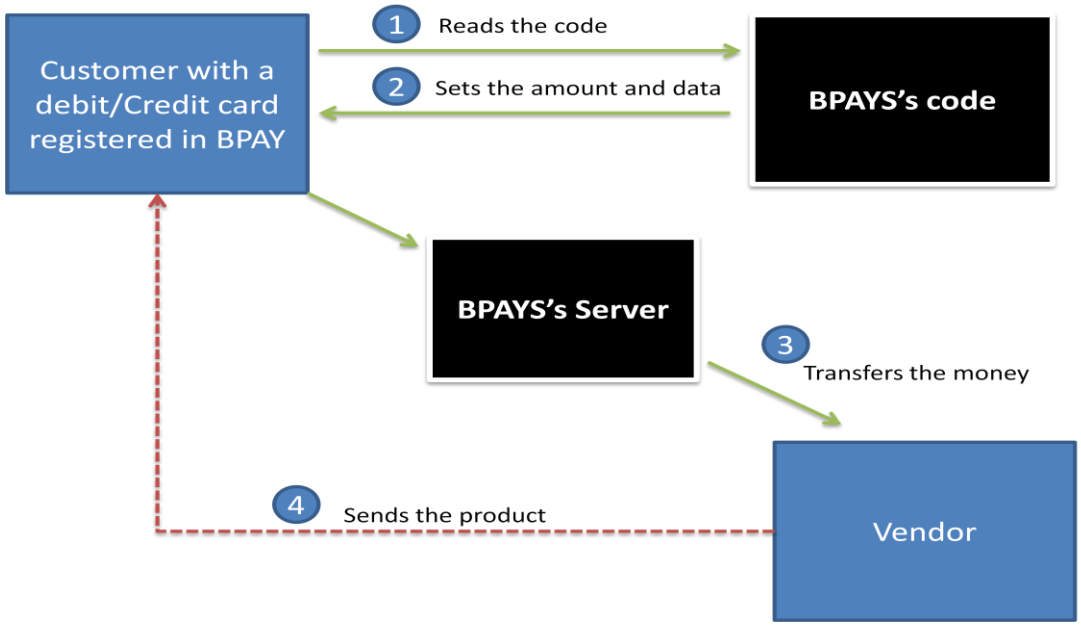


Figure 33. Transaction Flow with BPAY

BPAY is the electronic payment that was launched in Australia on November 1997. By now, it is the most popular payment in that part of the world. BPAY not only works for online transaction, it also gives the possibility to make transactions through phone banking. The start –up of this payment was mainly phone banking but the market pushed them to start looking for new ways of trustable payments

The actors that are involved during the transaction is only the client with a specific device (cell phone/PC/ telephone) , the client bank account, the vendor's bank account and the vendor.

In order to start using the payment, the first step is to get registered for online, mobile, or phone banking of the financial institution when the user already has a valid account, the second step is to look for the BPAY codes in the bills, then log in into your (online, mobile, or phone) account, and then pay the bill specifying amount and date of transaction (39) . (This type of system allows making scheduled payments; it means that if the account has funds enough, the data for the payment can be "scheduled" for another day (less than 90 days))

The cost for customers and vendor are the same, the fee is related to the registration of the account, thus the fee depends on the type of card that is registered in the system . The transactions with debit cards cost 4.5 cents of dollar and with a credit card account 40.7 cents of dollar plus the 0.297% of the transaction value. **(BPAY official site)**

BPAY has a recognized trustability and security among the Australian citizens, according to different sources, more and more young Australians are getting safer and safer by using Internet as a source of payments, and being BPAY one of the most popular systems in Australia it is not the exception. It is rue that all around the world there are always news about hackers taking out all the money for different electronic payments, but if the Bank is serious it helps a lot for the customers not to feel anxious about that issue. If during different types of payments, any of them has gone astray, it starts developing a bond between the payment method and the customer, it means that even if the customer does not know what is happening behind, he/she has confidence that if anything does not go appropriately the Financial Institute will track her/his money and give it back

The most typical error that customers find using this kind of system are few, most of them are related to a mistake made by the customer himself/herself; for example when the transaction is made it cannot be stopped or cancelled, so in this case the customer has the need of contacting the Financial Institution for cancelling the payment. Most of the banks make an investigation and a track of the money and the customer receives a feedback or answer within 30 working days.

The difference between the payments systems explained previously is that there are three ways to complete a transaction by using BPAY: PC, mobile devices and telephones.

In 1999 the percentage of phone banking customers was 70% . In 2003 the customers were more used to make all the possible transaction through the internet, but BPAY kept its other way of payment. In 2012 there were already 15820 BPAY biller codes, including QR codes.

4.18 DWOLLA

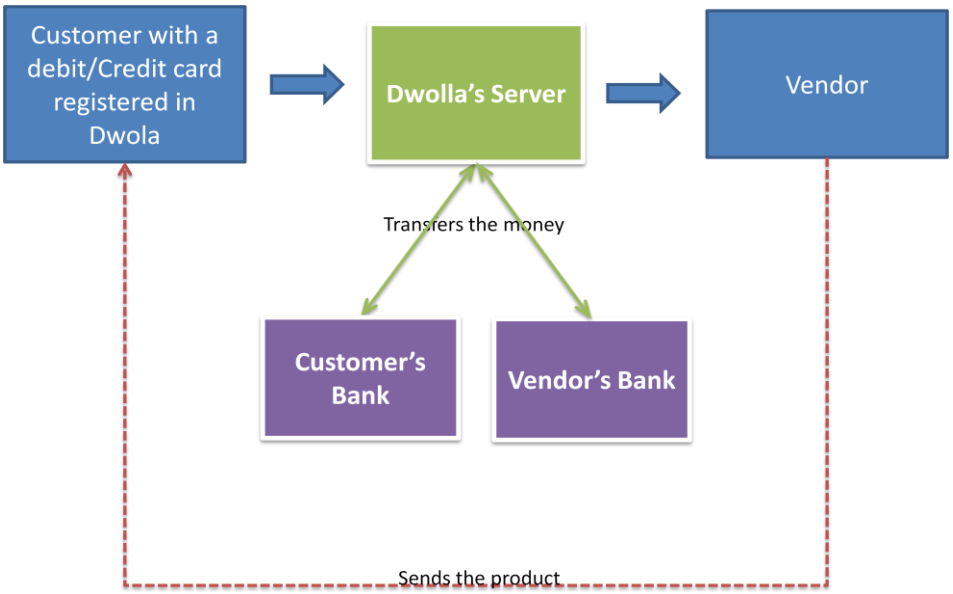


Figure 34. Transaction Flow with Dwolla

"The word Dwolla comes from the union of two words: Web + Dollar = Dwollar". This organization was launched in Des Moines, Iowa in December 1, 2009; two founders named Ben Mine (CEO) and Shane Neuerburg (CTO) At the begininning of its launch its benefits were only provided for Iowa, by now it is a United States provider of online payment systems. This payment system allows any business or person to transfer, receive, request or accept money from any type of internet connection. Their philosophy is no plastic cards or charge hefty fees. **(Silicon Prairie News, 2009)**

The actors that are involved in the transaction are the buyer registered with a bank account in Dwolla, Dwolla, the vendor's bank and the businessman.

Dwolla works with bank transactions, in order to give a safer a simpler way of payments. It is a B2C, P2P payment system. In the case of the retailer wanting to start using Dwolla, the way to start is really easy; the first thing to do to start the set up is to fill up the general information of the business, (of course taking into consideration a valid tax ID

number), scanned ID of the account administrator. The information has to be verified and after it the merchant or retailer has to add a Bank Account, Dwolla will make a small deposit in the financial account in order to verify if the amount appears inside the Dwolla account. (With that deposit is verified that the withdrawing and depositing is available in that financial account.) **(Guide Merchants, Dwolla.com)**

After the merchant has done the before steps, the customer with his/ her bank account registered in the system chooses the product and by using only is/er email makes the payment; Dwolla server receives the notification and "moves" the money from the customer account to the business account.

If retailers and clients are using Dwolla (Both of them), if the customer is in the store and want to buy something and has no cash available he/she can use the mobile application in order to make a transaction to the store, the cashier receives an announce on his/her computer of the client´s payment and the sale is done.

There is no cost in sending money nor in receiving $10 dollars or less. In case of receiving a higher amount the receiver (merchant) pays $0,25 dollars. Only one party pays the fee of transactions. **(Dwolla.com)**

Differentiation points of Dwolla:

- One point that differentiate this type of payment is that it also allows to send money to email adresses, phone numbers, Facebook friends, LinkedIn connections, Twitter users, and businesses that accept Dwolla as one of their payment systems

- It also allows to send money to someone who does not have a Dwolla account. (The only restriction is in order to receive the money the account should be created).

-Only one party pays the fee of transaction.

- No credit cards in order to maintain the low fees. ($0.25 per transaction or free for transactions $10 or less).

- If retailers and clients are using Dwolla (Both of them), if the customer is in the store and want to buy something and has no cash available he/she can use the mobile application in order to make a transaction to the store, the cashier receives an announce on his/her computer of the client´s payment and the sale is done.

The drawback by using this kind of payment as the others is the fact of being transferred to another page in order to finish the transaction. Also regarding this payment system in specific is the fact that it only used in the United States.

The devices needed for completing the transaction is only a mobile device or pc with Internet connection (Preferably a private one). The biggest advantage of this system in front of ACH is simplicity, because when the client is using Dwolla is not needed complex bank account identifiers just an email or mobile phone number of the recipient.

After its launch in 2009, the company started to grow that not only it was a payment system in Iowa but also across the United States; in June 2011 Dwolla celebrated one million a week in payments on the service. (A rapid growth when 6 weeks ago it was a total of $50.000 a week in payments). (43) Currently Dwolla has 70.000 users (including 5000 merchants or retailers [48]) and 11 banks alliances what facilitates the transactions. Dwolla is developing more banks alliances in order to make higher the number of potential clients.

Dwolla argues that the network they developed is safer in many ways but one of the most important issue is that its network does not send any sensitive card detail across the net (Only one secure number/ID and the transaction details). Dwolla has recently launched a bank-to-bank initiative that is designed in order to replace ACH function broadly the United Stated (ACH = *An electronic funds-transfer system run by the National Automated Clearing House Association. This payment system deals with payroll, direct deposit, tax refunds, consumer bills, tax payments, tax refunds, consumer bills and many more payment service)*(**Investopedia.com, 2013)**.

4.19 eWay

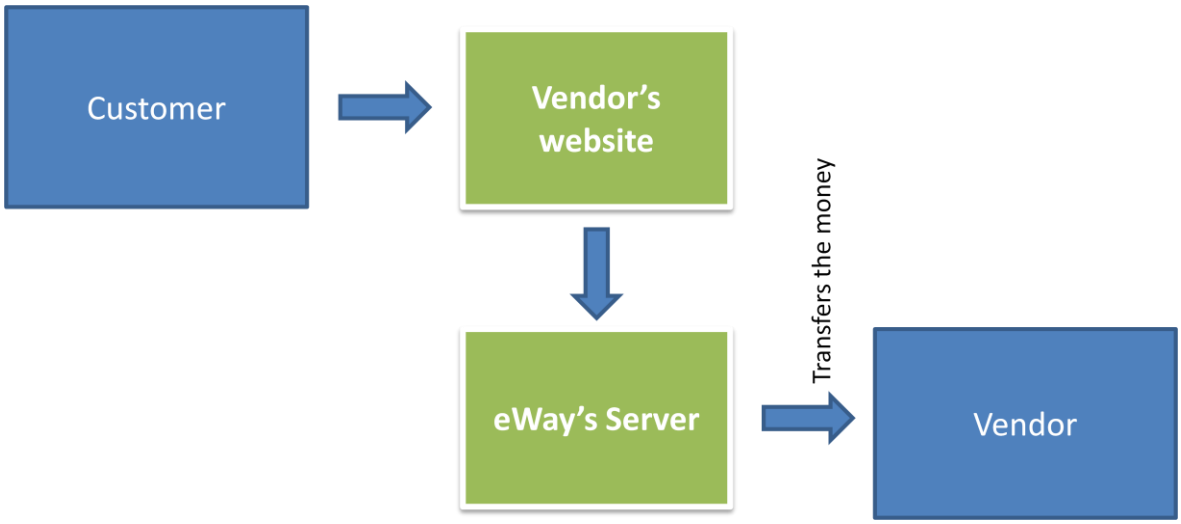


Figure 35. Transaction Flow with eWay

eWay is an online payment gateway (e-commerce application service provider), it was first launched in Canberra, Australia in 1998, its CEO: Matt Bullock.. Eway provides to the customers an easier way of payment, it means that in comparison with other types of payments the customer makes a purchase directly from a website store and it makes the whole transaction, the money is received by the company within no more than 3 seconds. (**eWay Australia Official Site).**

The actors involved are, mainly the customer and the vendor website.

The difference between this gateway and others is the simplicity, and the no redirection to another website. This means that the customer sees the product he/ she wants to buy, and buy it directly from the vendor's website. Then eWay makes the transaction in less than 3 seconds directly to the vendor's bank account and not the payment site.

The flow for the vendor in order to start using eWay as an alternative of payment is:

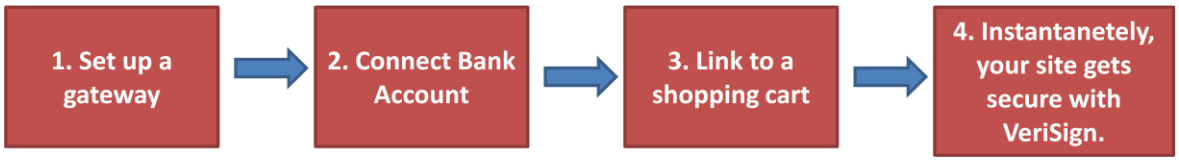


Figure 36. Vendor Iniciation Flow with eWay

The cost involved per transaction is $0,22 dollars, it is also included the set up of the account, the virtual POS and transactional emails.

The devices needed is just a PC or a mobile device.

The main features of this system are:

- Card holder's name can be different to the purchaser's name
- Basic data validation
- Supports Beagle anti-fraud measures for direct payments (supporting plugins)
- eWay transaction ID and bank authorization code are recorded for successful payments
- It is free

According to the Beagle anti-fraud, eWay selected ReD to protect merchants from online fraud. ReD is a well known global provider of fraud prevention and payment service; so every time a transaction is approved the ReD shield checks them in real time against a global database of credit card information and alerting the merchant to any suspicious one. The alert goes through a mobile application of an Ipad or Iphone in order for the merchant to reject any kind of transaction in a matter of seconds. With this strategy businesses and customers can maximize the revenue opportunities and the confidence in any transaction.

Summarizing, eWay strategies are *"following banks, merchant facilities and reducing the Web development time, taking a business model and emulating it in a far bigger market; first in the United Kingdom and then in Europe".***(Ozman Hasifah, 2011).**

This payment is now only available in Australia, New Zealand and United Kingdom.

At present, it has been expanded to New Zealand and U.K. Over 13000 eCommerce merchants use eWay for their credit card payments, including of course the biggest online brands.

eWay is allied with Commonwealth Bank Australia that simplifies the procedure for merchants that want to go inside the world of e-commerce. Having this alliance means that “Businesses’ representatives do not have to go to banks to apply for a payment gateway service in order to set up an online payment facility, instead they will only have to register themselves in Eway and Eway will make all the formalities.

Chapter

V

Chapter V – Comparison between Payment Systems

In the previous chapters, the traditional and innovative were mentioned and analyzed, this chapter displays comparative tables regarding for the Traditional payments systems the issues of:

- Actors Involved; the main actors that interferes from the beginning of the transaction until its completeness.
- Payment system flow; the complexity of the information flow in order to make a purchase.
- Cost; Cost associated to the merchant (i.e., set up) and to the customer, regarding the cost for every transaction, receiving money, sending money.
- Benefits.
- Drawbacks; the disadvantages of using a specific payment system.
- Barriers to B2C System; features or characteristics that does not benefit the b2c system ecommerce.
- In the case of PayPal that it is an innovative payment system but it is worldwide known that in this work it is consider as a traditional one, we also consider the diffusion of it.

On the other hand we also compare the innovative ones by adding the diffusion of the payment, it means the participation of the payment in the market of ecommerce; and the innovation or devices that the new payments are developing in order to improve the traditional ones.

The comparisons in order to have everything simplified were made in the subsequent tables.

Table 7. Comparison table of Traditional Payment Systems

FACTORS	Cash Tranfer	Direct credit transfer	Credit cards	Debit cards	Rechargeable cards	Stored-value cards	PayPal
Definition	These kinds of transactions involve money immediately after the service or product is received.	"Circulation of Money". Used through bank accounts	the cost of the product or service will be paid later on, it means that the customer is able to create a balance of debt	similar to the credit card one	the customer recharges the card in the bank with cash, with a specific amount of money	payment system that works in a specific store The card is issued by the store, and there is no need to give any name of the issuer	PayPal™ is not the standard traditional payment system but from the innovative payment, this one is one of the most popular that nowadays
Actors Involved	Customer and Seller	the customer, the seller, the customer's bank and the seller's bank.	the consumer; the bank or credit union, that issues the card; the merchant; merchant's bank	the consumer; the bank or credit union, that issues the card; the merchant; merchant's bank	the card issuer /bank, the client, the merchant's bank and the merchant (as a final receiver).	card holder and the vendor's bank on behalf of the vendor	the customer, the PayPal™ server, the eShop Server and vendor's PayPal account.
Payment System flow	Simple	Simple	Simple	Simple	Simple	Simple	Complex - simple
Cost	No cost	variable from country to country, but in general it is between $3,40 and $3,50	The debt is agreed to be paid in a "x" period of time with variable increament of interest. Merchant: every transaction that it receives from credit cards of 1% to 4%	merchant's view, the bank asks for a commission of every transaction that it receives from debit cards of 1% to 4% of the value of the amount purchased;	the card demands to leave as a deposit. Merchant: percentage of receiving payments with cards, which can vary from 1% to 4% of the purchase.	No cost	PayPal merchant fees for business; PayPal Payment Standards, PayPal Payments Advanced, PayPal Payments Pro.
Benefits	The seller will always has a cash flow or cash circulation. The seller receives the contribution immediately	accuracy, no probabilities of being robbed from the bank's perspective	simplicity of lending money from the bank	no more cash handle, similar to the payment with cash (no debt), vendor does not handle cash, reduction of the probability of being robbed	not having any kind of debt with the bank (no bank account), expenditures control	Possibility of spending all the money that the card has. The card can be used by any person.	the security of the payments, simplicity, transaction tracking, accepts 25 different currencies and it is available in 190 countries .
Drawbacks	the quantity of money is almost not easy to handle, so the risk of robbery rises. Risk of being involved in fake money or in "Laundry Money"	Long cycle time, physical interaction between bank and customer	Customer: higher cost of the purchase. Merchant: paying approximately 1% -4% of the transaction to the Bank.	Lack of spending notion, of paying the 1%-4% to the bank in order to accept the transactions with cards	customer cannot spend more than what he/she deposited, Merchant: paying approximately 1% -4% of the transaction to the Bank.	no opportunity to choose another store	risk of saturation of the servers, no bank regulations.
Barriers to B2C System	Easiness, time transaction, customer face 2 face interaction	Vendor's bank account details have to be correct in order to have a successful transaction	time that the transaction takes to be completed, security	Security personal password, simplicity by doing online transactions	having a limit of money in the card	online purchasing	n-a
Diffusion	-	-	-	-	-	-	a growth of 25%, and an increment of 1,22% in the total Payment Volume. 128 million active accounts

Table 8. Comparison table of Non- Traditional Payments

FACTORS	PayPal ™ Here	Alipay	BPAY	DWOLLA	eWay
Definition	it mainly works by plugging a small device in the vendor's cell phone, it accepts credit and debit cards, PayPal™ and also checks, the device can be used as many as 20 employees.	Give more reliability to the small and medium size enterprises in terms of payments. In this case, they only need minimum requirements of membership, having an online bank account or a credit card	not only works for online transaction, it also gives the possibility to make transactions through phone banking.	allows any business or person to transfer, receive, request or accept money from any type of internet connection. Their philosophy is no plastic cards or charge hefty fees.	provides to the customers an easier way of payment, it means that in comparison with other types of payments the customer makes a purchase directly from a website store and it makes the whole transaction
Actors Involved	client and the employee.	customer, the Alipay's Server and the Supplier.	client with a specific device (cell phone/PC/ telephone) , the client bank account, the vendor's bank account and the vendor.	buyer registered with a bank account in Dwolla, Dwolla, the vendor's bank and the businessman.	customer and the vendor website.
Type of Payment	Electronic Cash - Account based	Electronic Cash - Account based	Electronic Cash - Account based	Electronic Cash - Account based	Electronic Cash - Account based
Payment System flow	Complex - Simple	Simple	Complex- simple	Simple	Simple
Cost	depending on the kind of payment that he/she has (Standard, Advanced or Pro)	The cost depends on the transfer value, free with a transfer value is equal to RMB 500 (Approx $82 USD). the fee is equal to 1% of the surplus.	The fee is related to the registration of the account; debit cards cost 4.5 cents USD and credit card account 40.7 cents USD plus the 0.297% of the transaction value.	no cost in sending money nor in receiving $10 dollars or less. In case of receiving a higher amount the receiver (merchant) pays $0,25 dollars. Only one party pays the fee of transactions.	cost per transaction is $0,22 dollars, it is also included the set up of the account, the virtual POS and transactional emails.
Benefits	Same benefits as PayPal. The customer can also make the transaction without the need of a pc or a mobile with a payment application.	established a security alliance. It destroyed over 133000 phishing sites. It has alliances with important banks of China, where the customers can use their accounts to send or receive money through Alipay.	trustability and security among the Australian citizens	It is a B2C, P2P payment system. Simplicity. Not needed complex bank account identifiers just an email or mobile phone number of the recipient.	no redirection to another website in order to complete the transaction. eWay transaction ID and bank authorization code are recorded for successful payments. Basic data validation
Drawbacks/ Barriers	Signing in a mobile device, that in case of the falsification, the sign of a client is very valuable. Merchants: the fees of transaction are quite elevated	needed a bank account in specific Banks of China. Need of activating the function called e-banking	mistake made by the customer himself/herself; for example when the transaction is made it cannot be stopped or cancelled	transferred to another page in order to finish the transaction. Also regarding this payment system in specific is the fact that it only used in the United States.	This payment is now only available in Australia, New Zealand and United Kingdom.
Diffusion	128 million active accounts between PayPal and PayPal Here	Over 550 million of users	15820 BPAY biller codes, including QR codes.	70.000 users (including 5000 merchants or retailers) and 11 banks alliances	Over 13000 eCommerce merchants use eWay for their credit card payments, including of course the biggest online brands.
Innovation / Devices	Extra- device. No need of PC or Mobile device to complete the purchase.	Alipay Cross- Border E- Payment Service. pioneer in the security of customers; their strategy is that the platform does not share any kind of personal information between the buyer and seller.	Transactions can be done by PC, mobile devices and telephones.	to send money to email adresses, phone numbers, Facebook friends, LinkedIn connections, Twitter users, and businesses that accept Dwolla as one of their payment systems. device or pc with Internet connection (Preferably a private one).	Transaction in less than 3 seconds directly to the vendor's bank account and not the payment site. PC or a mobile device. Allied with Commonwealth Bank Australia

Table 5. Comparison table of Non- Traditional Payments (*Continued)*

FACTORS	Octopus card	Bitcoin	Paysafecard	Paybox	Payfair
Definition	Contactless smart card, initially as a solution to regulate and unify the payment system of the transportation sector in Hong Kong	Bitcoin is a peer to peer electronic system in which a digital coin is transfers from a customer's wallet to another.	My Paysafecard works as a electronic wallet in which individual Paysafecard cards can be stored together. It keeps a registry of every transaction done	Paybox is a trending micro payment system in the m-Commerce context that is also suitable for macro payment operations	Nowadays Payfair is issuing over 2.5 million cards and many merchants are seeking to formalize the usage of Payfair accepted terminals.
Actors Involved	Customer and merchant.	Customer, merchant and block chain.	Customer, retail outlet, my paysafecard and merchant	The customer, merchant , Paybox and the account keepers of both participants.	Customer, customer's bank and merchant.
Type of payment	Smartcard	Electronic cash -Token based	Smartcard-Scratchc card - Micropayment	Micropayment	Electronic cash - Mobile assisted
Payment system flow	Simple	Complex	Simple	Complex	Complex
Cost	Customer is just determined by the value of the smart card. For the merchant, it concerns the acquisitions of the platform in each of the touch points. (High)	No additional fees nor taxes. Paying a voluntary amount so that the priority of the transaction is higher	Paysafecard PIN's cost the amount that they carry inside. Merchant debit a small fee per transaction.	Paybox debits montly for manipulating and being the intermediary between issuer and acquirer.	Banks charges for banking services come along.
Benefits	Physical payment and electronic payments. possibility to track old records and keep the balance over the expenditures. advantage of promotions and to earn fidelity points due his/her membership.	The risk of thieves is decreased. stores the address for the customer to send/receive money and also to control the balance of coins for each customer's account	Not necessarily need to buy the scratch cards physically. PIN directly from online and virtual stores	it does not store user's money within the system, but it asks the permission of the customer in order to have a long term access to the customer's account at the moment of the purchase and do the payment.	Time to fully complete and authenticate a purchase. It a very secure way to execute transactions since it only requires to give in your mobile phone and no personal data.
Drawbacks/Barriers	Losing the card will take to losing the money in it without any chance of restoring it	Bitcoin is still in a experimental phase and not being recognized by many markets, makes its economy volatile, so price might change all of a sudden until the it matures and stabilizes.	If the card is lost before entering the PIN, the money is lost as well	Any disruption of paybox system will not allow the transaction to take place	Structure dependent from a bank which is the entity that retain the funds. banks charges for banking services come along.
Diffusion	Represents over the 95% of the payables activities in the market in Japan.	over 25 millions of transactions have been done with different amount	Over 4000 companies include Paysafecard as a payment option. 8 web stores only accept payments via paysafecard's PIN.	It opened to other 39 countries in Europe. services are accepting over 15 payment methods nowadays with some potential for including more in the near future.	Over 2.5 million cards and many merchants are seeking to formalize the usage of Payfair accepted terminals.
Innovation / Devices	One card to have access to multiple stores, services, mean of transportation and online shops.	It only required the user to download the official Bitcoin wallet directly into his/her computer or mobile phone	Paysafecard is a secure payment system which does not need to expose personal data during transactions	Provides an easy-to-integrate solution that allows customers to have access to different payment systems. It also allows Paybox's users to have deposit and balance management.	Customer only need a mobile phone and a computer with connection to internet. Transactions can also be done at points of sale or ATM

Table 5. Comparison table of Non- Traditional Payments (*Continued)*

FACTORS	Google wallet	Amazon Payments	Paycash	Skrill	Sofort banking
Definition	Google wallet is a free application which charges no fees for mostly all of its utilities.	Offer a perfect customer experience while giving some credit to the merchant's brand	It is a mobile payment solution for customers to use at points of sales	Customers can charge their Skrill accounts using traditional means such credit/debit card payment or bank transfers.	Sofort banking is a direct payment method that allows customer to make online purchases in a matter of seconds by triggering a credit transfer with his/her online bankinf information.
Actors Involved	Customer, Merchant and Bank entity	Customer, merchant, bank and Amazon.com	Bank, Paycash users and merchant.	Skrill's users, Skrill and Merchant.	Customer, Merchant, Sofort Banking and bank.
Type of payment	Mobile Wallet	Electronic cash - Account based	Mobile payment	Electronic cash - Account based - E wallet	Online banking
Payment system flow	Simple	Complex	Complex	Complex	Complex
Cost	Sending money is completely free except when it is done via credit cards. Receiving money is always free. merchants do have to acquire by themselves NFC readers that will allow to connect their terminal0,s at the POS, with mobile phones.	For customers is completely free. Merchants: no hidden fees or add-ons for monthly use, set up, cancellation or unused authorizations. only pay when a transaction is done from their web site, 2.9% + $0.3	Free for customers and it is available in every app store. Transactions are free. chargeback, account blocking and written summaries paid by customers. Merchants: cost structure depending on the type of package they apply for.	Sending money costs 1% of the total amount and it will never be higher than10 euros.	It is commission free for the customer. On the other hand, merchants do have to pay an installation fee just for once and a commission equal to 0.9% +0.25 per transaction done via Sofort Banking
Benefits	Convenient way to pay and to make savings, at POS, with only the tap of the mobile phone. safe as paying with credit or debit cards because the app is protected by both pin and optional screen lock and every detail of the stored card is encrypted	Reliability is not a matter anymore ;it is as safe as Amazon itself.	Individual packages for business.Possibility to store and keep coupons or bonus cards in one place, impacts directly in their perception of the stores which makes really likely to earn a future sale	Available in many countries around the world. IT OFFERS more than 100 local payment methods to charge the fund of the Skrill account. there is no 3rd party dependency , since all the money is store in a separate Skrill account.	There is no need to register at the merchant's web site to do a purchase, Sofort is the intermediary that makes sure the payment go through the system and informs the merchant
Drawbacks/Barriers	The participants of the system (customers or merchants) might be suited to do transactions via this payment method	The participants of the system (customers or merchants) might be suited to do transactions via this payment method	New payment system that lacks of certain capabilities that are looked for by customers, such as payments from an online shop.	Any disruption of paybox system will not allow the transaction to take place	Customer are not willing to expose or leave their sensitive data in any place rather than the merchant's.
Diffusion	Google Wallet is the new core payment system powered by Google after merging with the original Google checkout which was a mechanism for just doing online purchases.	Amazon payment has had great acceptance by the online community since it is a brand new product from Amazon.com.	Paycash counts with around 19 partners in Germany and Luxembourg , mainly in the food and beverage sectors.	Began cooperation with Ebay. over 35 million customers. 200 countries and 40 currencies and a wide number of payment options available	It is very popular in Germany and it is now present in 10 more Europeans countries and over 25.000 eCommerce websites.
Innovation / Devices	Let customer store their credit cards, loyalty cards, gift cards and Google coupons in the mobile phone. control and balance of the sent/received money is helped by a notification system at the e-mail.	Allows them to pay for purchases in other websites with their Amazon.com account. it is fast, secured and no need to register or introduce the same personal data . tablets, kindles and smartphones.	Customer requires his/her mobile phone with the Paycash application which generates a QR code at the moment of the payment. The app is also suited for money transfers between users.	Allows both customers and merchant s to pay and get paid globally. 1 tap payments via PCs, smart phones and tablet, digital wallets for online fast and secure payments and prepaid MasterCard Skrill card	Sofort banking is a direct payment method that allows customer to make online purchases in a matter of seconds by triggering a credit transfer with his/her online bankinf information.

Table 5. Comparison table of Non- Traditional Payments (*Continued)*

FACTORS	ClickandBuy	Wirecard Mobile payment	Ukash	Entropay
Definition	ClickandBuy is an online payment system that allows customers to make purchases in a easy and safe way	It is a mobile payment system that allows customer to integrate and manage their bank accounts, credit cards and other payment systems from their mobile devices	Ukash is a 3rd party free model that allows to handle electronic cash and pay online	A solution for online payments with credit card absence
Actors Involved	Customer, ClickandBuy, Bank and Merchant.	Customer, bank, Wirecard and merchant.	Customer, retail outlet, Ukash and Merchant.	Customer, bank, Entropay account and merchant
Type of payment	Electronic cash - Account based	Mobile payment	Scratch card - Account based	Virtual cards
Payment system flow	Complex	Simple	Simple	Complex
Cost	Opening, funding and retrieving money from a user account is free. Customer is charged whenever there is a transaction with a foreign currency, withdrawing money from the account, a dormant account for more than 12 months and finally when the account funding has been done through credit card.	Wirecard is free, though, if the Mobile phone is not NFC enabled, it is generated an extra cost.	Buying Ukash money at points of sale does carry any extra cost besides, the quantity to be paid	Fee structure for customers is affordable, opening the Entropay account with the respective Virtual Visa card is free, customer is only charged for: loading the account, receiving money from a merchant, transfer between Entropay accounts, foreign exchange and putting the money back to the initial sources e.g credit or debit card.
Benefits	ClickandBuy has over 16000 online partners that allows customers to have access to a high number of shops all around the world. This payment method takes the burden of the online transaction while the customer focus on purchasing	Wirecard terminal are available not only at points of sales but in the service sectors as well.	Customer no prompted to give neither financial nor personal data. Registration whenever the customer is willing to manage the electronic money and have access to some additional features such as combining different Ukash PINs into one.	Entropay allows customers to open a Entropay account regardless the credit history because is a prepaid based system which means that customers can only spend what they have load and cannot get into debts with 3rd party participants.
Drawbacks/Barriers	It is forced meet the PCI DSS compliance to guarantee security of the data of the customers.	M commerce is on a higher stage which means that more competition is coming over in this regard and Wirecard might find some struggling	If the card is lost before entering the PIN, the money is lost as well	the service is just available for certain countries and some specific banks
Diffusion	ClickandBuy offers 16000 online shops, over 50 local and international payment methods and billing in over 120 currencies worldwide.	The company offers over 85 payment solution for both consumers and merchants and it is available over 100 currencies	It is now available in 55 other countries around the world. customers can exchange their cash in over 420.000 points such as retail outlets, shops, gas stations, ATM.etc.	Its virtual card is accepted at millions of merchants worldwide, spanning a broad spectrum of industries and specialties.
Innovation / Devices	All the financial information is stored in the ClickandBuy platform which means that customers no longer require to introduce their sensitive data at online shops.	This new invention is up for operations such as ticketing, NFC payments, redeeming vouchers, promotions or coupons instantly and e-wallet services	Ukash is a new way of substituting cash for electronic money, it is simple, safe and customer only needs to buy a Ukash PIN with the value he/she wants to convert into digital cash	Entropay provides its customer the facility to have a virtual Visa for online purchases and to have access to the thousands of online websites where Visa is accepted

In this section we highlight the features more representative for a model of payment system. It means that our conceptual model includes the minimum number of actors involved required, because a more simple transaction flow involves a short number of actors. For example, the traditional and non-traditional payments require at least customer and merchant in order to complete the transaction, for the credit and debit cards plus the non-traditional, banks always play an important role, as Entropay, Payfair, Amazon Pay, Alipay and similar payment systems which are highly dependent to the customer and merchant's bank accounts.

The cost as much to the customer as to the merchant is an important variable, reason for taking into account while choosing a payment system, because the core idea is to use the payment system frequently, but if for any kind of transaction there will be a high cost associated to it, it will not be "attractive" for the customer. According to the comparison, using traditional system can be perceived cheaper than the innovative one, but by using the innovative payments, the customer has the possibility of tracking the payments, making balances, making payments in a safer way without exposing personal and private data.

Some of the benefits of the innovative payments, in comparison with the traditional, are the issue of pursuing the security for each transaction, in other words the systems are creating alliances with not only with banks but also with security companies in charge of destroying phishing sites, for example: Alipay that has established a security alliance and destroyed over 133000 phishing sites. Another way for payment systems to reduce risk of robbery is no redirection to another website in order to complete the transaction (i.e. eWay).

The traditional payment systems have different barriers that are all considered in the innovative ones in order to improve the online experience; for example, in the cells depending to barriers in table of traditional payment systems we can appreciate that the transactions take so much time to be completed, there are always risks of fake money

and robbery, the personal data is written down several times, limit of deposited money the time from selecting the item to finally have it is long, and so on.

5.1 Matrix positioning

In this section, we shall bring the comparison into a graphical stage where we will display a 2 axis plot with 4 quadrants, showing four different scenarios. Each axis will be about the most important characteristics that we treated in chapter 3 and 4. This graphic analysis aims to identify the positioning of the different payment system across the matrixes and how, graphically speaking, we are able to perceive the distinctions between the conventional and the innovative payment mechanism. All the factors where measured whether they are high or low.

5.1.1 System flow and bank dependency.

System flow refers to both the number of actors that intervene in the whole process and the flow of information that passes from entity to the other before the transaction is completely finished. Bank dependency regards whether or not, transaction needs a a 3 rd party agent or in our particular case a bank, in order to complete the transaction successfully. As follows, we show how the payments system are positioned.

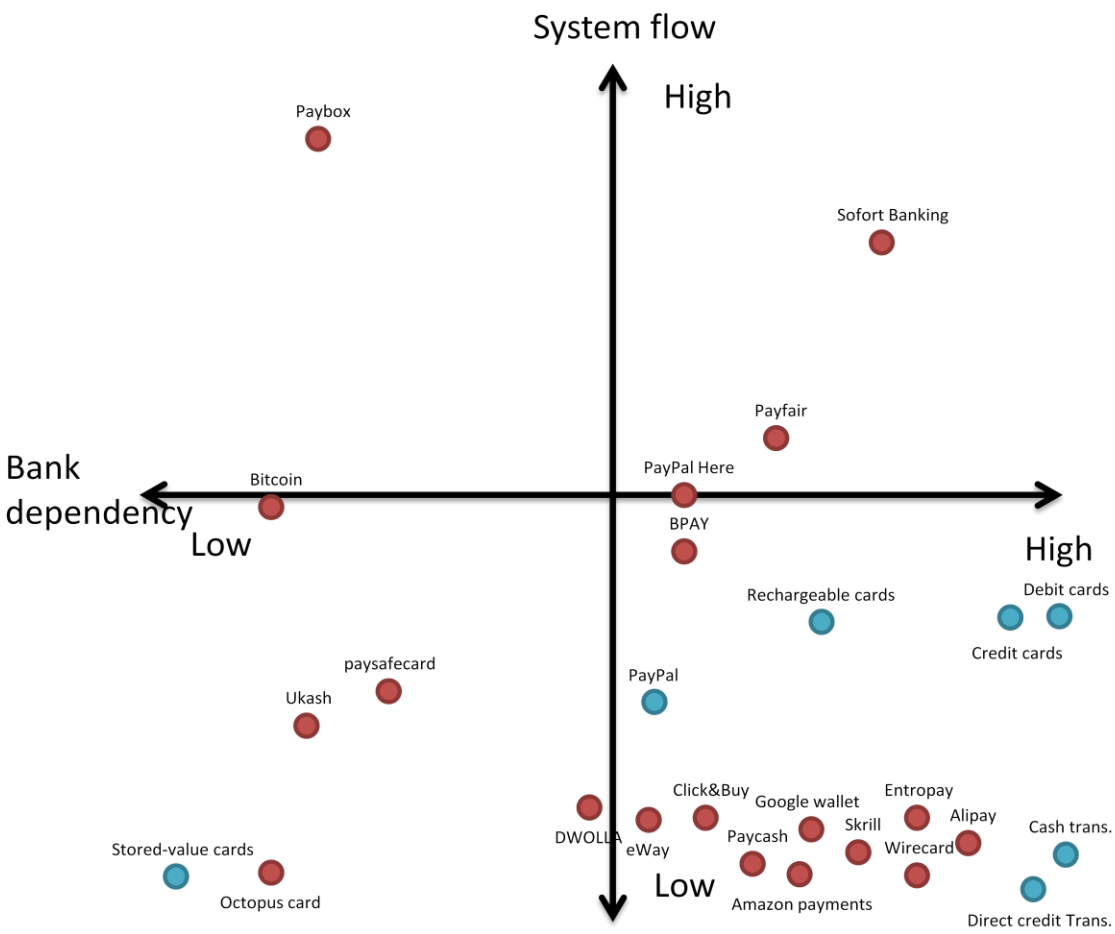


Figure 37. Bank dependency vs. System flow

It is rare to find low bank dependency in innovative payment systems, unless we are referring to smart cards or some other way of static currency that is stores somewhere else besides normal bank accounts or any kind of wallets. As we can appreciate, the only four payment systems that present a low bank dependency, as matter of fact, are Octopus card, Ukash and Paysafecard who somehow belong to the smartcard, electronic cash category. This three payment systems are in this part of the plot because they store the money in separate devices rather computers or bank accounts and the transactions are done only between the merchant and customer.

Bitcoin also presents a low bank interference is the process since once the coins has been purchased, every transaction is done independently from where the money initially came from.

On the other side of the plot, we can find the systems who present relatively a middle-high bank interference which is explained by the fact that somewhere in the execution of the transaction, either the customer or the merchant, requires a bank to verify and authenticate a fund transfer. Those payment methods who present medium-high bank dependency and a low system flow, usually fall into the category of electronic wallet system which requires a previous registration into the payment system and a bank to manage the fund transfers. For instance: Google wallet, Amazon payments, Paycash, Skrill, etc.

Exceptions to this rule are those payment systems which use a mobile phone not for the mobile applications but to make encrypted signals to authorize money transfer between the acquire and issuer banks. Examples of these cases are Payfair and Paybox. Sofort banking is also a electronic account based system who present an almost simple system flow but high bank dependency since it is a form of banking online payment which takes the burden to interact with the bank and have funds ready for the customer to spend.

5.1.2 Costs

The graphic is referred to the costs for the customer and for the merchant while using the payment system.

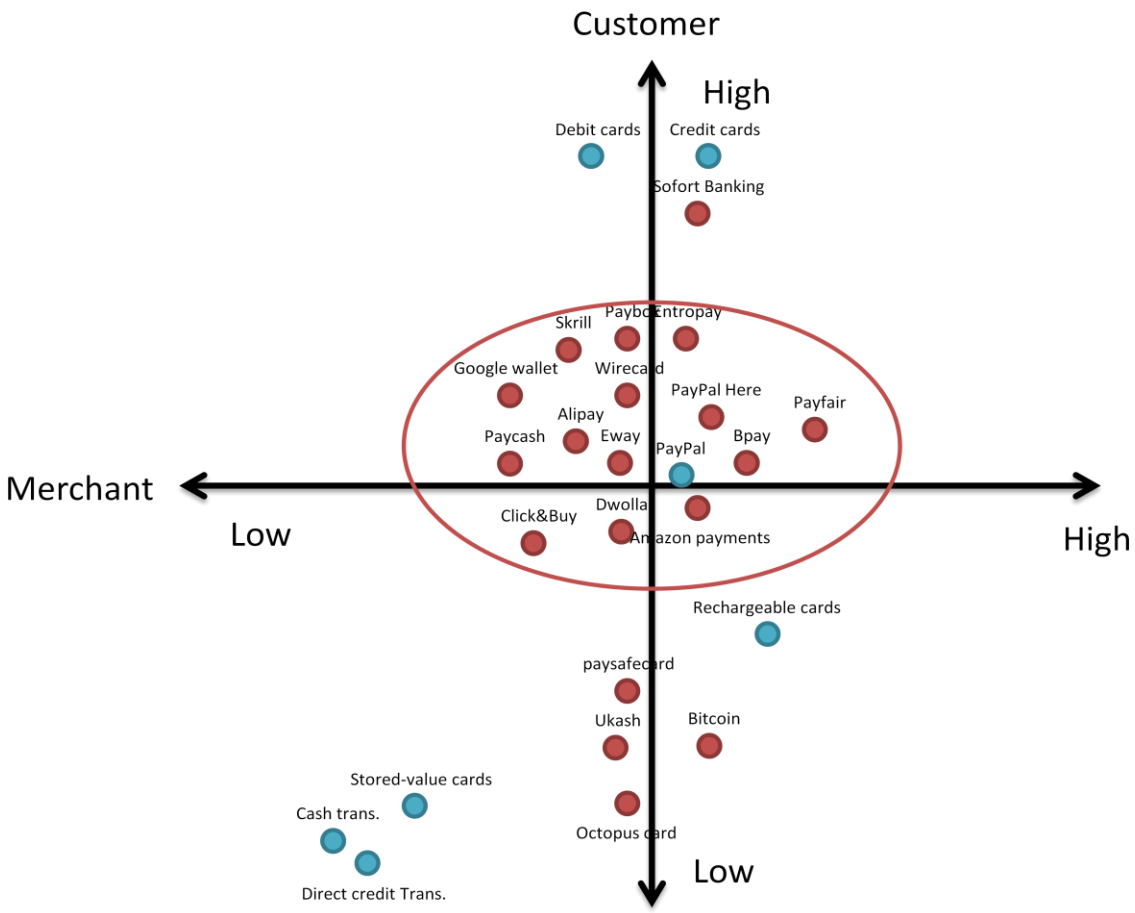


Figure 38. Costs for customers and merchants

As it can be seen, the traditional payment system din terms of costs are lower for the customer as for the merchant, because there are no factor related during the transaction because are mainly face to face. The payment that incurs in lower costs is cash transaction followed by direct cash transfer and stored-value cards. In the case of using credit cards, the costs are higher because for merchants they pay commissions and the customer monthly interests.

In the other hand, the innovative payment system incurs in cost while transferring money from one account to another account and of course the users accept to pay while receiving an optimal service. However, it is noticed an agglomeration in the central part

of the graphic what explains that even if the innovative payment systems incur in costs, they are relatively not so high for the customer nor the merchant.

The innovative payment systems (Octopus card, Ukash, paysafecard and bitcoin) are located as low for the customer and merchant because they are very independent from banks so the cost of transferring of paying via banks are not related to payments.

5.1.3 Benefits (security and privacy)

Security refers to the ability of the payment system to keep the money safe from robbery or lose. Privacy regards the amount of sensitive information that has to be given or shared by the customer with directly the merchant or a different payment system.

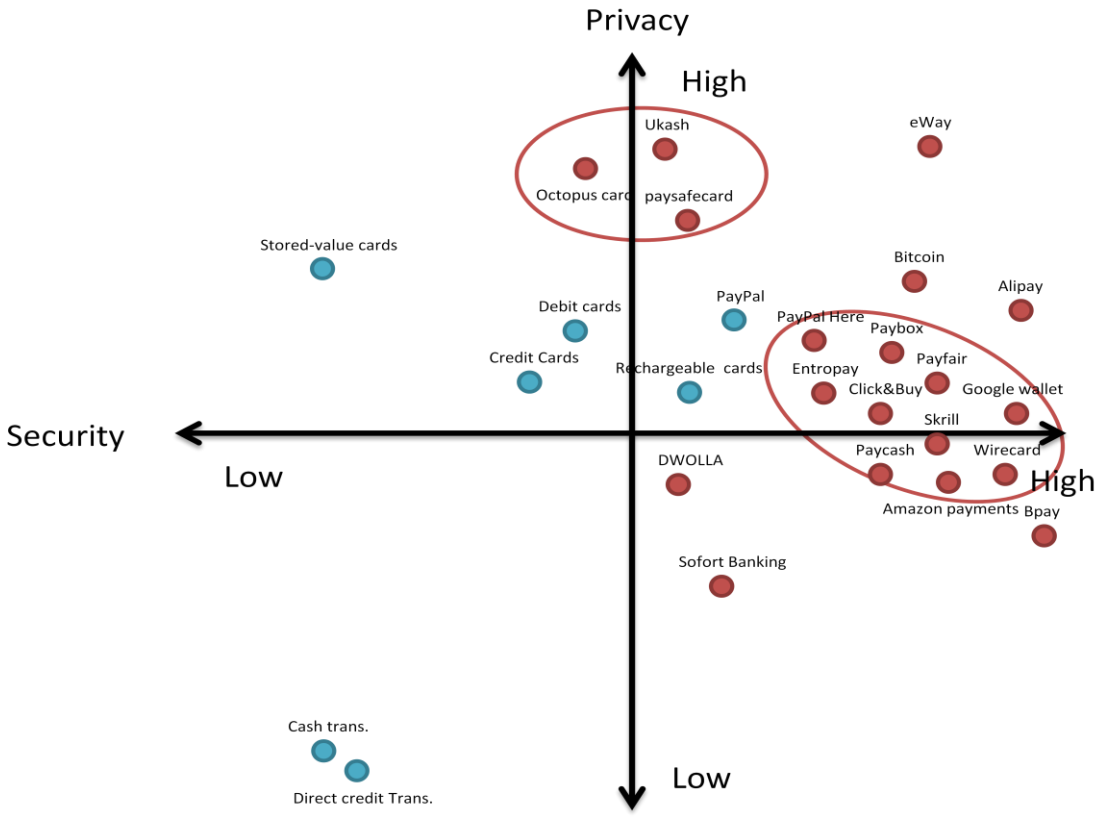


Figure 39. Benefits

First of all, it is very rare to find security down breaks in payment systems because , in theory, they are supposed to be endowed with high security protocols to protect our money. Nevertheless, we yet find payment systems, mainly traditional, such as stored value cards cash transfers and direct credit transfers which can be manipulated and endanger the money within just by having few information about it.

A interesting group to analyze is the circled region at the top of the plot which has high privacy and a medium level of security. This group of payment systems are likely to fall into the very left part of the plot when the instrument where the money is stored (smartcards or scratch cards) is lost, the money is lost as well. This is the same situation as the value stored cards, which are also known as gift cards; whenever the card gets lost, all the value stored in it, is lost as well. Unlike gift cards, smartcards and scratch can still restore the money lost and manage the rechargeable fund from an account, which makes this group of payment move into the very right part of the plot and have superb level of security, just like eWay.

Another group that deserves to be analyzed is the one located at the very right part of the plot and over the X axis. This group of payment solutions is composed by innovative payment systems that are mainly supported by electronic wallet and mobile solutions and present a high level of security and a medium extent of privacy. The high level of security in this group is explained because of the secure protocols that electronic wallets implement to keep money safe and handle fund transfer with banks. Moreover this payment solutions usually are supported with mobile technologies and NFC terminal readers that allow to have virtual credit cards on the mobile device with the same functionalities as a physical one. For instance, Entropay allows customers to have both a electronic wallet and a virtual credit card that both keep the money safe and decreases the risk of counterfeiting or getting the physical card duplicated by robbers. On the other hand, we can appreciate that the majority of the payment systems are found in this region of medium term privacy. This is due to the fact that all of them require, at least, a onetime registration process which means the turning in of sensitive data to an entity, in

this case the payment system. Sofort banking which is the only online banking service we are analyzing in this study, has the lowest level of privacy amongst the innovative payment systems and it can attributed to the fact the service provider is empowered with all the sensitive data and updates continuously, as long as, customer decides to be with it.

They payment solution that often present high-level of privacy are those whose money is stored in an independent instrument such as scratch cards, smart card or even gift cards where the money debited is directly taken from the funds stored within the payment solution. The transaction just requires the introduction of serial code, PIN number or redemption through scanning and it does not include, at any moment, the customer to give in sensitive data. Transactions are based on what is inside of the payment solutions and no more.

5.1.4 Type of devices

The devices required to use the payment systems in the easier way are related to the level of innovation as well, the next graphic establishes four categories related to the use of PC's, mobile devices (tablets, mobile phones, smartphones), No use of devices and physical phones.

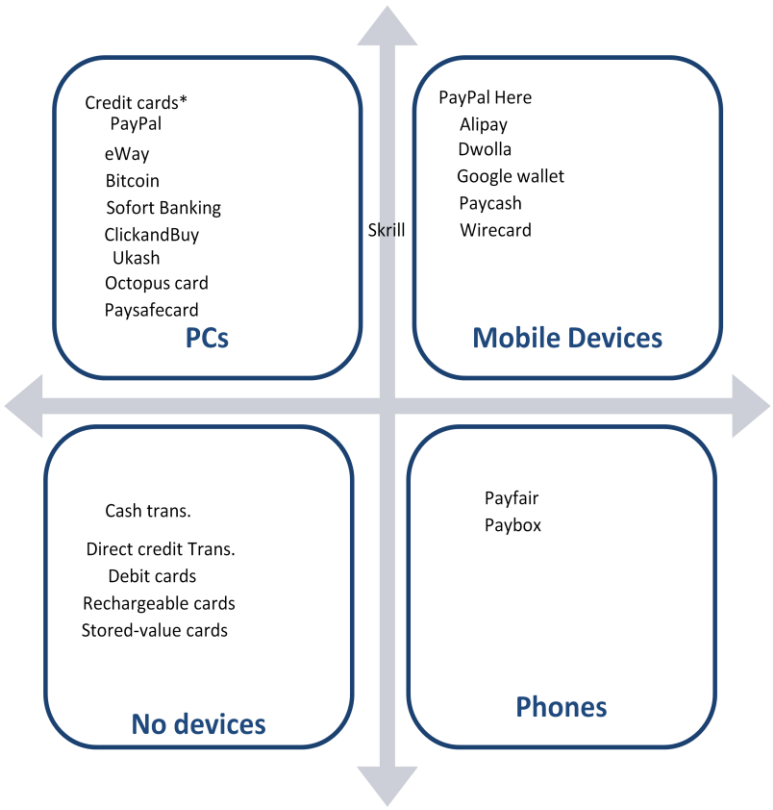


Figure 40. Type of devices

The graphic shows in the area of no devices the payment systems considered traditional, credit card that is mainly use with no devices, it is located in the area of PC's because as it was explained before the credit cards can be also use to make transfer by using Banking Online.

Skrill is equally used in PC's and mobile devices; the majority use as devices the PC's, so in a future they can develop an application for mobile devices in order to improve the shopping experience.

Chapter VI

Chapter VI – Survey Analysis

6.1 Theoretical structure

Survey analysis is a full process that goes beyond the development and distribution of just a set of questions , it involves a entire methodology that starts with the definition of the objective and the scope, designing the instrument and the channel of distribution, the respective questionnaire and data analysis.3

In this survey analysis, we decided to follow the methodology that was just mentioned, so that we could cover the whole phenomenon and achieve the objectives that were defined for this study.

6.2 Objectives

The survey was done after making the research for all the different payment systems (traditional and innovative). The information found about the history and drawback is not considered complete; there are some gaps about how to introduce a new payment system in order that the change reaction will not be negative but positive.

The survey is structured in order to define how customers perceive the innovation of payment systems and how could the innovation evolve in a specific background. Saying this we will consider the main objectives as:

- *To clear up the perception of the Colombian participants referring to traditional and innovative payments*

[3] Principles of Survey Research. Shari Lawrence Pfleeger, Barbara Kitchenham. ACM. November 2001.

- *To define the most important factors that interviewees consider while making online purchases*
- *To define the actual barriers to the B2C E-commerce*
- *To measure the awareness of the people regarding the use of innovative payments in the B2C System*

6.3 Stratification

The population for our particular study regards those Colombian participants who could and might have done payments of any kind throughout their life. There was not such discrimination to what the person might have done, monetarily speaking. In fact, the point of the whole study is to identify, anonymously, what people prefer to do when it comes to payments both online and offline. In this order of ideas, we vowed to follow a Convenience Sampling approach, thus, we can reach those people who are available and , at the same time, those who are willing to cooperate in our study. This means that, our survey was distributed through popular social networks and among family and friends that somehow could provide information to our research.

Since many people that participated in survey are from a Hispanic country, we decided to post the questions in two languages: English and Spanish. Our intention is not to stratify the result according to the place where they come from, but to analyze the whole population that has been surveyed.

6.4 Questionnaire design

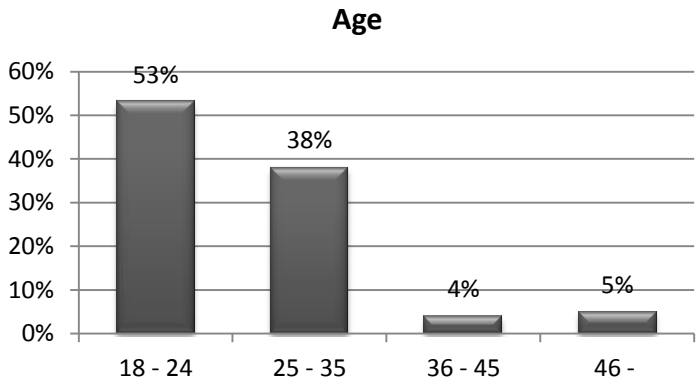
The questionnaire design was done following some steps for creating surveys as:

- *Defining the target respondents*, which in our case were all the people we could reach by using mails, including students, colleagues, family members, friends and friends of friends.
- *Deciding the question content*, by researching what was the information that could help us to develop the dissertation.
- *Putting questions in significance order and format*, taking into consideration to put the questions that concerns traditional payments at the beginning and then approaching with more "in detail" questions.
- *Checking the length of the questionnaire,* considering the fact to summarize the more important facts in order not to make vague and meaningless questions that give us no contribution.
- *Pre – testing the questionnaire; the* questions are all with just one single answer, one to classify the gadgets of the payment.
- *Developing the final survey format; the* final format is done in an anonymous way and it only takes one-two minutes to complete it all.

6.5 Data Analysis

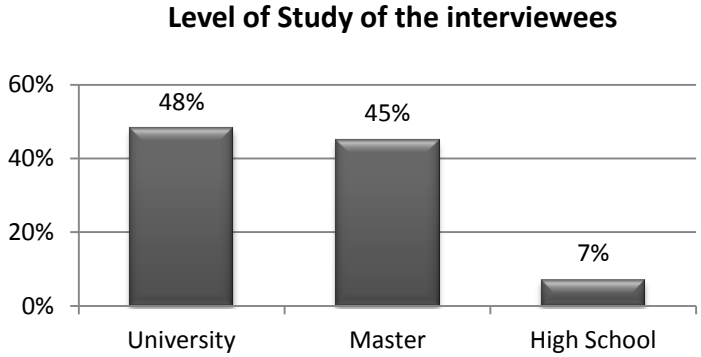
6.5.1 Demographic Analysis

The survey was public available for two months, the number of persons that collaborated by fulfilling the survey was equal to 602; the main filter was the Colombian shopping online experience. For the demographic Analysis we got a 60% male respondents and 40% female.



The higher percentage is 53% for the range of age from 18-24 years old.

Chart 7. Age proportion of the respondents



We sent the survey without regarding the level of study of the interviewee expecting a result similar to the one gotten (University and Master with similar percentage).

Chart 8 Level of Study of the Interviewee

6.5.2 Participants Profile

In this section, our intention is to perceive the population insights and level of awareness about specific topics in the B2C e-commerce context. Our ultimate goal is to point out the consumer profile when doing purchases and finding out which is the best solution for them, in order to enhance the customer experience.

First of all, we shall provide the results of the survey that show an broader picture of the present issue and the respective evidence that shows the level of awareness of the

interviewees. Finally, we shall sort the results of the survey according to the classification given at the literature review.

The participant profile was set by asking some question about the frequency of online purchases, the methods that they have used and heard about, the amount of money spend in one electronic transaction and the kind of features that the customer expect for improving their electronic payment experience.

The 61% of the respondent answered "*Sometimes"* in the frequency of making online purchasing as it is display in the chart 9. The 5% of the interviewees affirmed that they do not have done any kind of purchase online.

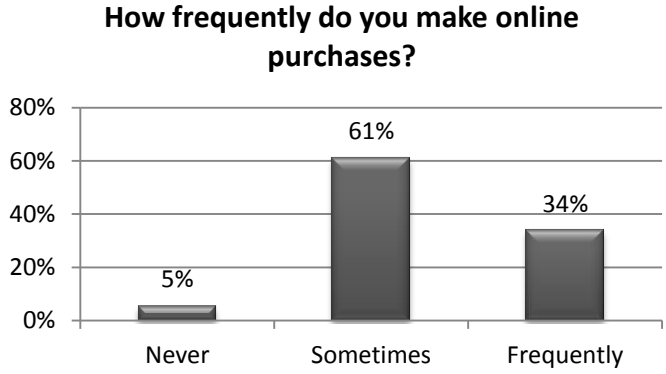


Chart 9. Frequency of online purchases

Subsequent to the fact of the payment systems known and used, the next chart displays that almost the 80% of the respondents spends more than $50 USD, thus the Colombian online shopper prefers to make large payments in order to reduce the costs of paying by credit card or debit card that in the previous chart it is clear that they are the payment more used.

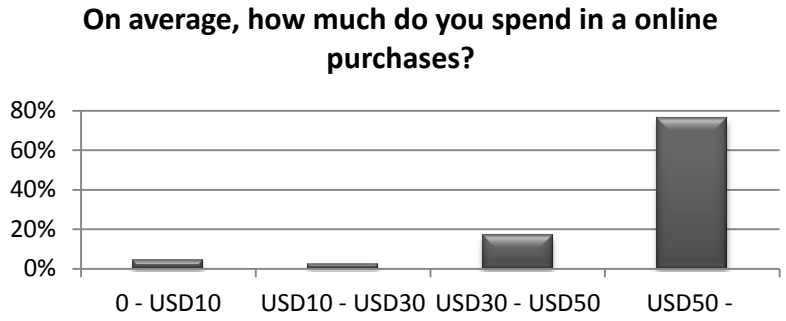


Chart 10. Average expenditure at online purchases.

Transaction that were considered in the research and exposed in the survey were mainly: Bank Transfer, Ticket purchasing, Items purchasing, online bets and online gaming.

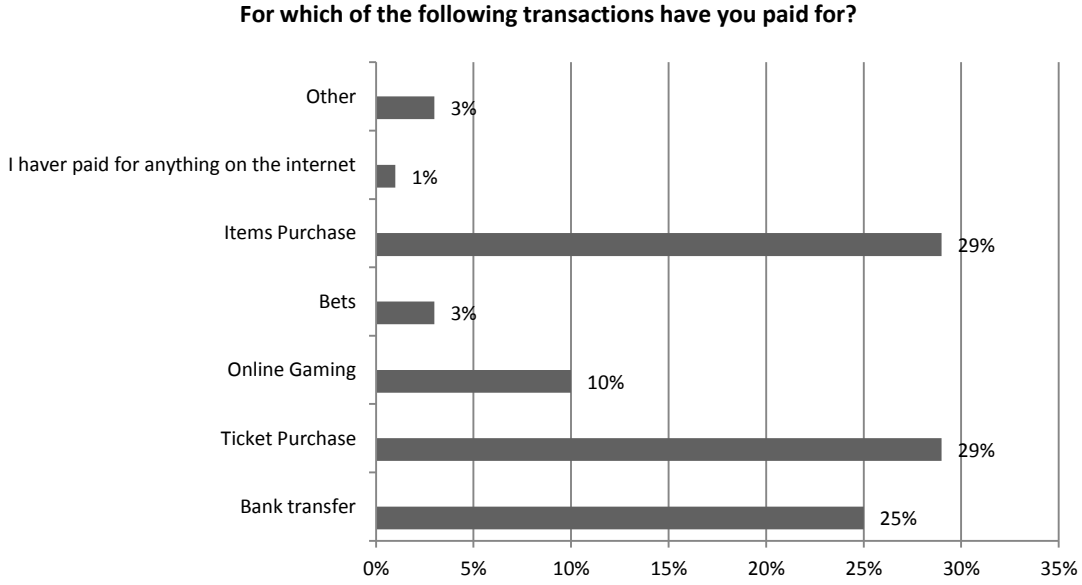


Chart 11. Customers' preferences while buying online.

Items purchasing and ticket purchasing, both of them have a 29% of preference, it means that as it was explained before customers make online items purchasing because occasionally the assortment of "X" store is not enough for the customers demand and it

persuades the customer to buy the items online. (This is a coherence data regarding the result previously analyzed). The ticket purchase can be highly attached to the fact of complexity of buying in directly to the airline or with an intermediary, in other words "easiness of making the ticket purchase".

The research considers four places to store the money, the traditional place (Banks), PC's, Mobile Phone's, USB's and Smartcards. The survey respondents with a 61% prefer to store their money in a "safer" place as it is the bank that it is kept safe by thirds, so the responsibility of their money is not 100% of the accountant by also of the bank. In the other alternatives of saving the money the risk of losing the devices or being robbed is higher because the owner has the entire responsibility, thus, the lowest percentage (3%) goes to USB, a small device that can be easily lost or robbed.

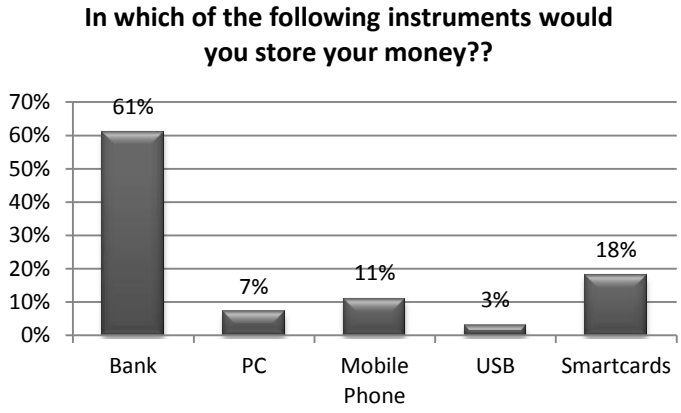


Chart 12. Places to store/keep money safe

6.5.3 Current level of awareness in the interviewed Colombian population.

The first statement proposed was the fact of knowing if the respondent were aware about the meaning of Electronic Payment, in this case we got a positive answer with a 98% .

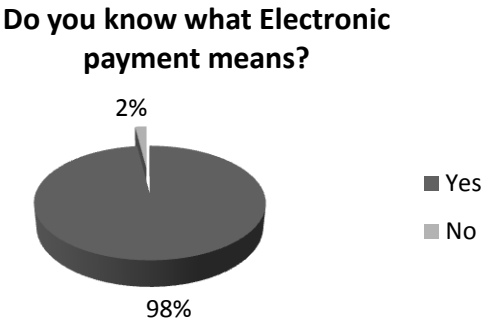


Chart 13 Awareness of the Electronic Payment Concept

The 98 percent of the respondent affirm that they know the concept of Electronic Payment; this can implied that there is the possibility of them doing an electronic payment or in the other case the fact of being aware of the e-commerce new wave that has already started in some other countries.

By having asked the question of the awareness, we asked if the respondent has made any kind of electronic payment the result was again posit0ive with a 96% of yes Vs. a 4% of no.

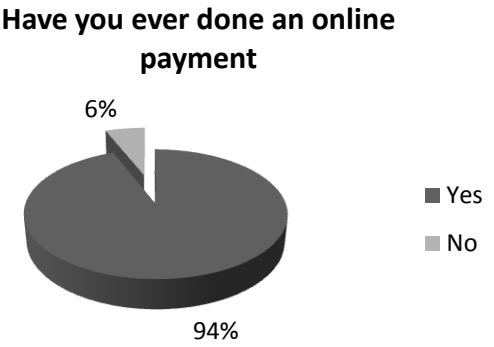


Chart 14. Percentage of respondents that have done an online payment

The customers with a 98% said that they know what the meaning of electronic payment is and the 94% of the respondents affirmed that they have done an online payment, this

means that 4% more knows the meaning but still do not have experience any kind of shopping online.

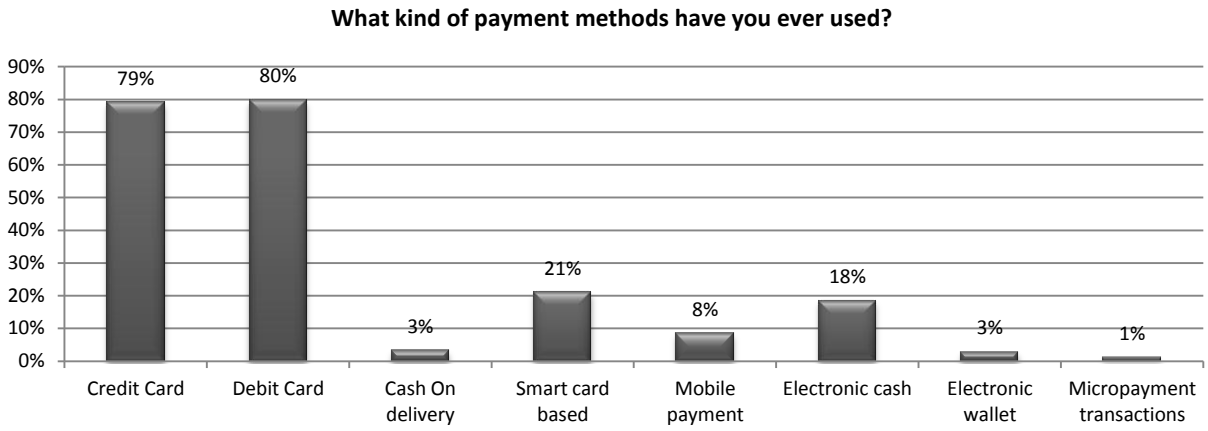


Chart 15. Payment methods frequently used in Colombia.

Chart 15 displays a clear favoritism by the Colombian population towards traditional payments systems such credit and debit cards. However, Cash on delivery which ends up in the same category is not that preferred nowadays. On the other hand, we can appreciate that the 18% of the total population has tried the electronic cash mechanism and it is the third one after credit card and debit card.

Internet as a commodity and the massive diffusion of smartphones all across the territory is an upcoming event that will definitely change the course and preferences of the customers. Given the fact that credit and debit cards have been the chosen payment mechanism in the past decades, it is kind of hard to expect a growth in the other payment systems in a near future. Nonetheless, mobile commerce and electronic wallets provide new ways to manage theses traditional mechanism, enhancing the performance through new features. That being said, it is still possible a growth as long as customer can preserve the figures of their traditional payment system with new functionalities.

Going deeper in our analysis, Chart 16 shows the responses of the participants when asked about them knowing about any of the payment systems. The intention of the question was just to assess how much people know about the new generation of payment systems, regardless, they using it or not.

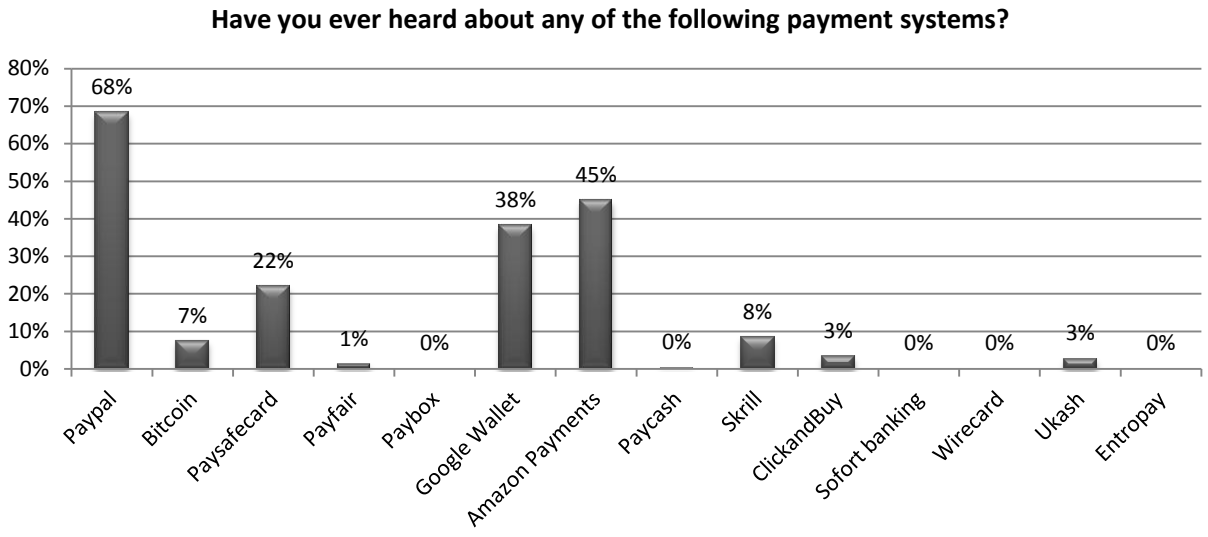


Chart 16. Payment systems' awareness in Colombian territory

We can appreciate that PayPal is up above at the participants 'mind when asked about their knowledge about one of the presented options. In the second and third place, we have Amazon payment and Google wallet respectively, showing a reasonable portion occupied in the interviewees mindset. Being Google the most famous browser on the internet and Amazon a top notch online store, might create certain awareness in customers mind. This also applies for PayPal's case, which was initially adopted by eBay as preferred payment solution.

6.5.4 Expectations assessment

Since innovative payment systems might come new for many people , it is wanted to make sure that the participants could express their expectations about the new generation of payment systems, thus making easier the detection of value adding characteristics.

The participants answered as well, the main factors that made them buy online and in order of complete acceptance we got that buying online is consider a faster method that make it face-2-face or in cash. According to the research the main characteristic of the payment systems shows a focus in the easiness of using it (Friendly use) and the third one in order descendent is "International Purchases", it means that some of the vanguard brands are not available in the stores or sometimes the assortment of the store is not enough to fulfill the customer needs.

Factors	Yes	No
Faster method	95%	5%
Easiness of use	93%	7%
International purchases	80%	20%
Short Cycle Time	59%	41%
Range of payments and multicurrency support	51%	49%
Security	43%	57%
Privacy	39%	61%
Token based	21%	79%

Table 9. Factors that interferes in the first payment

On the other hand, for respondents in their first experience of shopping online the Security, Privacy and token based are not the factors that made them to start buying. So, as a future improvement or future work these three factors can be exploit in order to have a correlation between "what consumer wants" and "what consumer finds". Because

as matter of fact security and privacy are two issues that clients are looking for, but still they do not feel 100% sure about the advertisement of the actual payments methods.

The survey was also meant to understand the factors that customers are looking for online shopping. The next factors were the one we considered according to Turban et al., 2010; in other words these factors are the ones that are more important for clients and also the ones that merchant are more aware of : Security, Easiness of using it, Faster method, token based, privacy, Short cycle time, international purchases, range of payments and multicurrency support.

Factors	1	2	3	4	5
Security	9%	4%	13%	10%	64%
Easiness of using it	2%	2%	10%	28%	58%
Faster method	1%	1%	9%	36%	53%
Token based	29%	18%	24%	18%	11%
Privacy	8%	11%	23%	22%	36%
Short Cycle Time	9%	9%	34%	32%	16%
International purchases	5%	4%	22%	29%	40%
Range of payments and multicurrency support	8%	10%	28%	36%	18%

Table 10. Important factors for customers

As a result we obtained that the factor “security” was considered as the most important; from 1 to 5 being 5 the most important, the 64% answered that it is one of the factors that customers are looking in the payment method when they decide to sign up for one of them. The factor “Easiness of using it” was considered as a 5 for 58% of the participants.

The factor “Faster method” was considered as a 5 with a 53% and international purchases 40%. According to what was explained in the table of Factors that interferes in the first payment , security was in the bottom line, and in this table it is consider as the factor that people look for the most, thus , we can infer that customers make purchases but no so frequently cause they do not feel safe by doing it, as an improvement for the actual payment methods could be a bigger approach to Security, and a bigger advertisement of the countermeasure have been developed by the creator (s) of the payment.

The payment has to be made easily; the customer should be able to understand the steps that the transaction has to surpass or at least a clear knowledge about the steps in order to accept the transactions.

79% in Table 1 affirmed that Token based did not play any role in considering the electronic payments as payment method, and the participant of the survey also affirmed that token based was a factor for them irrelevant. It is needed to take into consideration that the amount of people that collaborated with the survey was not big enough for the entire Colombian population. For example in this case, token based was not as important as security but as the literature review explains some of these methods are focused in online gaming.

Chart 17 shows some features that might be wanted by the customers of an innovative payment systems. We can appreciate that most of the participants concern about being notified whenever their transactions have been processed and that someone makes sure the purchased products arrive well and safe into the customer hands. These kind of features are already available in traditional payment systems, for instance, banks supports notifications upon transaction execution to its customers.

One click operational transactions regard the fact that some payment can be easily done with just one click, instead of the tedious processes of filling in with all the sensitive data. One click means that customer will be able to do fast checkout from the online shops since information is stored in single place and pulled out upon request. 25% of the

interviewees checked on this feature, which is equivalent to 150 persons out of the total. Though is a small proportion in comparison with the other answers, new generation movements such as m commerce might be one click operational.

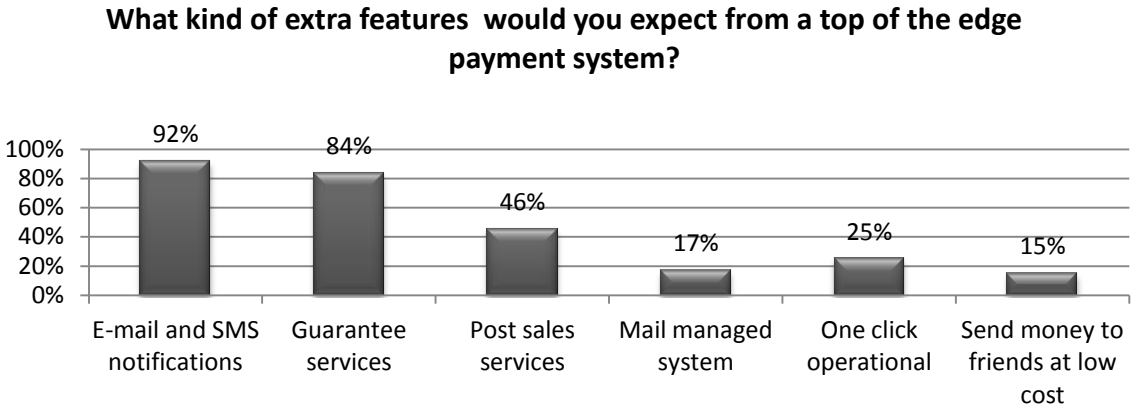


Chart 17. Interviewees expectation about innovative features.

Another factor that should be taken into account is the comfort of the user whenever executing a online payment. The following question pretends to analyze the position of the participants whenever they are requested to introduce their sensitive data into the web shops to finish the purchase. Chart 18 shows the issue just mentioned and the users' general mind set.

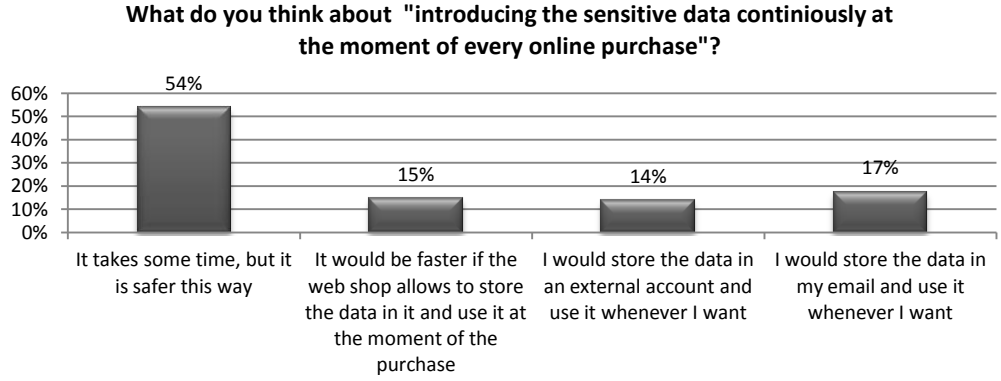


Chart 18. Users' perceptions about introducing sensitive data at online purchases.

The statement “It takes some time, but it is safer that way” is the most chosen one amongst the options and it gives us an idea of the change resistance phenomenon that Colombia undergoes nowadays. Customer might go thought their conventional ways to fill the financial data, rather than trusting other mechanism to do that for them. This being said, emergent innovative payment systems that want to spread across Colombia, should focus on different features rather than fast checkout.

Another question that falls into this phase of the study is display in Chart 19. The question was directed, exclusively, to those participant who had actually used any other payment system rather than traditional ones. As a matter of fact, just 130 interviewees participated in this question, being the answers as follows.

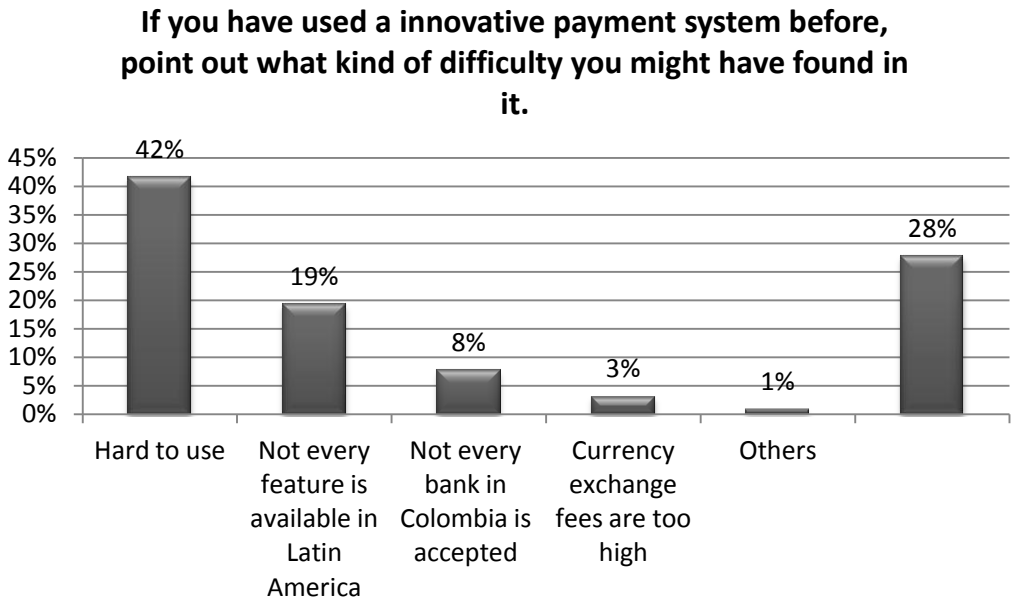


Chart 19. Innovative payment complaints.

As it is displayed, the 42 % of the participants declared that the experience was limited by the non friendly user platform. On the other hand, 28% of the interviewees declared that no difficulty was spotted during their experience. Non friendly user platform is a delicate factor that should be carefully analyzed since it is an open door for customers to instantly reject the payment system without even trying other features.

Colombia is not a country where all the payment methods described in Chapter III and IV are available, but despite of that, the consumers are interested and open minded to the whole idea of innovative systems, they found the idea of easiness and simplicity very tempting and attractive that are able to try the new wave if it is introduced in the market regarding the factors previously explained.

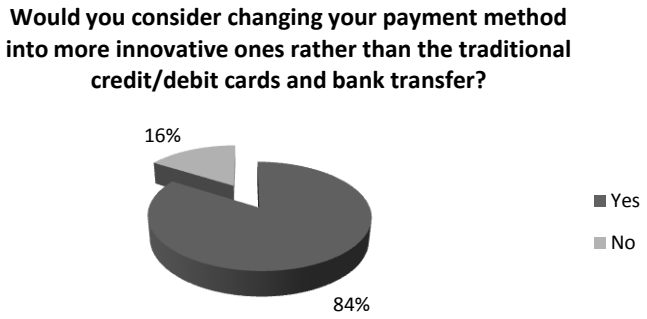


Chart 20. Customers perception to more innovative payment methods.

6.5.5 Analysis based on the classification

At this point of the study, our intention is to know how much the participants know about the four types of payment systems that we categorized at the literature review. 7

According to the perception of the customers, the mobile devices play an important role in the development of new technology (Kima et. Al, 2010), this phrase supports the result of one of the survey question: "*Do you think devices play an important role in more simple payments?",* with an 86% the participant agree with the fact of new payment systems supported by mobile devices, that as the definition said are handheld buy customers so creates a perception of control.

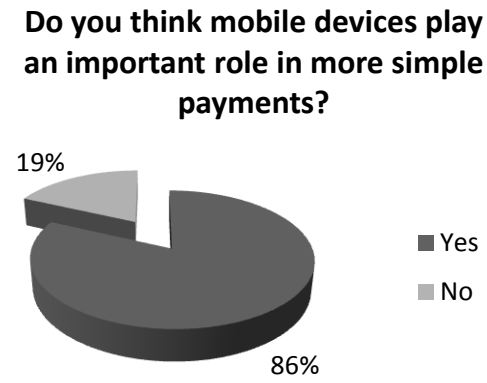


Chart 21. Customers' perception of mobile devices

In Colombia there is the new trend of Banking Online, this new banking online helps the bank clients to have control in their bank account by receiving a text message to their mobile phone with every transaction or movement done. Sometimes it also gives the alternative of accepting the transaction. This new trend is reflected in the results of the next pie chart:

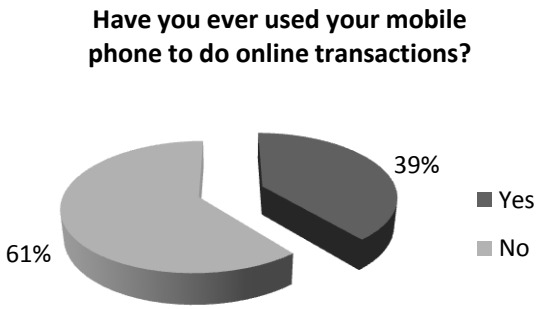


Chart 22. Customer awareness of transactions using mobile phones

Near Field Communication started with its boom in 2011 when Blackberry was the first brand in being certified by using this technology to pay. (Giaretta, 2011). By now, not only

the Blackberry has the option but also the Androids of high range. Colombia as all the countries in the world is experiencing the wave of androids and Iphones, so the fact of having mobile phones with this characteristic makes the customer and/or the device holder curious about the new things that are going on; these are the main reason of having a 31% of respondents stating that there are familiar to the term NFC.

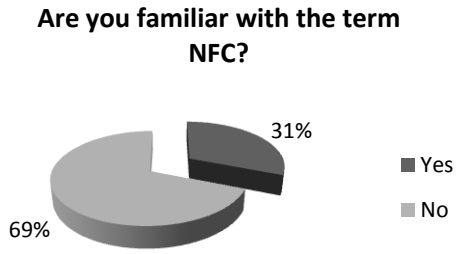


Chart 23. NFC term awareness

Chart 24 and 25 display the association that people tend to do when asked about transactions related to micropayments and smartcards. It should be noted that smartcards are a category of electronic cash, according to the literature review. (Abrazhevich, 2004)

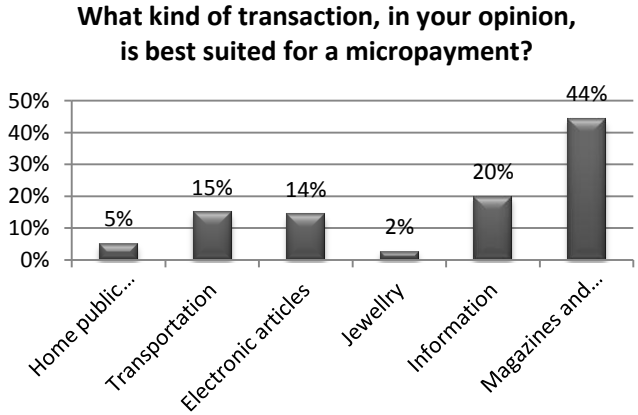


Chart 24. Different conceptions about micropayments.

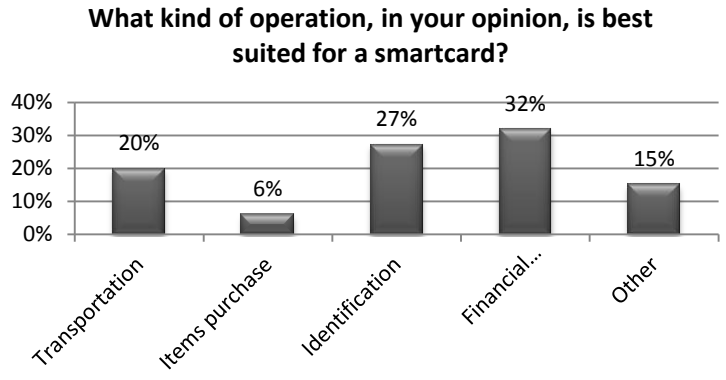


Chart 25. Different conceptions about Smartcards.

Chart 24 shows that people correlate the prefix “micro” with the real meaning of the word and create an idea accurate enough to suppose that micropayments regards to purchases of low price goods/services. As it is shown, the 44% of the interviewees associated the payment of magazines and newspapers as the type of transaction best suited to micropayment. The second most chosen answer was “Information” which occupied 20% of the total participants. Clearly, information is another type of web content whose cost is way below a dollar. (Newman & Sutter, 2002).

Micropayments are a flexible way of purchase of low price products regardless the transaction cost that is usually debited with traditional payment means. Thus, customers should beforehand the amount debited whenever they execute a transaction and face it against the value of the purchase. In theory, one usually does high value purchase to compensate the transaction fee paid, for instance, with credit cards.

Chart 26 displays the level of awareness of people whenever they make a transaction in which there is a fee to be charged. The charts shows that 98% of the participants are aware and know the exact amount of the fees. It is taken for a fact that, customers who know the price of what they are going to buy and the fee of the transaction, are more likely to measure the worthiness of it and assess different options. In our particular case, a customer could go easily and try a micropayment solution, since it would be more cost effective.

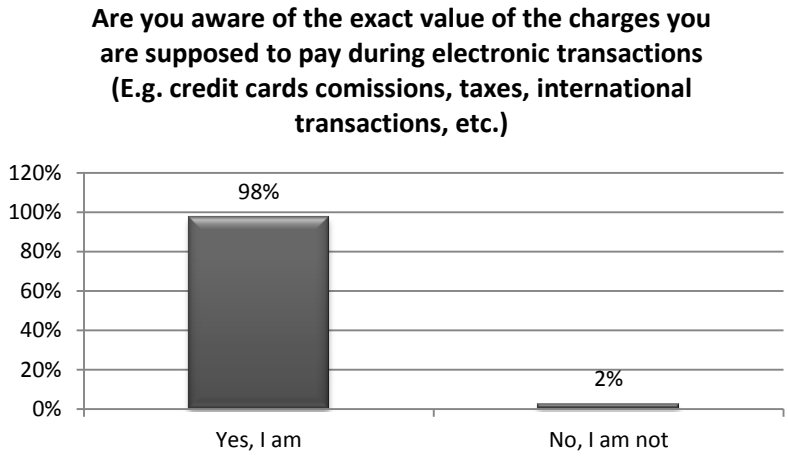


Chart 26. Level of awareness about charges and fees.

Chart 25 shows people's association when asked about smartcards. As it was expected, almost half of the participant affirmed that smartcards were most suited for financial transactions above anything else. As it mention by the Colombian magazine Dinero.com4, the smartcards were initially prompted for payments at PoS, universities, transportation and banks with a forecasted expansion in the upcoming years since 2009. According to the chart, the two most common associations done by the participants are related to identification and financial transaction which is explained by the fact students use smartcards to have access to their campuses and the new set of smart cards with chips given by the banks to support more secure transactions.

The next question is intended to know if participants were familiar with the concept of a scratch card just like we did with Chart 24 and 25. The results in Chart 27 show that almost the 50% of the participants do not know what a scratch card, which ends up being rare since scratch cards were the refunding method for prepaid cell phones in the last decade.

[4] Dinero.com, 2013

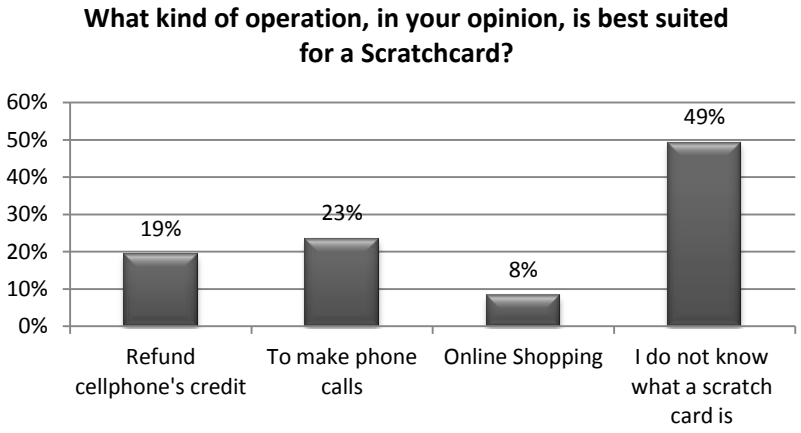


Chart 27. Different conceptions about Scratch cards.

In the last part of the study, we would like to highlight what could help the payment services providers to attract more customers into them. The next question, displayed in Chart 28, intends to demonstrate how customers normally come across new payment system. It does not really mean that they have to use it, it just a matter to be aware of.

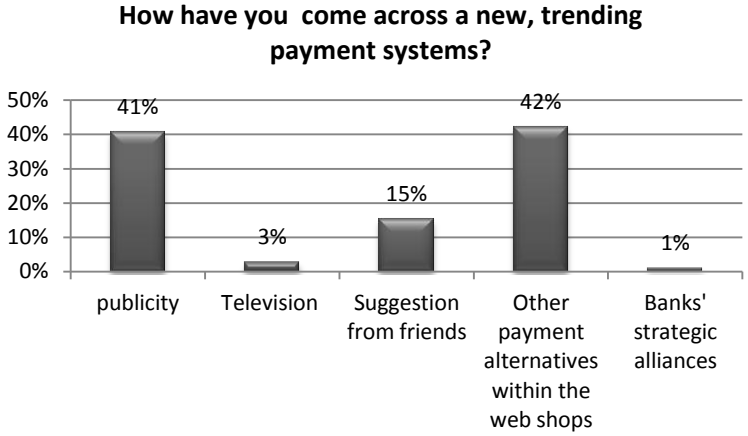


Chart 28.How customers come across new payment systems.

During its analysis, 124 participants reported that they have never come across any payment system, so the answers in Chart 28 are based on the 478 participants left. An underlined assumption is generated our of the chart and it is the remarkable influence of

visibility and the effort to create brand awareness trough publicity and to offer a variety of payment methods, so that customers can pick whichever they prefer.

6.6 Limitations

The limitations during the survey are:

- Our distribution channel was mainly Facebook, so, the reach was not all the Colombian population.
- No respondents; despite of the fact of sending the survey via email, facebook or posted on groups there were people that did not answer the form.
- Regarding the issue of the bias to the Colombian internet experience; we must say that the innovative payments have no penetrate in its total the Colombian territory, thus the information regarding the new technology is quite poor.
- The sample size was defined with the Convenience Approach that means "*All the people available to cooperate",* is not enough for defining the behavior of the population, but of course it gives us an idea.
- The questions had predefined answers what does not let the respondent to write down (in case of need) another answer not specified in the question.
- As a methodology of surveys it is needed to make two or more surveys in order to understand the change in the behavior in different times; we only sent the survey once.

Chapter VII

Chapter VII – Conclusions and Future Works

7.1 Conclusions

The traditional payment systems are available for the people who still do not feel safe when using alternative means, but the innovative payments are the new generation that is spreading across the world by making improvements to the online shopping experience.

So far, we can appreciate that the most differentiating factor is the technology, in other words, every day the technology in those kind of payment is getting sharper and sharper, from faster methods to more secure transactions; alliances between physical banks and web security companies are playing an important role in this phenomena.

The final idea of improvement is having the product or service as easy as doing "click" from your personal mobile device, which can be PC, tablet, smartphones, phones. The population nowadays has more access to mobile technologies which means more development of applications to facilitate the access to web store just like making purchases or payments.

From the survey we can appreciate the Colombian behavior, the information to highlight is the favoritism towards traditional payments systems such credit and debit cards with more than the 80% against other kind of payments. It is true that the Colombian population is open minded and willing to try new kind of payments experiences but the facto of easiness and user friendly is the constrain for this step (42% of the respondents have their credit/debit card registered in a innovative payment system but they declared that the experience was limited by the non friendly user platform).

Something to be taken into account is the fact that the factor “security” was considered as the most important by 64% of the respondents , thus, this the main factor they are looking in a payment method when they decide to sign up for one of them.

7.2 Future Works

This thesis work could be the first step to what could be complex project in the Colombian context. We have seen that the present study has tried to scheme customer profile and best match this profile with a payment solution that might satisfies his/her needs. Unfortunately the number of people that was willing to cooperate in our study is not enough with respect to the total Colombian population. In future works, it would be interesting to increase the number of participant as much as possible across different regions of the country and to emphasize in particular scenarios that are going on in the passing days. Such scenarios might include a dynamic analysis based on real statements about Colombia currently situation and might have some influence in the B2c e commerce topic.

- Fraud on payment systems in Colombia and full secure payment methods that can diminish the phenomenon.
- Implementation of multi functional smartcards that allow Colombians to haven access not only to their universities but to the new set of transportations that are being introduced in the most important cities.
- The increasing number of smartphones in Colombia is a matter that should be assessed so that more transactions and operations could be mobile phone supported.

On the other hand, if the study cannot be executed with such level of detail in the current country, there is still the possibility to perform the inquires in more than one country and present comparisons and different profiles. It would be interesting to assess the different customers' perceptions about electronic payment systems and generalize a standard behavior per country.

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Appendix

Survey

Questionnaire

Just a couple of minutes, Thanks!! -- Solo un paio di minuti, Grazie !! -- Sólo un par de minutos, Gracias !! ---

* Required

Sex *

- F
- M

Age *

- 18 - 24
- 25 - 35
- 36 - 45
- 46 -

Level of Study *

- < HighSchool / Superiore / Bachiller
- University / Università / Universitario
- Master / Master / Master o Especialización

Are you working at the moment? *

- yes
- No

Do you know what electronic payment means? *

- Yes
- No ---> Cluster of payment methods that are supported by new technologies

Have you ever done an online payment ? *

- Yes
- No

Do you have your debit/Credit card registered in a electronic payment system? *

- Yes
- No

What were the main factors that convinced you to make electronic payment? *

	Yes	No
Security		
Easy of use		
Faster method		

	Yes	No
Token based		
Privacy		
Short Cycle time		
International Purchases		
Range of payment and multicurrency support		

Being 5 the most important, classify the factors that you consider the more important ones *

	1	2	3	4	5
Security					
Easy of use					
Faster method /					
Token Based					
Privacy					
Short Cycle time					
International Purchase					
Range of payment and multicurrency support					

Do you think devices play an important role in more simple payments? *

- Yes
- No

On average, how much do you spend during an online purchase? *

USD10 - USD30

- 0 - USD10
- USD10 - USD30
- USD30 - USD50
- USD50 -

Which of the following transactions have you paid for? *

- Bank transfers
- Tickets purchase
- Online Gaming
- Bets
- Items purchase
- I have never paid for anything on the internet
- Other:

Have you ever used your mobile phone to do online transactions? *

- Yes
- No

In which of the following instruments would you store your money? *

- Bank
- PC's
- Mobile Phone
- USB
- Smartcards

Are you familiar with the term NFC ? *

NFC is Near Feild Communication. It is a bi-directional short range communication for both sending and receiving information.

- Yes
- No

Would you allow 3rd parties companies (banks or online payment services providers) to hold and manipulate your financial information? *

- Yes
- No

Would you consider changing your payment methods into more innovative ones rather than the traditional credit/debit cards and bank transfers? *

- Yes
- No

What kind of payment methods have you ever used?

- Credit Card
- Debit Card
- Cash On delivery
- Smart card based
- Mobile payment
- Electronic cash
- Electronic wallet
- Micropayment transactions

Have you ever heard about any of the following payment systems?

- PayPal
- Bitcoin
- Paysafecard
- Payfair
- Paybox
- Google Wallet
- Amazon Payment
- Paycash
- Skrill
- ClickandBuy
- Sofort Banking
- Wirecard
- Ukash
- Entropay
- None of them

How frequently do you make online purchases?

- Never
- Sometimes
- Frequently

What kind of extra features would you expect from a top of the edge payment system? *

- ☐ E-mail and SMS notifications
- ☐ Guarantee services
- ☐ Post sales services
- ☐ Mail managed system
- ☐ One click operational
- ☐ Send money to friends at low cost

What do you think about "introducing the sensitive data continiously at the moment of every online purchase"? *

- ○ It takes some time, but it is safer this way
- ○ It would be faster if the web shop allows to store the data in it and use it at the moment of the purchase
- ○ I would store the data in an external account and use it whenever I want
- ○ I would store the data in my email and use it whenever I want

If you have used a innovative payment system before, point out what kind of difficulty you might have found in it. *

- ☐ Hard to use
- ☐ Not every feature is available in Latin America
- ☐ Not every bank in Colombia is accepted
- ☐ Currency exchange fees are too high
- ☐ Others

What kind of transaction, in your opinion, is best suited for a micropayment? *

- ○ Home public services payment
- ○ Transportation
- ○ Electronic articles
- ○ Jewellry
- ○ Information
- ○ Magazines and newspapers purchase

What kind of operation, in your opinion, is best suited for a smartcard? *

- ○ Transportation
- ○ Items purchase
- ○ Identification

- Financial transactions
- Other

Are you aware of the exact value of the charges you are supposed to pay during electronic transactions (E.g. credit cards comissions, taxes, international transactions, etc.) *

- Yes, I am
- No, I am not

What kind of operation, in your opinion, is best suited for a Scratchcard? *

- Refund cellphone's credit
- To make phone calls
- Online Shopping
- I do not know what a scratch card is

How have you come across a new, trending payment systems? *

- publicity
- Television
- Suggestion from friends
- Other payment alternatives within the web shops
- Banks' strategic alliances
- I have never come across to any new payment system