



UNIVERSIDADE CATÓLICA PORTUGUESA

Digital transformation in the banking sector and its impact on financial inclusion

BIM Peru Case Study

By

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Final work presented to the Universidade Católica Portuguesa in the modality of a
dissertation to obtain the degree of Master in Marketing

By

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Abstract

Purpose. The objective is to understand how the digital transformation in the banking sector can foster financial inclusion. Besides, the study addresses the main concepts of the digital economy, digital transformation, FinTech, and we will focus on financial inclusion and their issues. Besides, it is interesting to understand through real business cases how advances in technology can also benefit disadvantaged target groups. This study will concentrate on Peru because it is considered one of the leading emerging markets in South America. However, it has one of the lowest rates of financial inclusion in the region. Therefore, we will analyse the specific case of BIM mobile wallet, which aims to reach the unbanked people.

Method. The method used was the qualitative analysis of content with the intention of understanding and identified the main drivers of the digital transformation, its opportunities and impact on financial inclusion. Moreover, the case study methodology was chosen to develop insights and to make a depth description of BIM. In addition, a questionnaire and interview were also designed to complement the study.

Findings. The technological revolution in the financial sector has led to the emergence of FinTech, whose products can be used to reach and serve the unbanked and thus promote financial inclusion.

Research limitations. There is still not enough academic information about the use of new technologies to promote financial inclusion in Latin America, because the topic is still new in the region, especially in Peru.

Originality/value. This study contributes to the academic literature, first, by offering an overview of the available knowledge about digital transformation in the financial sector and financial inclusion; secondly, by analysing the situation of financial inclusion in Peru and the specific case of BIM.

Keywords. Digital economy, Digital transformation, Mobile wallet, Financial inclusion, FinTech, BIM Peru.

Abstrato

Objetivo. O objetivo é entender como a transformação digital no setor bancário pode promover a inclusão financeira. Além disso, o estudo aborda os principais conceitos de economia digital, transformação digital, FinTech, e focaremos na inclusão financeira e seus problemas. Além disso, é interessante entender através de casos reais de negócios como os avanços na tecnologia também podem beneficiar grupos-alvo desfavorecidos. Este estudo se concentrará no Peru, pois é considerado um dos principais mercados emergentes da América do Sul. No entanto, possui uma das taxas mais baixas de inclusão financeira na região. Portanto, analisaremos o caso específico da carteira móvel BIM, que visa atingir as pessoas não-bancárias.

Método. O método utilizado foi a análise qualitativa do conteúdo, com o intuito de compreender e identificar os principais direcionadores da transformação digital, suas oportunidades e impacto na inclusão financeira. Além disso, a metodologia do estudo de caso foi escolhida para desenvolver insights e fazer uma descrição detalhada do BIM. Além disso, também foram elaborados um questionário e uma entrevista para complementar o estudo.

Constatações. A revolução tecnológica no setor financeiro levou ao surgimento da FinTech, cujos produtos podem ser usados para alcançar e servir os não bancários e, assim, promover a inclusão financeira.

Limitações de pesquisa. Ainda não há informações acadêmicas suficientes sobre o uso de novas tecnologias para promover a inclusão financeira na América Latina, porque o tema ainda é novo na região, especialmente no Peru.

Originalidade / valor. Este estudo contribui para a literatura acadêmica, primeiramente, oferecendo uma visão geral do conhecimento disponível sobre transformação digital no setor financeiro e inclusão financeira; segundo, analisando a situação da inclusão financeira no Peru e o caso específico do BIM.

Palavras-chave. Economia digital, Transformação digital, Carteira móvel, Inclusão financeira, FinTech, BIM Peru.

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I also want to thank my supervisors, the professor Jorge Julião and the professor Marcelo Gaspar, for all the valuable suggestions, knowledge and experience that they shared with me in our meetings and the patience that they have had throughout these last months and most importantly for understanding the context of my situation, to them thank you.

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Acronym index

ASBANC	Asociación de Bancos del Peru
BCRP	Banco Central de Reserva del Peru
BN	Banco de la Nacion
DNI	Documento nacional de identidad peruano
ENIF	Commission for Financial Inclusion
FI	Financial Inclusion
ICT	Information and communication technologies
IMF	International Monetary Fund
NFC	Near-field communication
PDP	Pagos Digitales Peruanos S.A.
SME	Small to mid-size enterprise
USSD	Unstructured Supplementary Service Data

Chapter 1- Introduction

1.1 Background and motivations

First and foremost, the appearance of the Internet, its contents, and its digital services have been the most disruptive process in the last two decades. Furthermore, digital technologies contribute not only to innovation in goods and services but also to innovation in processes, new business models and organisational arrangements (OECD, 2017).

Currently, one of the sectors that has been more impacted by these digital technological advances is the banking sector. A sector that for many years remained untouchable and traditional but nowadays is evolving too quickly. New technology appears to be about to "revolutionise" the world of finance not only as a matter of transactional efficiency but also as a matter of social improvement (WBG, 2017b). For instance, one paradigm that can change in the medium term is the demonetisation of payments facilitated by new technologies, which could turn payments into commodities (Shahid & Razaq, 2017).

As a result of this financial revolution, we have the FinTech, which seems to promise a "win-win" solution at the micro level to the many issues of the traditional financial system (Ernst & Young, 2019). Furthermore, FinTech is offering new opportunities also for FI and greater access to financial services. Indeed, FI is a crucial subject for emerging economies, which are cash-dominated, with high informality, money laundering issues and with barriers against e-commerce (Shahid & Razaq, 2017). In harmony with Gupta (2018), said that efforts are being made to encourage the use of digital technologies and make the devices more accessible to all people who are not yet aware of the advantages of this technological revolution.

1.2 Theme and research question

This study has been chosen for its importance to understanding how the digital revolution in the banking sector can contribute to promoting FI. Besides, it is interesting to understand through real business case how advances in technology can also benefit disadvantaged and until recently neglected target groups. Finally, with this study, we will analyse accurately the Peruvian market, which astonishingly has a high rate of the unbanked population.

Alongside this challenge, we place the corresponding literature review, addressing the following question- “How can the digital transformation in the banking sector foster Financial Inclusion? The case of BIM Peru”. To answer this research question, it will be essential to understand first how this technological and digital revolution can help those less privileged people, with low access and scarcer resources. This group of people that only some years ago continued excluded or forgotten; however, with the arrival of the FinTech solutions and new services, this current picture is changing for good. Secondly, we must understand what the digital economy is. Then what is a digital transformation in the financial sector and finally what role is playing FinTech and analyse in specific the mobile-wallet as a possible instrument of FI.

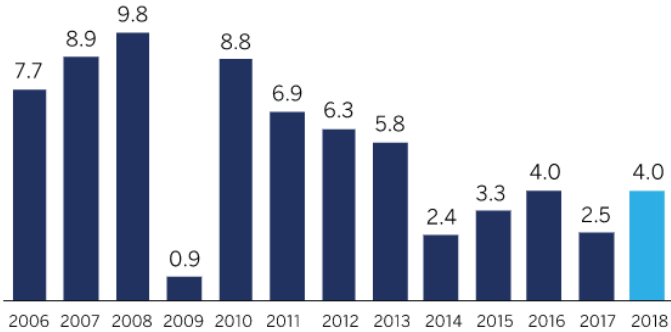
This paper will illustrate all these concepts and their application by studying one specific business case, called BIM Peru. As we know, the mobile wallet is a worldwide trend and is the perfect example of digital transformation. For that reason, we will study BIM Peru and its deployment in the Peruvian market as a strategy to promote FI in this country.

Why Peru¹? Because nowadays, this country is considered one of the leading emerging markets in South America. Moreover, Peru has an essential and recent

¹ Attachment 02

history of economic stability based on an uninterrupted annual average growth of 4.5% of its GDP during the last 16 years (Antón & Conde, 2017).

Figure 01- Real GDP Year-on-year change (%) (BCRP)²



Besides, the country stands out for its people with exceptional abilities and high academic standards. Also, it has a crucial natural, cultural and historical resources. However, despite all this, Peru has one of the lowest rates of FI in the region. Therefore, this study will try to understand what is happening and what opportunities Peru has to improve it with the digital financial revolution.

Table 01- Main features of Peru.³

Government	Chief of State	President Martin Alberto VIZCARRA Cornejo
	Government	Presidential republic
Geography	Area	Total- 1,285,216 sq km (Portugal + Spain)
	Natural Resources	Such as copper, silver, gold, petroleum, timber, fish, iron ore, coal, phosphate, potash, hydropower, natural gas
Economy	GDP	\$424.4 billion (2017 est.)
	GDP growth	4% (2018 est.)
	Agriculture products	Artichokes, asparagus, avocados, blueberries, coffee, cocoa, cotton, sugarcane, rice, potatoes, corn, plantains, grapes, oranges, pineapples, bananas, apples, lemons, pears, tomatoes, mangoes.
	Industries	Mining, steel, metal fabrication; petroleum extraction and refining, natural gas and natural gas liquefaction; fishing and fish processing.
People & society	Population	Thirty-one million (July 2017 est.). 0.95% (Population Growth)
	Language	Spanish (official) 84.1%, Quechua (official) 13%, Aymara (official) 1.7%, Ashaninka 0.3%, Amazonian and other native languages 0.7%, other 0.2% (2007 est.)
	Urbanisation	Urban population- 77.9% (2018). Annual Rate of urbanisation- 1.44% (2015-20 est.)

² <https://estadisticas.bcrp.gob.pe/estadisticas/series/mensuales/resultados/PN01770AM/html>

³ <https://www.cia.gov/library/publications/resources/the-world-factbook/geos/pe.html>

1.3 Scope and general research gap

The study is aimed at analysing the macro concepts involved in the research question. For this purpose, scientific bibliography in the subject from different resources has been consulted. Nevertheless, for the specific case of the digital transformation through the e-wallets, the scope has been limited to Peru. The country where the BIM is being launched, and we will focus on one product, the mobile-wallet BIM.

Indeed, the digital transformation in the financial sector is no longer a novelty topic, and there are many studies on this subject. However, there are still very few research studies with a focus in South America. It may be because the changes occurred first in other countries. In Peru, the digital revolution is still in the development phase. On the other hand, FinTech's impact on FI is still a new topic. For these reasons, the gap in this study is made up of a novel and still little researched topic, such as FI in Peru promoted by the recent digital transformation.

The following themes that are linked to the study are out of the scope because they are not part of the research. (1) We will not deal with the reasons why people do not use new and digital technologies. (2) We will not address the regulatory framework associated with mobile money services and FinTech. (3) We will not cover e-commerce, e-money, e-wallets or platforms. (4) Finally, we know that the impact of FI can be on individuals and SMEs; but this study will only focus the influence on individuals. Otherwise, some of these concepts may be mentioned but just in order to understand the general context of the research.

1.4 Methodology

For the present study, the qualitative conceptual analysis and the exploratory case study methodology together was chosen to develop insights and to make a depth description. On the one hand, by carrying out qualitative research and

applying the case study, we aim to solve our research problem. The qualitative conceptual analysis allows us first to understand the context as well as analyse the current situation. Moreover, it lets us organise ideas to structure and manage the research. On the other side, the business case will help to understand the concepts studied in a practical application. So, we can understand better, analyse, compare and identify opportunities in the case study. Besides, QDA software tool called NVIVO would be used as a tool to classify data into codes and themes. This study is under the guidelines of the APA Standard that has been processed using the Mendeley tool.

1.5 Document structure

This document has been divided into five chapters to facilitate understanding and analysis. The first chapter begins with the introduction of the topic, the motivation for the study, the research question and the gap. The second one presents a literature review concerning the digital economy and transformation in the banking sector, moreover developing the essential points of FI. Then, the third one represents the methodology used in the study and the data collection process in the case of the questionnaire. The fourth chapter includes the study of the business case BIM Peru. Lastly, the last chapter presents the questionnaire results, findings, limitations, future investigation, conclusions and recommendations.

Chapter 2- Literature Review

2.1 Path to a digital environment

In a short time, the whole planet will be connected, and most transactions, services, operations in all countries will be digitised. To cite some examples, Since the incorporation of cameras into mobile phones, the cost of taking and distributing photographs has become marginal, now people publish unlimited pictures. Similarly, search engines have digitised the process of searching for information, saving much time (Shahid & Razaq, 2017).

Besides, traditionally we used to pay for publishing an advertisement, but today, we pay only if the customer visits us, shows interest or makes a purchase. Another example, checking the contents of the refrigerators from the store, or order from the refrigerator door, all these look like a future technology but is already happening (UNCTAD, 2017).

There are more well-known examples in a digital economy in areas including community services (Bizzby), taxi services (Uber), catering (Opentable) and urban tourism (Airbnb). Therefore in the near term, practically all areas of human activity will be implemented with the participation of electronic media and new technologies (Jablonski, 2018). The global digital economy is undoubtedly undergoing rapid development, accelerated innovation and massive application in other economic sectors (Gupta, 2018).

The *OECD* (2017) argues correctly that on the past 30 or 40 years of ICT innovation, every decade has seen a new form of a technological revolution. The digital evolution goes far beyond e-commerce. Moreover, it is not a novelty that digital systems are facilitating many social changes, impacting the behaviour of consumers and increasing awareness of major social problems. For instance, financial exclusion issues, that means not everybody has access to financial services or experience to use them (Kabakova & Plaksenkov, 2018).

What is new in the new digital economy? It is the growth of information and communication technology ICT at an accelerated level (Ivanova & Sceulovs, 2018). ICTs are fostering the development and implementation of many different ideas among countries and industrial sectors. For example, the smartphone adoption rate was 37% in 2015 of the world population, and it is expected to reach 60% by 2020, Internet activity is increasingly ubiquitous and intense also ((CEPAL, 2015) & (Caldentey & Titelman, 2018)).

Moreover, new methods of payment will gradually replace conventional ways of payment. There will come a time when almost all operations will be made online, primarily through mobile devices (Maldonado, 2015). Fortunately, emerging economies are experiencing high mobile penetration too, which may represent new ways to provide access to financial services at a lower cost (Shahid & Razaq, 2017).

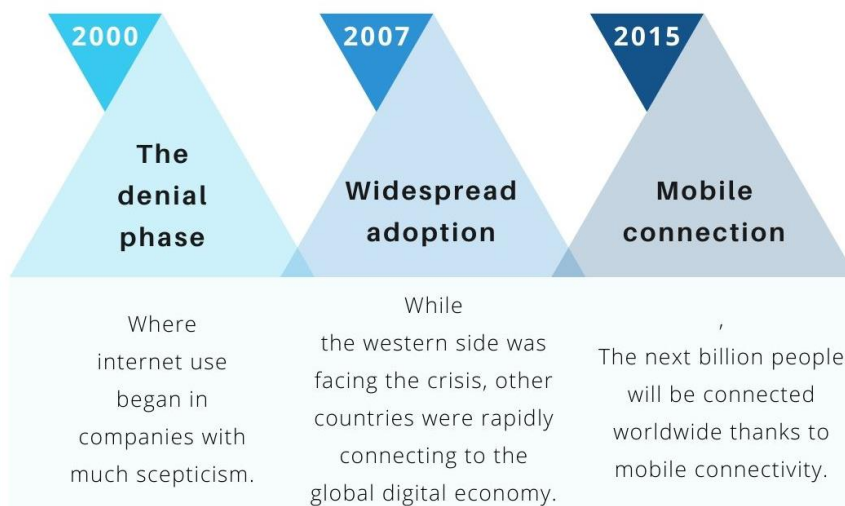
2.2 Digital Economy

The digital revolution is undoubtedly the most critical period of economic, social and technological transformation since the industrial revolution. The digital economy has established itself in an extraordinarily short period, compared to the hundreds of years taken by the industrial revolution.

Furthermore, the emerging revolution in global manufacturing, represented by the Fourth Industrial (Industry 4.0) puts information at the heart of the entire business process (Celaschi, 2017).

Figure 02- Key years in the digital revolution (Ivanova & Sceulovs, 2018).⁴

⁴ Own design with author's information.



According to Gupta (2018), the digital economy is a crucial factor in order to ensure higher productiveness of sectors, foster the creation of new markets and business models, achieve long-term economic prosperity and accelerate the development of the world economy. The "new" or "digital" economy is characterised by being dynamic, not static efficiency. In reality, it is more about new business models, activities and products than about higher productivity (Ivanova & Sceulovs, 2018). Studies have shown that more efficient use of digital technology will boost the economy, growth and even employment. Countries must make efforts to use the digital economy in order to generate more employment, increase competitiveness among countries and improve the service delivery of their citizens (Gupta, 2018).

2.3 Key Drivers for Digital Economy

There are three primary drivers for the digital economy, big data generation, new business models and technologies that are changing the way science, governments, cities and sectors such as health and agriculture work (OECD, 2017). It is aligned with the perspective of the UNCTAD (2017), argues that there are three features of the Digital Economy. First and foremost, new sources of data, which are sending large quantities of data so it can be analysed in order to generate new insights and future products. Second, new commercial models based on technology and platforms, these platforms are changing the organisation of industries and the terms

of competition. Third, the revolution of ICT hardware and software has advanced to the point where artificial intelligence and machine learning applications are proliferating everywhere. In the opinion of Sikhar, Kirtania, & Pani (2019), they identified four drivers (1) the extensive data and analysis, (2) the emergence of new competitors, (3) the new technology companies such as FinTech, and (4) changes in customer attitudes and behaviours.

Table 02- Main drivers for the digital economy.⁵

Driver	Main Idea	Authors
Big data	Companies are accumulating new data faster than they can organise and understand it.	UNCTAD (2017)
	Exist a rapid proliferation of technologies like smartphones, AI, big data, and analytics.	(Sikhar et al., 2019)
	Big data can be used to infer relationships, establish dependencies, make predictions and make decisions in real-time of outcomes and behaviours.	(OECD, 2017).
	Now the best-positioned companies are those that know best how to manage information.	(Jablonski, 2018)
ICT	The development of ICTs is increasingly seen as a factor in economic growth rather than a consequence of it.	(Kpodar & Andrianavo, 2011)
	ICT use among individuals is at a new peak but remains unevenly distributed.	(OECD, 2017)
	More efforts are needed to help most impoverished and most marginalised in the use of ICTs once connectivity is established.	(Graham, 2019)
New business models	The high-interest rates in traditional financial services have created an opportunity that led to the emergence of new business models.	(Caldentey & Titelman, 2018)
	Digital technologies contribute not only to innovation in goods and services but also to the creation of business models.	(OECD, 2017)
	Digital technologies enable new functionalities and business opportunities.	(Drasch et al., 2018)
Changes in customers	Changes in customer’s attitudes and behaviours are the impetus for banks to transform and innovate.	(Sikhar et al., 2019)
	Technological innovations are rapidly changing consumer behaviour and their conceptualisation of financial services.	(Vasiljeva & Lukanova, 2016)
	Expectations are changing dramatically with the growing demand for better experiences and service expectations.	(KPMG, 2017)

⁵ Own design with author's information.

2.3.1 Big data

Data are becoming a core driver of digital innovation, as stated by UNCTAD (2017), the digitisation and the rise of the Internet mean that data are emergent from every corner of industry and society. These days the world has access to more data than was conceivable just ten years ago. This analysis has an impact on the development of innovative business models based on a large amount of data (Jablonski, 2018). Data analysis can be used to understand customer profiles and to provide better customer service and product innovation (IFC, 2018). Furthermore, big data can stimulate new business perspectives, benefits decision making, enable process automation, and ensure customer satisfaction.

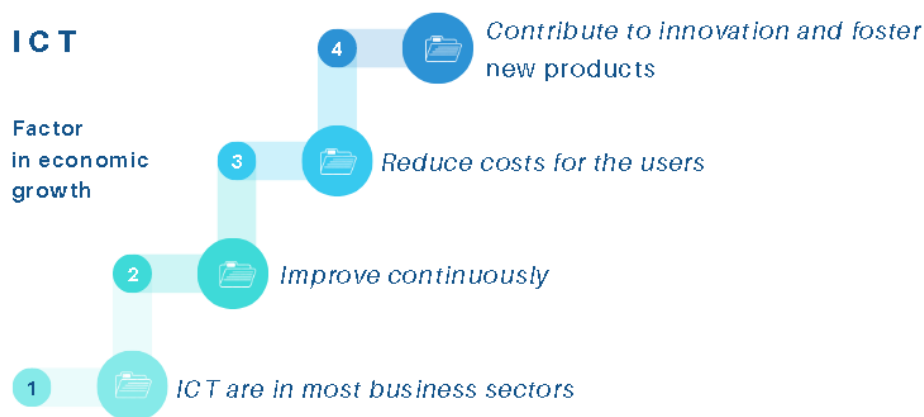
Today, data is increasingly the most crucial component of business in the digital economy. Proof of this is the dynamic development of the Big Data concept. In fact, the quantity of data that is available in the financial sector, for instance, has grown enormously. It is now becoming clear that such information can provide a more in-depth picture of the habits of consumers, and financial firms are examining how to collect, understand and draw conclusions from this analysis (Vasiljeva & Lukanova, 2016). For example, Celaschi (2017) states that through sensors strategically located in the product contact points, it is possible to collect real-time information on the reaction and relationship between the user and the product.

2.3.2 ICT

The uprising in ICT has enabled to become an indispensable tool for the implementation of numerous processes of socio-economic transformation, in particular, the so-called digital economy (OECD, 2017). According to Kpodar & Andrianaivo (2011), the development of ICTs is increasingly seen as a factor in economic growth; this view can be explained with the following figure-

Figure 03- Characteristics of ICT (Kpodar & Andrianaivo, 2011).⁶

⁶ Own design with author's information.



ICTs have a significant positive impact on rural development; because they facilitate connectivity with loved ones. Which also reduces psychological distress; besides ICTs provide information to farmers that contribute to their bargaining power, and they eliminate intermediaries (Mushtaq & Bruneau, 2019). In the light of OECD (2017), the average ICT use among individuals is at a new peak but remains unevenly distributed across countries and social groups. For instance, the elderly and the least educated are the most disadvantaged. The studies conducted by (Kpodar & Andrianaivo, 2011) identified the positive direct and indirect effects of the use of ICTs, which are summarised in the table below.

Table 03- Effects of ICT (Kpodar & Andrianaivo, 2011).⁷

Direct effects of ICT	Indirect effects of ICT
<p>From supply side</p> <ul style="list-style-type: none"> • Contribute to domestic output and employment creation • Increase government revenues. • Affect balance of payments. 	<p>From ICT use</p> <ul style="list-style-type: none"> • Contribute to rural development • Spur capital accumulation. • Improve firms' productivity. • Favor better and larger markets. • Deepen financial inclusion

2.3.3 New business models

The development of the ICT, together with the massive information of the new patterns of consumption, are changing the panorama of the businesses. As cited in Drasch, Schweizer, & Urbach (2018), digital technologies enable new functionalities

⁷ Own design with author's information.

and are opening promising business opportunities, changing the perception of information technology IT and its functions as we know them.

Nowadays, online platforms have grown exponentially in the markets for information, goods and services. Today, multiple online platforms provide markets for products and delivered them physically and digitally. Many of these platforms have emerged in the last 20 years and are managed by fast-growing companies (OECD, 2017). In the banking sector, we are witnessing that more innovative companies are entering the market. Likewise, with services faster and more suitable for customers, giving rise to a new phenomenon of digital platforms and FinTech (Kabakova & Plaksenkov, 2018). s

2.3.4 Changes in consumers

Along with the KPMG (2017), today's consumer profile is inspired and influenced by digital interfaces. Those interfaces are mainly offered by technological transnationals such as Apple, Google, Facebook, Netflix and Amazon to cite a few examples. The interaction with innovative services and products is making consumers more demanding and technological. Due to the most influenced are the millennials, a generation that was born and is growing in the digital age. They also want financial services using portable devices that are small and fashionable. Currently, bank users, especially millennials, are less likely to enter physical bank branches, and many prefer to use online banking or use their phones. Furthermore, banking customers want friction-free, safe and reliable online services (Drasch et al., 2018).

On the other hand, in the opinion of Shahid & Razaq (2017), the incidence of consumption of almost everything has increased exponentially as the "shift" positions itself, and as we move from the physical to the digital value chain. It is happening due to drastic cost reductions and digitisation, which makes it much easier for consumers to access services that are easier to operate in near real-time.

2.4 Digital Transformation in the Financial Sector

As said by Maldonado (2015), the current status quo, in which banks still have a dominant and privileged position, is threatened by the emergence of new and powerful competitors (technological giants, telecommunications operators, mobile phone manufacturers, FinTech, start-ups). There is no hesitation that traditional financial technologies have experienced an enormous transformation over the last decade. The new types of FinTech business represent a currently innovative and emerging field, which is attracting the attention of many (Zavolokina, Dolata, & Schwabe, 2016).

On the words of Lee & Jae (2018), argued that a full range of traditional banking products, from payments to investment advice, is being challenged by innovative products from FinTech. The perfect example is the blockchain technology, which is revolutionising many traditional banking services with better transaction security and faster exchange money at lower costs.

Besides, as stated by Ozili (2018), FinTech's innovation is already shaking up the current financial landscape providing faster financial services. Also, as claimed by Haddad & Hornuf (2019), new FinTech companies, established technology companies to provide financial services and could quickly become competitors of established financial incumbents.

New FinTech services can lead to a reduction in the size and number of physical branches. Hence, as stated by the OECD (2017), most of the employees' functions of the bank can be performed by ICT. However, we need to consider that many individuals still prefer to negotiate a loan with a human being instead with an algorithm, though this view is changing, especially with new generations.

As quoted in Drasch et al. (2018), digital change together with the emergence of a wide range of technological innovations such as artificial intelligence and machine learning, blockchain, biometrics, cloud computing, open APIs, robotics, augmented & virtual reality, big data and so forth; are nowadays redesigned the new banking

concepts. The total and systematic use of these new technologies is now called the Internet of Behaviours IOB (Celaschi, 2017).

As stated by Celaschi (2017), this label represents the most complex and current situation of the fourth industrial revolution, in which the real-time behaviour of users governs the production and its quantitative and qualitative response. With all these innovations, banking transactions have become more efficient and secure with the use of ITCs. With the increasing expansion of mobile and Internet-related technologies, digital banking is advancing at an accelerated pace (Mushtaq & Bruneau, 2019).

Figure 04- Transition from traditional banking to FinTech.⁸



2.5 FinTech

The research context in the FinTech industry is overgrowing. All this is because unexplored horizons are continually emerging as FinTech's new companies emerge overnight and reinvent the industry (Zavolokina et al., 2016). In the area of finance or the financial system, the digital transformation takes shape in the concept of what is known as "FinTech", a term composed of the English words Finance and Technology. Therefore, it means technologies applied to finance, products, services and financial markets (KPMG, 2017). Until today there is no definition accepted by everybody of what qualifies as FinTech and his real scope. Consistent with Vasiljeva

⁸ Own design with author's information.

& Lukanova (2016), the purpose of FinTech is to offer the fastest, most affordable and most effective solutions possible in the financial marketplace, ensuring this through innovation and technology.

Figure 05- The graphic concept of FinTech.⁹



Lee & Jae (2018), highlight FinTech because it can decrease costs, raise the penetration of financial services, besides improving the stability of the different sectors of the financial market. Likewise, as said by Zavolokina et al. (2016), FinTech offers new opportunities for individual empowerment, for example, by allowing transparency, reducing the number of intermediaries and making financial service accessible.

Currently, there is a growing trend to avoid traditional banking service because they are expensive, complicated and even time-consuming. For example, traditional banks require to spend a considerable amount of time assessing if a person qualifies for a loan (Ozili, 2018).

FinTech is also recognised as a critical innovation in the financial industry and is growing at an extraordinary rate. In part, It is driven by the sharing economy, favourable regulation and advancement of Internet technology (Wiradinata, 2018). As said by Lee & Jae (2018), FinTech emerged after the global financial crisis by

⁹ Own design with author's information.

combining e-finance, internet technologies, among other things. For that reason, even financial traditional companies have begun to take FinTech seriously and are developing strategies to compete, coexist and in some cases, even collaborate with them (Chetty et al., 2019).

FinTech now promises to redesign the financial industry by improving among other things (1) the quality of financial services, (2) cost reduction, (3) the creation of new markets and (4) the establishment of a more diversified, democratized and stable financial reform (Wiradinata, 2018). Other authors such as Drasch et al. (2018), state that FinTech develops short cycles and low internal bureaucracy processes being able to manage a short time to market and a higher capacity for innovation compared to the large traditional firms. On the authority of the KPMG, (2017), FinTech' growth has been driven primarily by four factors.

Figure 06- The drivers of FinTech.¹⁰



Furthermore, Haddad & Hornuf (2019), claim that countries witness more formations of FinTech start-ups when the economy is well developed, venture

¹⁰ Own design with author's information.

capital is readily available, the support infrastructure accessible, and regulations in the market are flexible. A study by Thakor (2019), found that FinTech in Latin America is in the process of consolidation. FinTech companies in this region are far from other more advanced ecosystems, such as England or Singapore. However, there are already some initiatives, and more are expected.

Figure 07- FinTech Country Rankings.¹¹

Global Fintech Rank	Change from Startup Rank	Country	Total Score	Global Fintech Rank	Change from Startup Rank	Country	Total Score
1	▶ ±0	United States	31.789	34	▲ +6	United Arab Emirates	9.928
2	▶ ±0	United Kingdom	23.262	35	▼ -5	Chile	9.746
3	▲ +18	Singapore	19.176	36	▲ +11	Malaysia	9.692
4	▲ +14	Lithuania	17.343	37	▲ +14	South Africa	9.614
5	▲ +3	Switzerland	16.018	38	▲ +6	Argentina	9.425
6	▶ ±0	The Netherlands	14.464	39	▼ -6	Thailand	9.415
7	▶ ±0	Sweden	14.272	40	▼ -6	Colombia	9.289
8	▼ -3	Australia	13.555	41	▲ +1	Greece	9.210
9	▼ -6	Canada	13.322	42	▲ +10	Kenya	9.039
10	▲ +3	Estonia	13.303	43	▼ -12	Ukraine	8.969
11	▼ -2	Germany	12.787	44	▼ -1	Turkey	8.937
12	▼ -8	Israel	12.771	45	▼ -19	New Zealand	8.893
13	▼ -3	Spain	12.372	46	▲ +8	Philippines	8.831
14	▼ -2	Finland	12.110	47	▼ -6	Indonesia	8.658
15	▲ +2	India	12.024	48	▲ +20	Cyprus	8.380
16	▼ -5	France	11.803	49	▼ -4	Latvia	8.329
17	▼ -3	Ireland	11.754	50	new	Taiwan	8.321
18	▲ +1	South Korea	11.543	51	▲ +21	Vietnam	8.118
19	▲ +18	Brazil	11.456	52	▲ +4	Nigeria	7.918
20	▼ -4	Denmark	11.368	53	▼ -14	Hungary	7.742
21	▲ +6	China	11.143	54	▼ -6	Slovenia	7.607
22	▲ +1	Japan	11.114	55	▲ +2	Peru	7.575
23	▲ +30	Luxembourg	11.088	56			
24	▲ +1	Italy	10.772	57	▼ -19	Romania	7.447
25	▲ +3	Austria	10.660	58	▲ +17	Ghana	6.632
26	▼ -2	Belgium	10.586	59	▼ -4	Belarus	5.986
27	▲ +19	Norway	10.497	60	▶ ±0	Egypt	5.676
28	▲ +1	Portugal	10.394	61	▲ +26	Bangladesh	5.073
29	▼ -9	Poland	10.364	62	▼ -1	Pakistan	4.675
30	▲ +2	Mexico	10.294	63	▲ +8	Uruguay	4.562
31	▼ -9	Czechia	10.188	64	▲ +17	Uganda	4.037
32	▼ -17	Russia	10.052	65	▲ +17	Lebanon	3.941
33	▲ +56	Malta	9.983				

2.5.1 FinTech Classification

Although FinTech is playing an essential role today, there is not a standard classification yet. On the contrary, there are a wide variety of organisation criteria. On the one hand, FinTech companies currently focus on four core fields- payment-related services, asset management, P2P loans and crowdfunding (Vasiljeva & Lukanova, 2016). On the other hand, in the opinion of Lee & Jae (2018), they identify six FinTech business models implemented by the ever-growing number of FinTech

¹¹ https://findexable.com/wp-content/uploads/2019/12/Findexable_Global-FinTech-Rankings-2020exSFA.pdf

start-ups- payment, wealth management, crowdfunding, lending, capital market, and insurance services. As said by Thakor (2019), he has provided a categorisation of FinTech service innovations by sector in four groups as it can be seen in the following table.

Figure 09- FinTech services by sector (Thakor, 2019).¹²

Credit, deposit and capital raising services 01	Payment, clearing and settlement services 02	Investment management services 03	Insurance 04
<ul style="list-style-type: none"> • Crowdfunding • Lending marketplaces • Mobile banks • Credit scoring 	<ul style="list-style-type: none"> • Mobile wallets • P2P transfers • Digital currencies 	<ul style="list-style-type: none"> • High frequency trading • Copy trading • Robo advice 	<ul style="list-style-type: none"> • Link to mobile devices • Big data • Improved risk pricing

2.5.2 E-Money and Mobile-Wallet.

One of the most popular e-finances is an electronic payment, which automates both the merchant and the customer while eliminating the need for traditional paper money (Wiradinata, 2018). In sympathy with Sharma & Kulshreshtha (2019), said that virtual cash or cashless transaction is an emerging trend which is increasing in the last years. Cashless payments in almost all areas are becoming a popular trend.

Therefore, payment habits have changed; nowadays, people do not need cash or cards. These recent changes can also benefit disadvantaged groups, allowing access to people who have never before had access to financial services. In this regard, the WBG, (2017b) also suggests that e-money reduce corruption, increase accountability and are faster in response to a natural disaster. E-money also expands the consumer market, increase bank access to the unbanked, improve macroeconomic efficiency, and encourage entrepreneurial activity (Drasch et al., 2018).

Moreover, based on IFC (2018), mobile wallet services also have changed lives by helping women move from subsistence farming to more sustainable livelihoods and commercial occupations. Mobile-wallets are allowing smartphones to replace

¹² Own design with author's information.

physical wallets, especially in developed countries. Consequently in the future, digital wallets can transform today's payment system by bringing together- peer-to-peer payments, boarding passes, car keys and even personal identity checks such as driver's licenses and passports (Thakor, 2019).

The researchers Sharma & Kulshreshtha (2019), explored the adoption of mobile-wallet by the Singapore community and analysed the challenges that arise during the transaction. His study concludes by identifying three essential characteristics for acceptance and preference for e-wallets; these are ease of use, convenience and safety.

IFC (2018) defined mobile -Wallet as an account accessed through a mobile phone, usually provided by a non-bank entity and linked to a standard bank account on which the associated funds are held. As believed by Mahindra (2016), several alternative approaches to mobile-wallets have emerged, highlighting four clusters based on the type of technology they use, as shown in the table below.

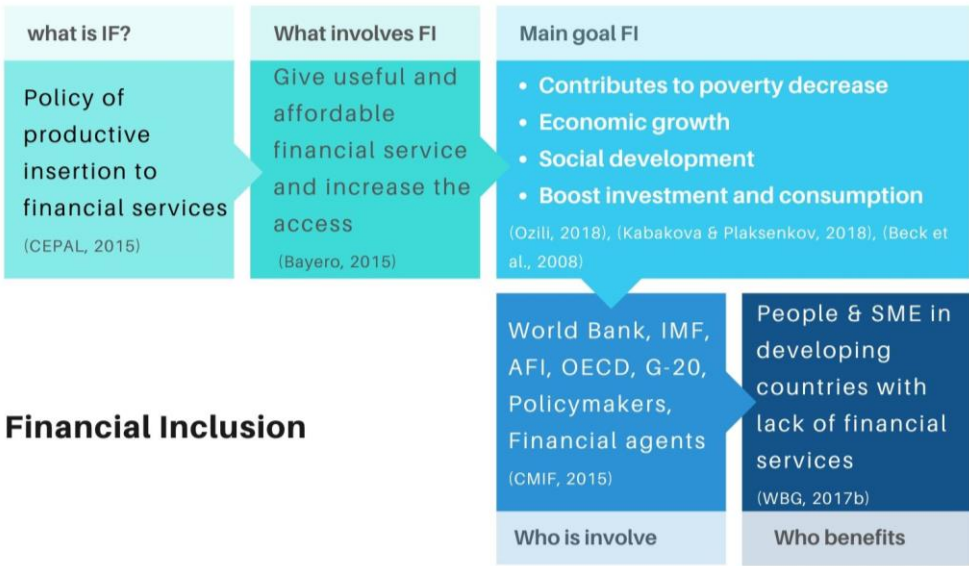
Table 04- Mobile-wallet by Delivery Technology (Mahindra, 2016).

Technology	Description	Examples	Use cases
NFC Near Field Communication	Tokenised wallet incorporating a secure element either embedded in the device or using host card emulation (HCE) in the cloud	Apple Pay, Android Pay, Samsung Pay, RBC/Capital One financial institution wallet	In-store mobile proximity, by mobile webs and in-app
Optical/QR code	Uses QR or bar code generated by either the merchant’s POS or the customer’s device	WeChat Wallet, Starbucks mobile payment, Chase Pay, Walmart Pay	In-store mobile proximity
Digital only	Wallet designed for use online with limited application in the physical- world	PayPal, Alipay, Paytm, Pay with Amazon, ICICI Pockets, M-Pesa, BIM Peru	Online/in-app payments in designated marketplaces, P2P, funds transfer
Text-based	An SMS-based payment platform with mobile phone functioning both as sending device and POS terminal	M-Pesa , MTN Mobile Money, Tigo, Orange Money,	P2P P2B funds transfer, current mobile account

2.6 Financial Inclusion FI

As said by the WBG (2017b), FI means that people, together with small businesses, have admission to reasonable financial services that meet their needs responsibly and sustainably. Besides, individuals are classified as financially included when they have or use a formal financial product or service (Bayero, 2015). Furthermore, FI involves increasing the number of people who have access to financial services, which contributes to poverty decrease and economic growth (Ozili, 2018). Finally, FI is understood as a policy of productive insertion, that includes efforts and initiatives aimed at providing people access to formal financial services (CEPAL, 2015). The following Figure summarises everything that involves FI.

Figure 09- Overview FI ¹³



FI strategies have been gaining importance worldwide; thus, worldwide organisations such as the World Bank, the International Monetary Fund, the Alliance for FI, the OECD, the G-20, among others, have been promoting and advising several countries to adopt coordinated public policies that encourage FI (CMIF, 2015). Furthermore, as quoted in Beck, Demirgüç-Kunt, & Peria (2008) FI is receiving increasing attention from academics as well as policymakers and financial

¹³ Own design with author's information.

market agents due to its positive impact on financial health and economic development. Although FI policies and actions may not have a long time gone by, empirical investigation reveals a list of favourable microeconomic and macroeconomic policies and actions that support the hypothesis that the growth of inclusive financial systems is a component of development progress (Kabakova & Plaksenkov, 2018).

Some standard foundations that characterise FI can be easily identified. Then, FI refers to access to formal financial services through compliance with three principles. (1) Accessible prices, (2) Quality services with better timing, (3) Appropriate and accessible service (Bayero, 2015). On the other hand, the characteristics identified by Kabakova & Plaksenkov (2018) are (1) uniform availability of financial services; (2) good quality of financial services; and (3) potential to generate higher welfare. The next Figure sums up the characteristics identified by these two authors.

Figure 10- Characteristics of FI.¹⁴



Besides, it is vital to understand the issues on both sides. On the supply side, penetration issues in rural areas are an enormous challenge in any country. Compared to urban areas, rural bank branches have poorer customers and smaller transactions (Karlan, 2014). Therefore, from the banks' perspective, physical branches in rural areas are practically unviable and expensive (Kodan, Garg, & Kaidan, 2011). Also, banks to date have shown little interest in experimenting with exclusive products for rural customers (Sandhu & Singh, 2016). Therefore, the low

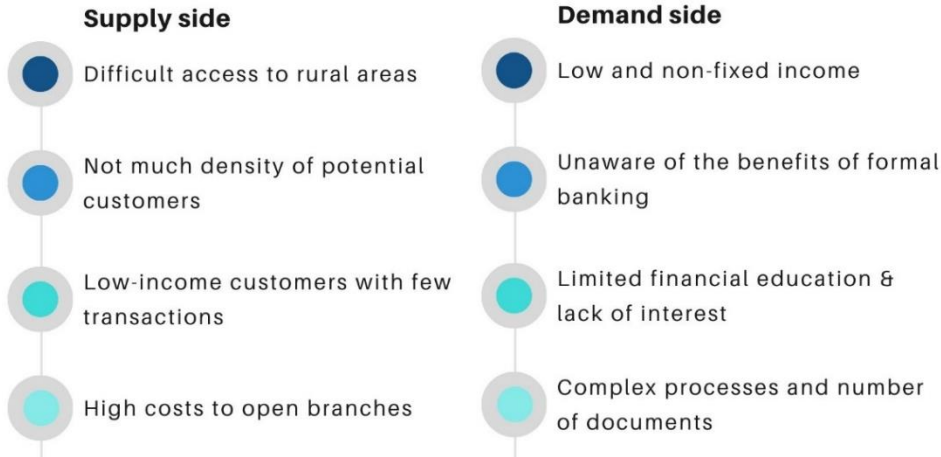
¹⁴ Own design with author's information.

volumes and small size of rural transactions dissuade any bank from investing in research and innovation for rural clients (Karlan, 2014).

On the demand side, some people in rural areas are too unfortunate, that their incomes are not big enough to accumulate savings and therefore do not notice the need for open a bank account (Karlan, 2014). Moreover, they often do not have a fixed source of income that could make them eligible for credit. Moreover, unbanked tend to be unaware of the benefits of formal banking. On the report of Cole, Sampson, & Zia (2009), argue that limited financial education is a significant barrier to demand for financial products.

Likewise, the lack of interest in experimenting with new things and illiteracy further aggravate this problem (Sandhu & Singh, 2016). It is confirmed by the low level of financial education that exists throughout the world. Therefore campaigns are needed to raise awareness and knowledge about financial products, especially among the poor at the base of the economic pyramid (WBG, 2017a). Another reason is the amount of documentation required by banks and their linguistically complex contracts to understand. The following Figure shows the issues on both sides.

Figure 11- Issues in the supply and demand side.¹⁵



¹⁵ Own design with author's information.

2.6.1 The benefits of FI

Inclusion is indispensable for financial systems to foster economic and social development. It refers not only to raising the region's low levels of financial access but also to improve the use of those who already belong to the formal financial system (Caldentey & Titelman, 2018). Consistent with WBG (2014), stated that access to accounts and payment mechanisms increase savings, empower women and boost productive investment and consumption. Additionally, the study conducted by Bittencourt (2012), has confirmed that financial development and economic growth are positively associated. Likewise, there is a research in 43 countries, which was pointed out that it is essential to consider at least two of four ecosystem spheres (social, economic, political and digital) in order to lead FI (Kabakova & Plaksenkov, 2018). The table below outlines the main benefits of FI.

Table 05- Benefits of FI.¹⁶

Impact on	Main Idea or Benefit	Authors
Individuals	Access to savings accounts and mechanisms encourages savings, empowers women and boosts productive investment and consumption.	(WBG, 2014)
Individuals & Society	(1) To obtain financing for business growth (2) To protect against natural and human-made disasters (3) To save for family celebrations, events or critical situations.	(EY, 2017)
Individuals & Society	Help people kick themselves out of poverty by facilitating investments in health, education and business. It also facilitates the management of financial emergencies, which can drive entire families into poverty.	(WBG, 2017a)
Individuals & Society	Opportunities provided by FI to reduce the vulnerabilities of lower-income households and inequality between countries.	(Kabakova & Plaksenkov, 2018)
Individuals & Society	(1) The supply of simple products at a lower cost. (2) Helping sub-banks with innovative solutions. (3) Providing finance access to SMEs.	(Beck et al., 2008) & (KPMG, 2017)
Individuals & Governments	Greater access to finance among the poorest people, reduced cost of financial intermediation for banks and FinTech suppliers, and higher aggregate expenditure for governments.	(Ozili, 2018) & (Levine, 2005)
Governments	Moving from cash payments to digital payments could reduce corruption and improve efficiency.	WBG. (2017b)

¹⁶ Own design with author's information

Economy	Financial services can also help boost countries' economic development.	(Chetty et al., 2019)
---------	---	-----------------------

Kpodar & Andrianaivo (2011) point out that the use of mobile phones in developing countries is leading to the emergence of branchless banking services, thus improving FI. Furthermore, studies have shown that mobile money services can help to improve people's potential earnings and reduce poverty (WBG, 2014). Indeed, a study in Kenya confirms that mobile money services have excellent benefits, especially for female-headed households because they increased their savings by more than a fifth. Besides, it allowed women to leave agriculture and start commercial activities (WBG, 2017b). The figure below summarises the main advantages of mobile money service.

Figure 12- Advantages of mobile money service.¹⁷



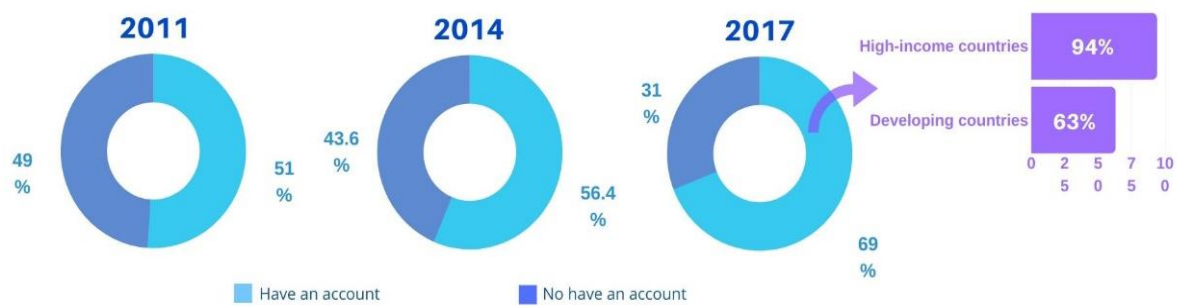
2.6.2 World current situation

There is continued growth in account ownership; the Global Findex database shows that 69% of adults now have an account, in comparison to 62% in 2014. In high-income economies, 94% of adults have an account; while in developing economies, just 63% (WBG, 2017b).

Figure 13- Accounts evolution (WBG, 2017b).¹⁸

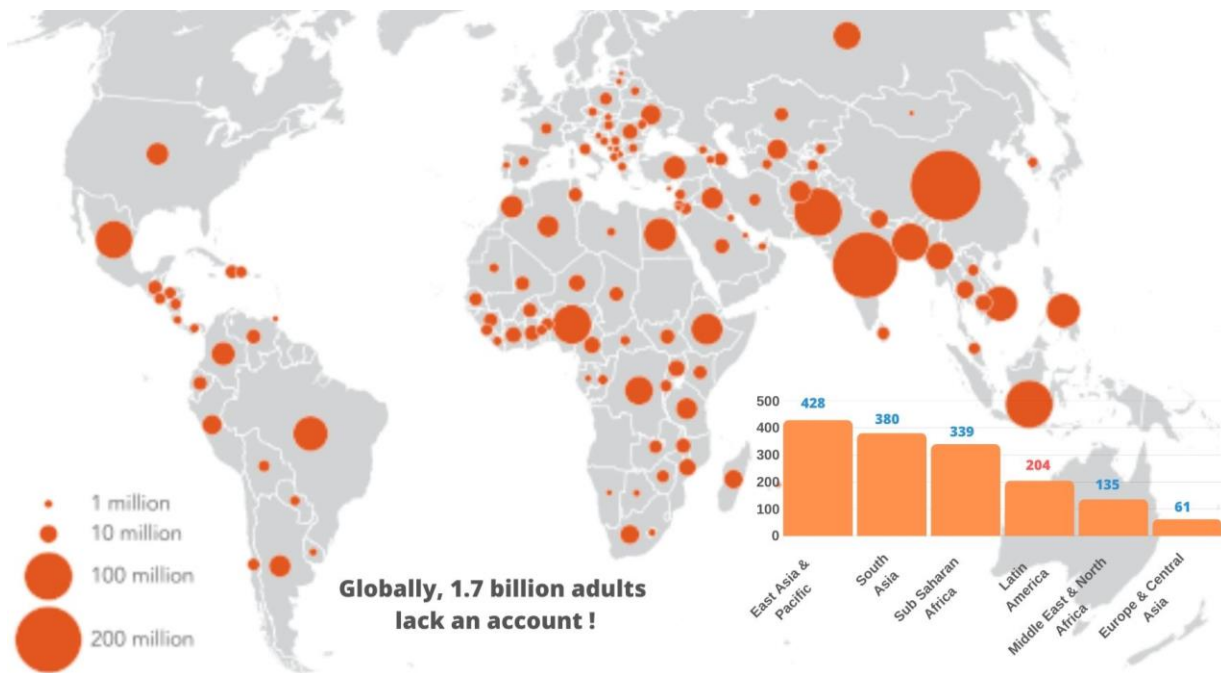
¹⁷ Own design with author's information

¹⁸ Own design with author's information



As can be seen, there are still high levels of financial exclusion around the world. Worldwide, about 1.7 billion adults remain unbanked. However, 31 emerging markets have had an impressive increase in FI rates attributable to the simultaneous growth in the active use of mobile money primarily through mobile-wallets (WBG, 2017b).

Figure 14- Number of Unbanked Adults in Millions (OECD, 2017) & (WBG, 2017b)



Many people in need around the world who lack financial services depend on cash, which can be insecure, risky and even challenging to manage. Furthermore, some studies conclude that some unfortunate individuals from the unbanked population may voluntarily refuse to participate in the financial system because (1)

they do not wish to deal directly with banks, (2) the lack of knowledge of the benefits, (3) their lack of education on how to use digital platforms (Ozili, 2018).

In the study of Bayero (2015), it was concluded that appropriate FI requires many resources, efforts and confidence in the concept of FI by the governments and all institutions involved. The lack of one of these variables will delay universal access to formal financial services. Meanwhile, account ownership is almost universal in high-income economies. Thus, it is necessary to highlight the enormous gap that exists in the world. Indeed, in some countries, the level of bancarization is practically overall, where for instance, there are widespread branch networks and ATMs everywhere, as shown in the next table.

Table 06- ATMs and Bank branches per group of countries WBG 2018.¹⁹

KPI per 100 000 adults (2018)	# ATMs	# Bank branches
High-income countries	91	27
Upper-middle income countries	56	18
Lower-middle income countries	26	13
Low-income countries	5	4

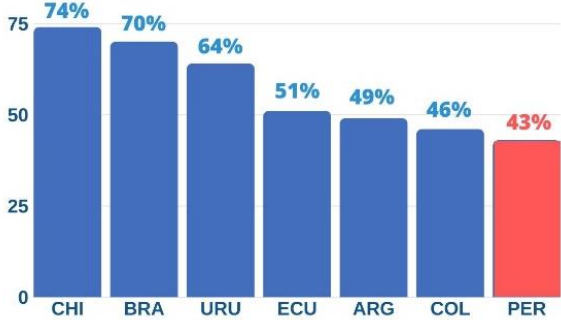
While high-income countries such as Spain have 109 ATMs in Kenya, which belongs to the low-income countries, there are only 9. Regarding the number of bank branches something similar happens, where countries such as Spain have 56 offices, Peru and Kenya only have six on average.

2.6.3 Latin America landscape

Data analysis of FI in Latin America shows that is characterised in this region, by a low and unequal level of access of households and SMEs to the formal financial system. Moreover, there are a limited number of instruments and mechanisms to improve the financial integration of productive agents participating in the formal financial system (WBG, 2017b).

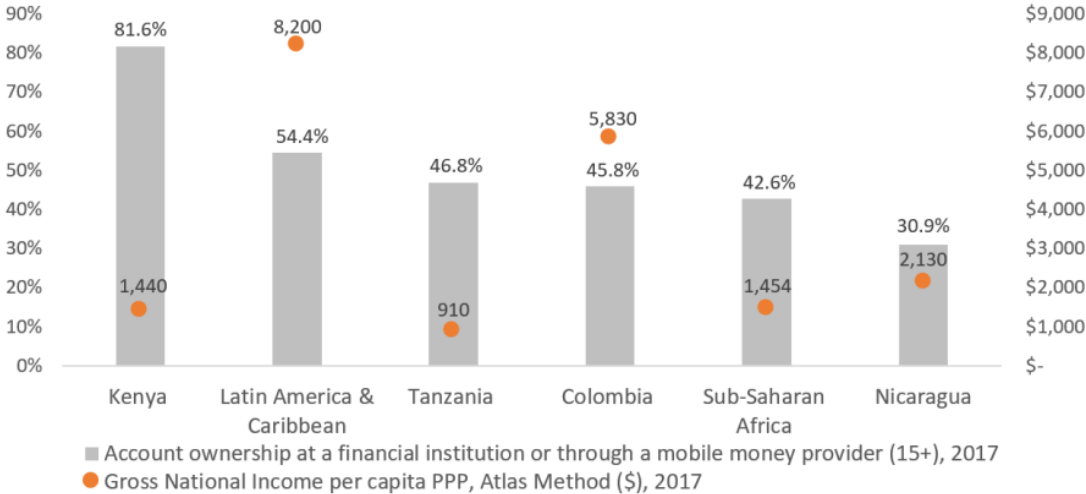
¹⁹ <http://www.worldbank.org/en/topic/financialinclusion/overview>

Figure 15- Adults with a bank account in Latin America (WBG, 2017b)²⁰



It could be assumed that due to higher gross national income (GNI) per capita Latin America should have a higher proportion of its population in banking than Africa. However, the reality is quite different, and it can be seen in the following figure.

Figure 16- Figure FI and livelihoods.²¹



South America is one of the regions with the lowest levels of relative FI. On average, less than half (45.8%) of the region's over-15s have access to the financial system. This level is lower than the world average (61%) and compared to 91% of adults in high-income countries (Caldentey & Titelman, 2018).

²⁰ Own design with author's information

²¹ <https://www.gsma.com/mobilefordevelopment/blog/reinventing-rural-financial-inclusion-in-latin-america-highlights-from-foromic/>

As stated in the Global Findex 2014 in Latin America, the most commonly cited reasons for not having an account in this region are (1) lack of enough money (2) accounts are too expensive and (3) the respondent does not need an account (WBG, 2014). In the following table, we can see other results of the questionnaire.

Table 07- Main indicators Based on the Global Findex (Full data 2014)²²

Country	% of adults own a transaction account	% of adults own a debit/credit card	% unbanked save outside formal system	% report cost as a barrier to owning an account	% unbanked and making payments in cash
Brazil	68.1%	61.5%	18.6%	8.6%	18.6%
Chile	63.3%	58.3%	24.3%	17.6%	27.2%
Colombia	39.0%	33.0%	43.8%	21.6%	43.7%
Kenya	74.7%	35.4%	17.4%	16.0%	13.6%
Peru	29.0%	24.4%	48.8%	35.9%	50.9%

2.6.4 Opportunity

A study conducted in African countries between 1988 and 2007 shows that the correlation between average real GDP per capita and mobile phone penetration is positive. Besides the correlation between FI and mobile phone penetration is also positive, concluding that ICT deployment could stimulate economic growth and FI (Kpodar & Andrianaivo, 2011). Therefore, the combination of high financial exclusion rates, high mobile penetration and technological innovation represent an excellent opportunity for the FinTech sector. FinTech initiatives can bring financial services through technology to a part of the population that until now had not been adequately served by traditional financial services. Some studies ((Beck et al., 2008), (Chetty et al., 2019)) show the potential benefits of developing FI, especially the use of digital financial services.

Smartphones and the Internet increasingly offer an alternative way to make direct payments from an account, with a mobile money account or an app (WBG, 2017b). As claimed by GSMA (2019), almost 300 million people were connected to

²² Own design with author's information

the mobile Internet for the first time in 2018. For most of them, mobile is the only method of accessing the Internet, so the mobile Internet is also driving FI, especially in developing countries. Moreover, mobile phones remove the need to travel long distances to find a branch.

Furthermore, it decreases the cost of providing financial services (Beck et al., 2008). Globally, there are about 1.1 billion unbanked people who have a mobile phone, which is about two-thirds of all unbanked adults. Subsequently, mobile financial services are an opportunity to reach unbanked people and a new source of profit for mobile network operators (Kpodar & Andrianaivo, 2011). Besides, globally, there is more than 20% of unbanked adults (more than 400 million people) that receive wages or government cash transfers (WBG, 2014). Switching it to electronic payrolls, for instance, could help these workers enter the formal financial system and start enjoying its benefits.

2.6.5 The challenge

As can be seen, mobile technology with an adequate and inclusive strategy can achieve unbanked users taking advantage of mobile's phones penetration and internet access (WBG, 2017a). However, as stated by Beck et al. (2008), digital technology alone is not enough to increase FI. Digital technology itself can become a placebo while delaying the more profound changes required to solve the real underlying problems (Graham, 2019).

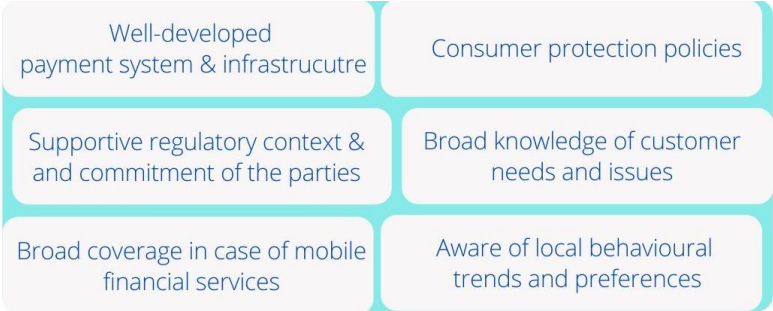
Digital financial services require a well-developed payment system, an excellent physical infrastructure, adequate regulations, internet coverage and strict consumer protection measures to work correctly. In agreement with a study conducted in Sub-Saharan Africa by Chetty et al. (2019), the drivers of FI must take into account from the perspective of the demand for services (consumers) and the perspective of the financial provider services.

Furthermore, financial services must be adapted to the consumer's needs in disadvantaged groups. Special considerations must be taken for those using

financial services for the first time and who may have low literacy and numeracy skills (Cole et al., 2009). In order to develop suitable services for the low-income segment, FinTech operators must be aware of local behavioural trends and preferences. All this becomes a challenge, as there is limited data collected and available describing the product requirements of poor people (Chetty et al., 2019).

In fact, initiatives to increase FI, especially in developing countries have recently begun to rely more on the use of technology- mobile wallet, electronic payments or start-ups FinTech (Koker & Berlin, 2013). The next Figure resumes the main requirement for mobile financial service.

Figure 17- key requirement for Mobile Financial Service.²³



2.6.6 Best practices

There is no hesitation that FI has a big success in Africa. Amid 2012 and 2016 alone, there have been 7.2 million new users of digital financial services in the continent, a 250% increase over the baseline (IFC, 2018). All this proves that FI is a catalyst for equitable development and inclusive economic growth. In fact, the best prototype of success is undoubtedly Kenya. One point in Africa's favour is that 77% of its population is under 35 years and they prefer digital services rather than traditional ones. Moreover, part of FinTech's success in Africa is that they focused on providing essential services such as P2P transfers, airline top-up, cash in/out as shown in the Figure below (IFC, 2018).

Figure 18- DFS service evolution as markets mature (IFC, 2018).

²³ Own design with author's information.



Another reason for success, as stated by IFC (2018), in Kenya, the regulator decided to adopt a "wait and see" approach according to perceived risk, learning, monitoring closely, and starting to regulate later when it has enough information.

Kenia M-Pesa

M-Pesa is the perfect example of a case in which FinTechs can successfully solve some of the problems of people living in third world countries (Haddad & Hornuf, 2019). In Kenya, where cash reigns and credit and debit cards are barely used, its citizens have chosen to skip cards option and have switched directly to mobile payments (Maldonado, 2015). Furthermore, due to the massive adoption of mobile money accounts, the use of digital payments is nearly universal among account owners in the country (WBG, 2017b).

M-Pesa was born as a mobile payment platform in 2007 by Vodafone's subsidiary "Safaricom" (IFC, 2018). M-Pesa allows users to deposit, send and withdraw money, also allows to pay for things. M-Pesa has already brought to millions of poor Kenyans, who previously did not have access to banking services, all the benefits of a banking product (including interest, deposits, insurance and access to credit) using an unparalleled mobile money infrastructure.

Furthermore, M-PESA contributes with 27% of Safaricom's total revenue in Kenya (IFC, 2018). In line with the WBG (2017b), claims that 93% of Kenyans have access to mobile payments.

Moreover, there are 120,000 M-Pesa agents, enabling Kenyans to exchange cash for virtual currency and vice versa²⁴. How M-Pesa works? It works directly from the telephone line. Sending money is like sending a text message. Nowadays, it can also be used downloading an app. In its first advertising campaign, his message was emotional and straightforward with the slogan- "Send money home".²⁵ Furthermore, M-Pesa developed three main strategies that work well.

Figure 19- M-Pesa strategies (IFC, 2018).²⁶



Colombia Daviplata

The banking infrastructure in Colombia is extensive, with financial institutions located in 99% of the municipalities and approximately 50,000 banking correspondents. However, only 45.8% of Colombian adults have an account in a formal financial institution (WBG, 2017a). However, Colombia is making many efforts with the public and private sectors to promote FI, for example, it is the unique country in Latin America that has established the "Information and Communication Technologies Ministry" in the government.

²⁴ <https://www.safaricom.co.ke/personal/m-pesa>
²⁵ The tv commercial is available in <https://youtu.be/nEZ30K5dBWU>.
²⁶ Own design with author's information.

Moreover, his “Daviplata” model was ranked by the World Bank's CGAP advisory group in 2015 as one of the best subsidy payment systems in the world. By the end of 2015, this mobile financial service had 2.7 million customers, 3,258 banking correspondents and 1,700 ATMs throughout Colombia, covering 75% of the country²⁷. Also, Davivienda, (owner of the Daviplata product) is making conditional cash transfers from the government to two million citizens G2P. By 2015, 3,700 companies were using it, making payments to their workers (Davivienda, 2017).

2.6.7 Financial Inclusion in Peru

For seven consecutive years, Peru has been positioned as the country with the best environment for microfinance and FI, thanks to the various initiatives that have been implemented (CMIF, 2015). However, there are still significant challenges for FI; despite considerable efforts by the sectors, huge gaps remain in the country (Antón & Conde, 2017).

For instance, the number of bank accounts in Peru remains below the Latin American average. There are more than ten million people over the age of 18 who do not have an account in the financial system²⁸. Even though in Peru exist a high rate of mobile penetration also in remote areas (more than 70%).

Among the main reasons for Peru's low FI rates are three factors- (a) Insufficient competition in the banking sector, which results in relatively high costs for the adoption of financial services. (b) Little penetration of payment infrastructure, particularly POS terminals. (c) Lack of financial education and a culture of use (Antón & Conde, 2017).

Therefore, in order to promote FI, the Peruvian government has launched two crucial initiatives in the last decade. The first initiative was the introduction of the

²⁷ www.daviplata.com

²⁸ <https://pagosdigitalesperuanos.pe/>

electronic DNI in 2013, which works as the unique identification system and has the electronic signature.

The second one is the foundation of “Modelo Peru”, an interoperable payment platform, which was promoted in 2016 by the government and private sector. Modelo Peru has the support of all financial institutions, all telecommunications companies and the Peruvian government. Furthermore, the table below shows the most relevant initiatives carried out in different areas to promote FI.

Table 08 - Evolution of Public Policies in FI (CMIF, 2015) ²⁹

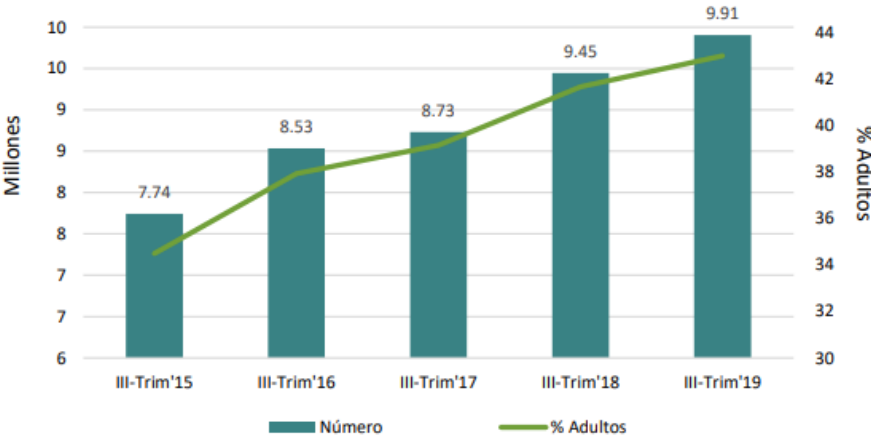
Year	Initiative / Policies
2008	New national curriculum design, including topics related to the promotion of FI.
2009	The SBS signs an agreement with the Ministry of Agriculture to promote financial culture in rural areas
2010	The use and characteristics of the underlying financial accounts are regulated for people with limited economic resources
2011	Peru joins the Alliance for FI and makes commitments to increase access to financial systems
2012	Peru assumes compromises to promote FI with APEC and G20 FI Peer Learning Program
2013	The law of electronic money is established
2014	Creation of the Multinational Commission on FI. Questionary for Measuring Capacities Financial.
2015	MINEDU disseminates FI in all primary education (schools and colleges)
2016	Operations in order to raise awareness of the importance of saving
2017	SBS launches the National Financial Education Plan (Planef) to strengthen financial education initiatives.
2018	Project for the bancarization of users of social programmes, such as the Juntos Programme and the Pension 65 Programme.
2019	Government approves National Policy on FI. Midis strengthens processes of FI in users of social programs

The application of these initiatives by the government, along with greater competition in the financial system, all within a favourable economic context that the country is going through, is generating a gradual expansion of the financially

²⁹ Own design with author's information

included customer base. Thus, as said by information from the National Household Questionary (ENAHQ – INEI), by the third quarter of 2019, 9.91 million adults had at least one financial product, representing an advance of 5% compared to the similar period in 2018.

Figure 20- Evolution of financial inclusion (2015 – 2019).³⁰



³⁰ https://webinei.inei.gob.pe/anda_inei/index.php/catalog/ENC_HOGARES

Chapter 3- Methodology and Data Collection

3.1 Methodology

3.1.1 Research Methodology

Qualitative research is defined as mainly an inductive process of organising data into categories and identifying patterns (relationships) between categories (McMillan and Schumacher, 1993 p.479, cited by Kumar, 2013). Besides the qualitative research is a holistic approach that involves discovery. It is also described as a model of deployment that takes place in a natural environment that allows the researcher to develop a level of detail from active involvement in real experiences (Creswell, 1994 cited by Williams, 2007).

Besides, qualitative research can be considered "that which produces descriptive data: people's own words, spoken or written, and behaviour (Taylor and Bogdan, 1986 cited by Rodríguez, Gil, & García, 1996). The objective of qualitative research is understanding, focusing the inquiry on the facts.

Moreover, qualitative research aims to understand the complex interrelations that occur in reality (Rodríguez et al., 1996, p.13). Therefore, the problem of financial exclusion is a real issue in our current society, which is why we decided to start with a qualitative analysis. There are five areas of qualitative research: case study, ethnography study, phenomenological study, grounded theory study, and content analysis, from which we have chosen to apply the first one.

A case study is defined as the analysis of people, events, decisions, periods, projects, policies, institutions or other systems that are studied holistically by one or more methods (Thomas, 2011 cited by Kumar, 2013). According to Creswell (1997), the case study research is a qualitative approach where the researcher explores the real-life, contemporary delimited system through comprehensive and in-depth data collection. It also includes multiple sources of information, such as

interviews, documents, and reports. Further, the case studies try to learn "more about a little known or misunderstood situation" (Leedy and Ormrod, 2001 p.149 cited by Williams, 2007). Conversely, according to Yin (2009, p.18), a case study is empirical research that investigates a current event in detail and within its real-life environment, especially when the boundaries between the event and the context are not apparent.

3.1.2 Methodology Justification

Why we chose a qualitative conceptual analysis?

After the bibliographic review, it was observed that one of the most used strategies to develop this type of study is through qualitative research. Since its approach is characterised by in-depth and subjective analysis of information, which has allowed us to go into detail in understanding how technology in banking can help promote financial inclusion. Furthermore, the qualitative research will help to make an in-depth description and analysis of the literature review, qualitative analysis of the content aimed at identifying critical components, features and drivers. Therefore, in this study, we will focus on the digital transformation in the banking sector and their impact on FI as the main objects of study.

In conformity with (Saunders, Lewis, & Thornhill, 2000), the qualitative methodology allows to test a theory together with a framework, to compare concepts and to explain outcomes. Besides, qualitative research is appropriate because it uses a new approach to research, seeks to collect data in an environment sensitive to the understudy, and data analysis is both inductive and deductive which allows patterns or themes to be established (Creswell, 1997). Another reason to choose a qualitative conceptual analysis according to Saunders et al. (2000) this type of methodology operates within a natural environment, or research context, to establish trust, participation, access to meanings and deep understanding.

Moreover, because it provides information on the context of a problem, generating ideas for further quantitative research (Park & Park, 2016).

Consequently, this methodology is suitable for this research because the application of conceptual analysis will allow us, first of all, to understand the macro concepts, then to understand the context. Besides, it will allow us to organise ideas to structure the research and finally obtain conclusions, proposals and constructive criticisms.

Why we chose a case study?

On the other hand, the business case helps to comprehend the concepts studied in a practical application. Therefore, we can understand the current situation, analyse pros and cons, compare situations and identify opportunities. In keeping with (Mfinanga, Mrosso, & Bishibura, 2019), a case study can offer more detail on a particular event, develop an exhaustive explanation and analysis of a particular case. For example, it may involve a specific narrative and description of a particular activity, so it is suitable for BIM case analysis. Certainly, case studies are helpful to produce “testable, relevant theory” (Glaser and Strauss, 1967).

3.2 Data Collection

3.2.1 The literature review and case study

Regarding the data collection techniques, the resources for this literature review was found through the databases of the Católica University EBSCO Discovery Service, e-library, Google Scholar, academic journals, e-books, financial documents and well-known international reports such as World Bank Group, CEPAL, GSMA, among others.

We have found enough information for this study; however, in the specific case study of BIM Peru, the primary sources are a series of online publications and articles. We use these because there is not much information in academic papers about BIM Perú. Also, for that reason, we decided to do an interview with an executive of the company to understand better what is happening with the product.

3.2.2 The questionnaire

We decided to use the questionnaire because we wanted to generate certain quantitative information that would complement our object of study. We should remember that the focus of the study is the impact of technologies on financial inclusion, but additionally, we proposed to explore through the questionnaire what Peruvians know about this product (mobile wallet) as well as their valuations.

Therefore, we decided to conduct a questionnaire to understand the context of users and potential users of a mobile wallet. Moreover, why do we need a questionnaire? As stated by Brace (2004, p.17), the function of the questionnaire is to provide a standardised interview so that all respondents are asked the same questions and asked in the same way. Asking the same questions to different people is the key to most research of this type.

Furthermore, it is quite possible to use the questionnaire strategy within a case study (Saunders et al., 2000), besides the purpose of a questionnaire is to describe the specific characteristics of a group of people or objects and to understand the current conditions (Park & Park, 2016). Therefore, this study includes a questionnaire that complements the research carried out, being the main objectives of the questionnaire (1) validate general mobile wallet knowledge and attributes, (2) made a comparison with cash or financial services (3) basic understanding about why people use a mobile wallet.

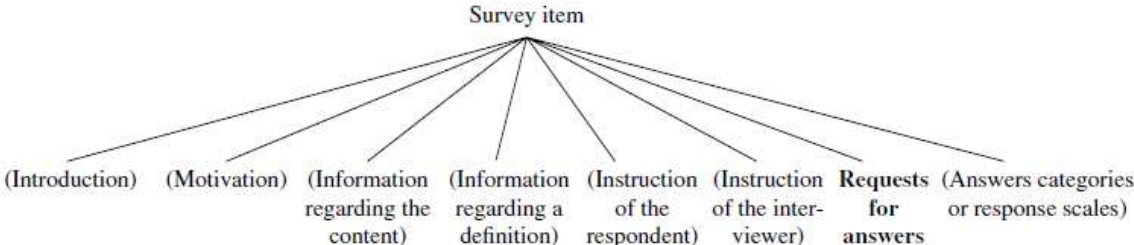
The complementary questionnaire was formulated on previous research (Schierz, Schilke, & Wirtz, 2010) & (Vasiljeva & Lukanova, 2016), a scale was established as cited in (Sharma & Kulshreshtha, 2019). Some questions apply as they are, and the rest were modified depending on how this study has been carried out. A Likert scale of seven points - from 1 to 7 was used to take the answers (Saunders et al., 2000).

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neither agree or disagree	Slightly agree	Agree	Strongly Agree
SD1	D2	SD3	NAD4	SA5	A6	SA7

The use of online questionnaire has several advantages, such as low cost, rapid response time and the possibility of obtaining a large number of cases, which would allow us to generalise the results to the population (Malhotra, Baalbak, & Bechwati, 2010). However, we must consider that a clear disadvantage is an impossibility of clarifying specific answers and that they are not answered in a controlled environment, which may cause some respondents to answer the questions at random.

The questionnaire was divided into three parts. The first fragment of the questionnaire included demographic and socio-economic variables such as name, age, sex, city, and all. The second fragment of the questionnaire contained statements that seek to explore attitudes towards the use of the mobile wallet, as well as their attributes. The third part contains statements that are proposed exclusively for users of mobile wallets. In this section, we intend to compare the attributes of the product studied against cash and banks. The fourth try to answer in the case of users, what attributes they value most of using a mobile wallet and something similar for non-users (see the attachment 01 to find the results for each question). We built our questionnaire following the component structure suggested by Saris & Gallhofer, Irmtraud. See figure 21, where the components in parentheses are optional.

Figure 21: Decomposition of a survey item into its components (Saris & Gallhofer, Irmtraud, 2014, p.116)



The questionnaire was distributed electronically through e-mails, google doc (formularies) and social websites/apps such as Facebook and WhatsApp to random respondents in Peru, it ran for 30 days, during this period there were obtained 108

answers. The data was then tabulated using Microsoft Excel worksheet for further analysis.

3.2.3 The interview

The interview can be defined as a "conversation with a purpose". The chance to encounter and converse with a range of individuals seems to be a prime focus for many career interviewers (Bingham and Moore, 1959 cited by Bradburn, Sudman, & Wansink 1971, p27). Also, a structured interview is one in which each subject or respondent is asked a series of questions according to an organised scheme (Brace, 2004). Therefore, the purpose of our interview was to find out what is happening with the company PDP because everything seems to indicate that they are not having the expected success or at least are far from the results of cases like M-Pesa.

To conduct the interview, we decided to ask five open-ended questions, as previous research has argued that open-ended requests are better than closed-ended requests because people can follow their thinking and are not constrained in the investigator's frame of reference (Saris & Gallhofer, Irmtraud, 2014). Furthermore, open-ended questions are mainly useful for development work, for exploring a topic in-depth, and for obtaining quoting material. While closed questions are more challenging to build, but they are easier to analyse and generate less unwanted variations of interviewers and coders (Bradburn et al., 1971).

Besides, there are researchers such as Krosnick and Fabrigar 1988 cited by Saris & Gallhofer, Irmtraud (2014, p.99), who have suggested that it would be appropriate for specific problems, or in general in a qualitative study, not to use explicit response alternatives.

Therefore, we decided to use open-ended questions to obtain as much information as possible for the interview. Moreover, according to Bradburn et al. (1971), open-ended questions allow and encourage respondents to give their full opinions with as many nuances as they are able.

3.3 Data Analysis

Data analysis technique for this research will be coding, and for that reason, QDA software tool called NVIVO would be used as a tool to facilitate data analysis. We chose to use this software for three reasons (1) It allows to manage a large amount of qualitative data from different sources (2) It allows the organisation of data in nodes which facilitates the organisation of concepts (3) The tool was available at the University. There are many ways to describe how NVivo is organised, according to Woolf & Silver (2017) there are four components that describe all that the tool can do see table.

Table 09: The four clusters of components (Woolf & Silver, 2017)

Providing data	Providing the data to NVivo and everything to do with organizing, managing, and using data files.
Conceptualizing data	Most commonly accomplished by using NODES to represent the concepts in a study, by linking them to REFERENCES, or by grouping them to represent more general concepts. Other COMPONENTS may be harnessed for these conceptualizing purposes, and NODES may be harnessed for purposes other than conceptualizing data.
Writing	Writing can be captured in MEMOS, in ANNOTATIONS (comments linked to REFERENCES), in Descriptions that are attached to COMPONENTS, and by directly editing SOURCES inside NVivo.
Visualizing	COMPONENTS can be displayed and worked with visually in an NVivo display called a MAP. In addition, the associations between COMPONENTS can be visually displayed in different types of CHARTS.

This tool facilitates and manages the information. Moreover, it allows the consolidation and structuration of ideas from different sources collected in an organised way but without an analytical contribution.

Furthermore, regarding the bibliography, this study is under the guidelines of the APA 6th edition standard style that has been processed using the Mendeley tool in Microsoft Word.

Chapter 4- Results Presentation and Analysis

4.1 Bim Peru Case Study

On the one hand, Peru is a country commercially open to the world with a stable and leading economic growth in the region³¹. Moreover, Peru has led to poverty rates being reduced to more than 50% in the last decade³². On the other hand, a decade ago in Peru, the percentage of bancarization was at deficient levels worldwide. However, recent years have seen considerable improvements. As said by Antón & Conde (2017), stated that more people in Peru is getting access to financial services in recent years. This is evident by statistics where bank accounts have increased by almost to 50% since 2014. As explained by the Global Findex questionnaire, this jump was driven by a substantial increase in rural accounts, 14 percentage points higher from 29% to 43% between 2014 and 2017 (WBG, 2017b).

Hence, there is no doubt that Peru is a country of contrasts, highly developed, modern and advanced nation. Nevertheless, there are many opportunities for improvement, especially for people in need. Therefore, in order to foster FI, the Peruvian government created the National Strategy Commission for FI (ENIF). With the primary goal, to promote FI through the execution of multisectoral actions (CMIF, 2015). Likewise, it is indispensable to point out that the Peruvian government was the first country in Latin America to create electronic money law (29985).

4.1.1 Peruvian financial system

The Financial System in Peru is composed of 54 companies that perform multiple operations and have assets of more than \$140 billion, according to the

³¹ Attachment 04

³² Attachment 05

Superintendency of Banks and Insurance (SBS)³³. Peru has a reliable, dynamic and well-developed financial system, which can be confirmed by its investment KPI. Credits continue to expand too in the country, together with the domestic demand, employment and wages.

Figure 22- Total investments and credits (BCR) ³⁴



Financial services have grown in recent years, as can be seen in table 10, especially agents have increased the most, however, if we extrapolate them to the amount per 1000km, financial services are still insufficient.

Table 10- KPIs of Financial Services 2019.³⁵

Financial service network	Jun-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19
No. of offices	4,229	4,388	4,465	4,628	4,675	4,697
No. of ATMs	12,059	14,530	25,632	25,679	24,087	28,407
No. of agents (POS)	44,210	68,147	94,611	107,737	149,867	167,720
Nº of channels per 100,000 adults	313	443	625	681	867	960
Nº of channels per 1000 km2	41	61	88	95	124	141

Another characteristic of the Peruvian banking system is its high costs for financial services, to carry out operations and basic requirements. For example, in

³³ www.sbs.gob.pe
³⁴ https://estadisticas.bcrp.gob.pe/estadisticas/series/index
³⁵ https://www.sbs.gob.pe/inclusion-financiera/cifras/indicadores

some financial entities, it can cost more than \$3 to obtain a physical statement and have to pay a fee of \$2.71 to withdraw cash from a bank agency.

Table 11- Bank's Account Fees in \$ (SBS).³⁶

Service Fees	Min Cost \$	Max Cost \$
Physical account statements	1.06	3.02
Balance check at the agency	0.30	1.51
Cash in a financial office	0.30	2.71
Balance check at the ATM	0.30	0.90
Withdrawals at network ATMs	0.36	0.90
Withdrawals at offline ATMs	0.54	2.71

One of the most critical operations identified by persons excluded from the formal financial system is the remittance. Table 12 shows the remittance costs of the leading financial entities through their agencies and by online banking. The first thing that can be highlighted is that prices in both channels are practically the same when internet operations should have a lower cost.

Besides, it can be seen that the cost of transferring money can be \$4 on average, which is expensive, especially for those who are less fortunate. On the other hand, the cost of this operation using BIM could be more than 80% cheaper. Example built simulating the transfer of 500 dollars.

Table 12- Remittance fee.³⁷

Financial Company	Financial Office \$	Online Banking \$
BANBIF	3.15	3.15
BCP	3.15	3.15
BBVA	3.00	2.85
SCOTIABANK	5.25	4.80
CMAC LIMA	5.25	5.25
PICHINCHA	5.10	5.10
CMAC	3.15	3.15
CREDISCOTIA	3.15	2.61
Average	3.90	3.76
BIM	0.45	

³⁶ <https://reportedeudas.sbs.gob.pe/ComparaComisionSF/Paginas/EntreEntidades.aspx>

³⁷ <http://www.sbs.gob.pe/>

Finally, another critical challenge to consider is that Peru has really complicated and challenging geography, where there are villages of difficult access above 4,000 meters above sea level in the highlands, or three or four days of navigation by a river, in the case of the jungle. Therefore, the network of BIM agents should be so powerful that it can reach these villages that today have no presence of the financial system.

4.1.2 The company, the service and the challenge



Modelo Peru is a joint effort of many institutions whose fostered the creation of a first digital payment platform. Billetera Movil “Bim”, is a unique model around South America. Bim is led by the Association of Banks, all the telecommunications companies, government institutions and regulatory agencies. The members of the Modelo Peru project created an independent company exclusively to manage the electronic money in the country called Pagos Digitales Peruanos (PDP).

It is essential to know that the FI services have already been implemented around the world can be summarised in three main models, where the fourth is the result of Peru's proposal, a pioneering and unique model that seeks interoperability and access.

Figure 23- Implementation models of FI.³⁸

³⁸ Own design with author information.



Thus, PDP launched Bim, a product that can be used from any mobile operator in the country. It was not necessary to have a smartphone, nor internet and even less of a bank account to operate Bim. Besides, almost all financial institutions accept the service in the country, and the users can use the same network of agencies and ATMs (however this initiative is still being implemented). Bim used to run on a USSD as entry channel, which ensured accessibility from any telephone operator and any phone model. However, nowadays, they are using the app and messenger as a means of accessing the service.

Nowadays, Bim's main challenges are improving their network and becoming an instrument for government payments (for example, subsidies, pensions, tax payments). As claimed by Shahid & Razaq (2017), the mobile wallet that allows government payments has led to an increase in wallet accounts in other countries.

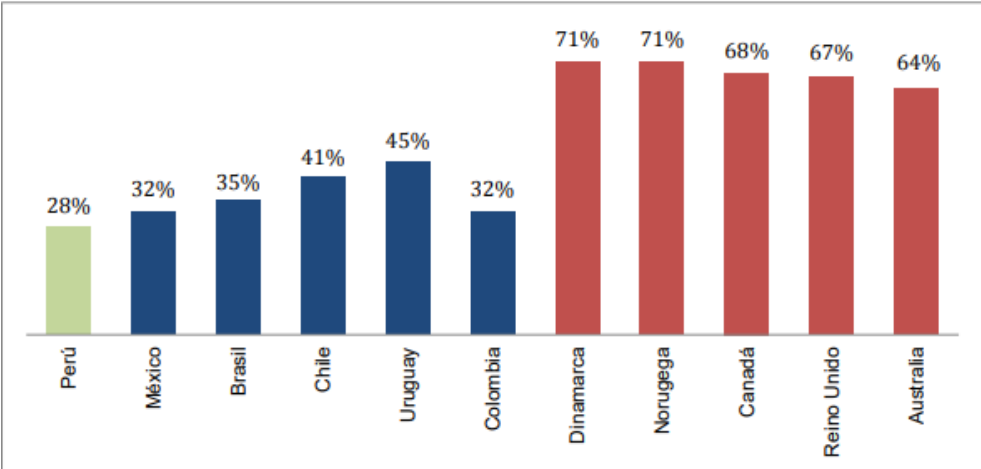
It has been identified that BIM is facing the lack of an extensive network of agents to make cash in/out. PDP started from the premise that its cash in/out points network would be the existing network of correspondent agents of these members. However, the information tells us that this task is still in implementation, and the process is taking much more than expected. As mentioned by Antón & Conde (2017), there is a total of 8,500 physical POS with Bim (the goal was 20 000 POS).

An additional significant issue in Peru is financial literacy, which remains a challenge among the lower-income segments. Low financial literacy is compounded by limited literacy, numeracy, digital literacy and general knowledge of financial

products (Chetty et al., 2019). In terms of WBG (2017b), ownership of the account is lower among less literate adults. Why is it important? The World Bank argues that financial education helps the poor empowering and educating on how to do finance and how to manage better their money so that it is relevant to their lives. This knowledge allows them to evaluate financial products and take better decisions (WBG, 2017a).

Therefore, poor households with a right level of financial education are likely to be better off than those lacking the skills to manage their affairs prudently (Okello, Bongomin, Munene, Ntayi, & Malinga, 2017). Also, the S&P Global Financial Literacy Questionary, 2014 (national representative questionnaire in more than 140 countries, carried out by Standard & Poors, and the World Bank) indicated that Peruvians have limited knowledge of fundamental financial concepts. As can be seen in Figure 24, Peru scored just 28% compared to the Latin American average of 33%.

Figure 24- Global Financial Literacy Questionary Results.³⁹



4.1.3 Competitive Analysis

Currently, in Peru, there is no direct competitor to BIM, there was one with similar features, which was even launched before BIM and focused on social inclusion but was not successful. On the contrary, after the launch of BIM, many financial institutions decided to launch their e-wallets, some of them are growing

³⁹ https://gflec.org/wp-content/uploads/2015/11/Finlit_paper_16_F2_singles.pdf

very fast, but none of them has as main objective the financial inclusion since they are mostly addressed to bancarized people, and they also offer only P2P payments and transfer services. Table 12 shows the three companies that could be seen as competitors of BIM.

Table 12- BIM and competitors main features.

Main Features	B I M (PDP)	aPanda (GMONEY S.A.)	Monet (Metapago S.A.)	Efectivo Móvil (BBVA)
Registration	Mobile phone	Mobile phone	Web site	Web site
Business model	Association / FinTech	FinTech	FinTech	Financial institution
Mobile Operators	All	2	2	All
Requires a bank account	-	-	-	Yes
Requires an app/messenger	Yes⁴⁰	-	Yes	Yes

The following table shows the services offered by the four leading mobile wallets in Peru. We can see that all offer essential services except BIM however if we compare BIM with other mobile wallets, we could conclude that BIM still has much to develop, especially in financial services.

Table 13- BIM and competitors main services.

Services	BIM	aPanda	Monet	Efectivo Móvil
Cash in / out	Yes	Yes	Yes	Yes
Transfers within the network	Yes	Yes	Yes	Yes
Transfers to third parties	Yes	-	-	Yes
Payment in shops	Yes	-	-	Yes
Payment of services	Yes	Yes	Yes	-
Government Payments	Yes ⁴¹	-	-	-
Air time recharges	Yes	Yes	Yes	-

⁴⁰ It is also possible to access from basic equipment through SMS

⁴¹ Only one type of tax payment is possible.

4.1.4 The Interview

An expert interview was conducted with an executive of BIM who is responsible for developing BIM's ecosystem, but she requested anonymity because according to their claims the PDP company is going through a process of internal restructuring and they are forbidden to give any statements.

The main goal of this short interview was to understand better the issues that Bim is facing at present. The following goals were set for each question.

Question 1	Understand the real objectives of the project.
Question 2 & 3	Reject the hypothesis that banks are holding back the growth of BIM
Question 4	Understand why they no longer use SMS as a means of transaction
Question 5	Discard the hypothesis that there is an internal conflict of interest among shareholders

The interview consisted of 5 questions and was conducted in Spanish by skype (here the transcript).

Question 01. Why was BIM born, what is its primary objective?

Answer- BIM was born as a strategy of the financial sector to accelerate the processes of financial inclusion in the country from a collaborative effort and competition between financial intermediaries. The main objective of BIM is to provide financial services to more than 10 million people (considering adults over 18 years old) who do not have access to the financial system. Moreover, efforts to reach them (unbanked people) traditionally were complicated. Furthermore, nowadays many people do not trust in banks for some of the following reasons according to our studies: lousy experience, maybe the agencies mistreat them, or they think that the interests and commissions are not apparent, even in the free savings accounts, there are still doubts in this crowd of people.

Question 02. Why was it essential to invite the financial institutions to be part of the project?

Answer- In theory, to reach the segment of Peruvians outside the financial system more quickly, especially the big banks already have a whole network with an

important scope that we wanted to take advantage of it. Bim is a way to expand the presence of the financial sector in areas without agency coverage. So, the collaboration was requested to have access to their network agents and to make a single communication effort.

Question 03. What do financial institutions gain as shareholders of BIM?

Answer- The services of BIM are not free. Therefore, it is expected to generate income with financial operations. Besides, the 25 institutions that today are connected to BIM have the same opportunities to be chosen by any Peruvian to open their BIM and guard their virtual money. However, this process is not necessarily something that the big banks like. Today some banks that do not have a clear picture of their participation in Bim, they do not see the benefits of being part of the project and the shareholders.

Nevertheless, other smaller institutions, such as Financieras Rurales and Municipales, are taking more advantage of it. For example, Compartamos Financiera found in Bim a promising alternative to improve its operational process. With Bim today, more than 200 thousand of their clients now pay their group loans. Before that, they used to go to the financial agency to pay every 15 days.

Likewise, in many cases, they suffered from robberies and assaults. However, today they can pay without that risk. Therefore, the finance company offers a better service to its customers and differentiates itself and reduces the risk of default.

Question 04. If the idea is to reach people that do not have access to banking (assuming not everybody has a smartphone), why BIM changed their means of access to the platforms using just app& messenger and leaving SMS?

Answer- Customers in rural areas are essential, but they are not the group we should start with to generate adoption. There are many people in San Juan de Lurigancho (the most populated district in Lima) for instance, who do not have an account. Furthermore, they are living in urban areas, and we can more easily reach

them. Bim also targets those people. That is why the network of agents is essential. Moreover, today it is complemented by the Bimers network. These people in urban/peri-urban areas without an account have definitely a smartphone so we decided to focus on them.

We also had to launch the app because access to the USSD was costly. The telecom companies did not give us a special rate, despite being part of the same project we could not convince them. Besides, for the project to be sustainable, we needed to save on costs. Ideally, if the Peruvian government intends to reduce the use of cash (to help minimise informality, reduce theft, increase the productivity of Peruvians, etc.), they should launch measures such as a social tariff for the USSD for the use of e-money. Still, these measures have not yet been taken and you must remember that PDP is not a government company, it was created on their initiative in this way.

Question 05. We have the feeling that there is a conflict of interest inside, we understand that managing the expectations of more than 20 entities is difficult, we say this in the base of some statements that we saw from the managers in the media.

Answer- Indeed, there is a conflict of interest. Even more so when one of your shareholders, like BCP (the biggest bank in Peru), declares that they want to have 10 million customers and compete with cash with his e-wallet “Yape”, goals similar to those of Bim.

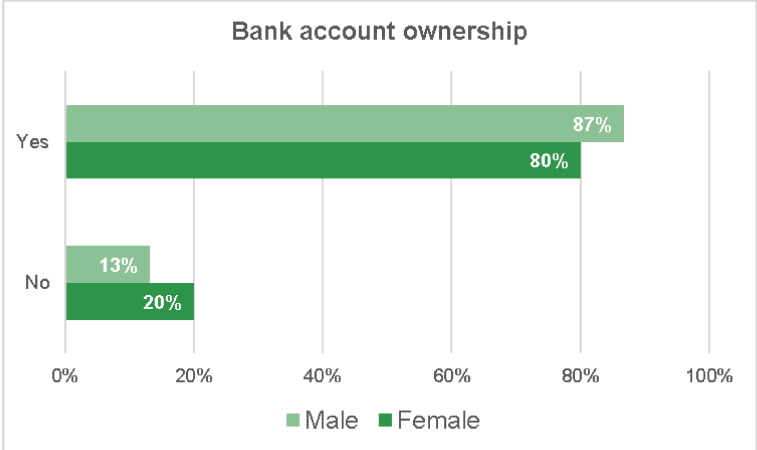
4.2 Questionary Results

The questionnaire questions and the results for every single question are attached at the end of this document. After analysing the results, the following insights can be highlighted.

The results of our demographic questions are related to the results of the Global Index of Latin America, which indicates that bank account ownership is lower among young adults, those with less education, lower-income and women.

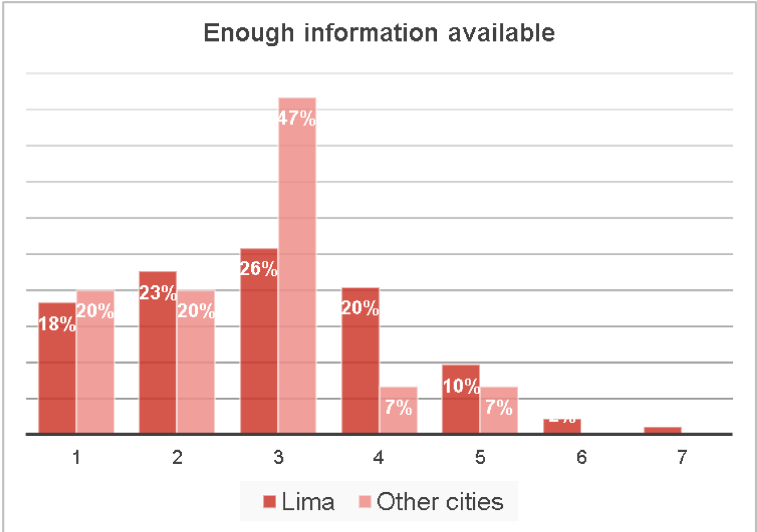
Regarding the bank account ownership. While it is true that 89% of all respondents have an account in the traditional financial system (see the attachment 01), this figure varies unfavourably for women when compared by gender, where it can be seen that men are 7pp higher than women in account ownership.

Figure 25- Bank account ownership by gender.



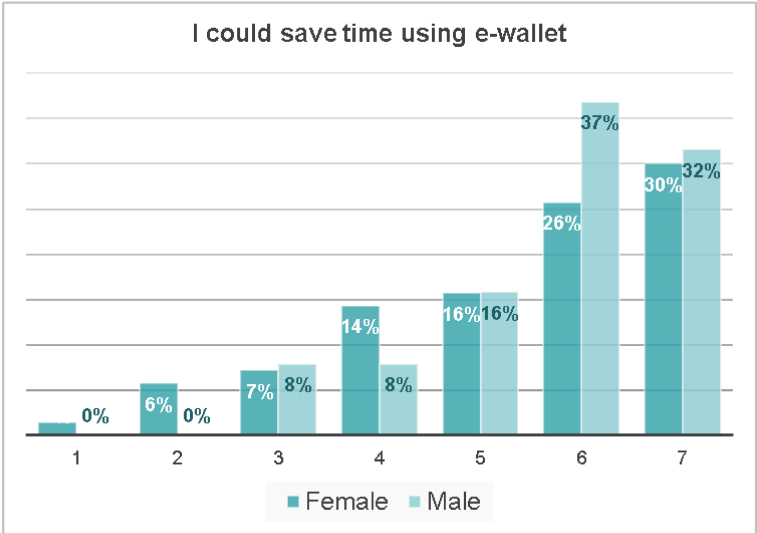
Regarding information available. It can be seen that the information available about mobile wallets is much lower in the provinces than in the capital, with 47% of those living outside the capital Slightly Disagree with the statement compared to 26% in Lima. It can be settled that in Peru there is not enough information about the services and benefits of mobile wallets.

Figure 26- Information available about the mobile wallet.



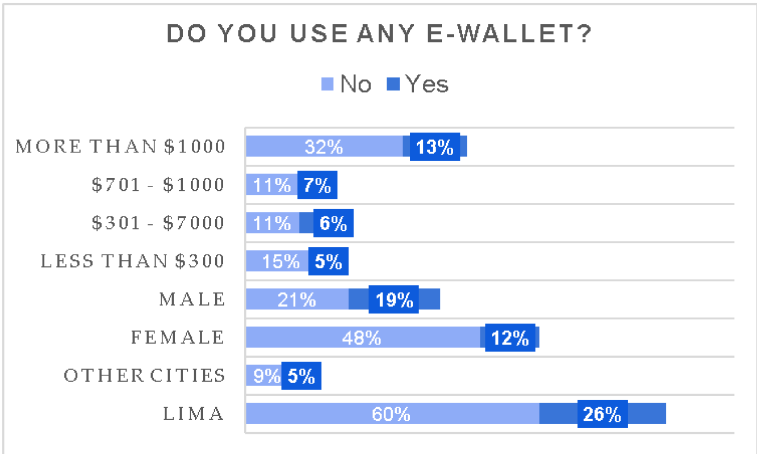
Regarding the time-saving. The answers show that of all the characteristics assessed, time-saving is the most valued and approved by the respondents (users and non-users of the mobile wallets). In the following graph, we can see that men are more convinced that it is possible to save time by using mobile wallets than the women who were surveyed.

Figure 27- Time-saving using a mobile wallet.



Regarding who use a mobile wallet. The following graph summarises the use of mobile wallets in three different variables, where it can be seen that 13% of those who use the service have an income higher than \$1000. Also, men use the service more than women with a difference of 7pp, and finally, Lima stands out with 26% of respondents who claim to use a mobile wallet than other cities.

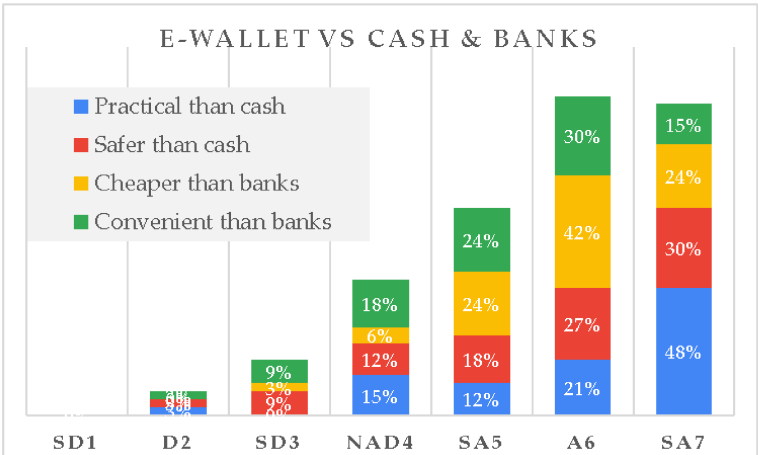
Figure 28- Features of the mobile wallet’s users.



Regarding the opinion of mobile wallet’s users. The following graph presents the appreciation of mobile wallet users against their main attributes and compares them to traditional banking and cash. Two indicators stand out, 48% of the users strongly agree that the mobile wallet is more practical than carrying cash, and 42% agree that the services of a mobile wallet are cheaper than a bank. As a result, in all comparisons made, respondents generally agreed with and preferred the services of mobile wallet users over cash and banks.

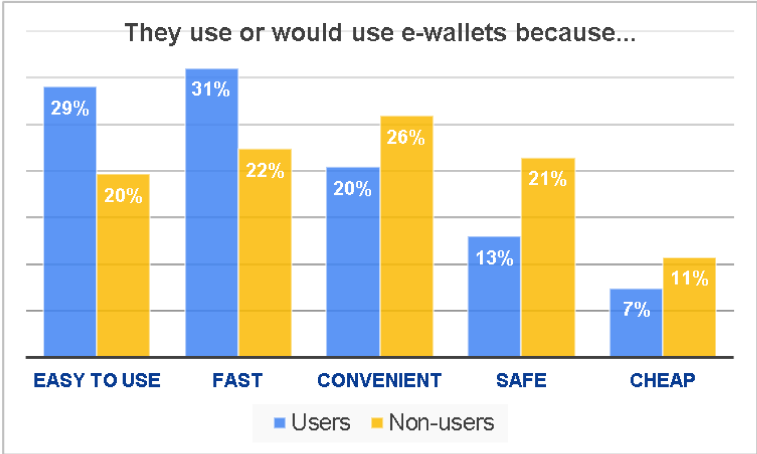
The components evaluated in these questions were taken from the researchers Sharma & Kulshreshtha (2019), who explored the adoption of the mobile wallet concluding that there are three essential characteristics for acceptance and preference: ease of use, convenience, and safety.

Figure 29- Mobile wallets vs cash and banks.



Regarding why they use or would use the service. The last graph presents the attributes that users and potential users of mobile wallets value the most. It can be seen that users appreciate the speed and ease of use of their mobile wallets, while potential users say that they would use it because they are convenient and fast too. On the other hand, both groups coincide in placing in last position the attribute of cheap.

Figure 30- Why they use or would use the service.



Chapter 5- Discussion and Conclusions

5.1 Findings

- From the literature review, we identify four drivers needed to develop a digital economy. Big data, ITC, new business models and new consumer behaviours, are the components that every nation or organisation must understand and manage in our times.
- We identify that there is a growing tendency to avoid traditional banking services, especially for millennials, this because such services are more expensive, complicated and even time-consuming.
- We understand that FinTech can become better than traditional banking because they develop processes of low internal bureaucracy, use technology better and have a higher capacity for innovation.
- We can appreciate that the benefits of financial inclusion are not only in individuals but that society and governments also benefit. Besides, we have a variety of benefits that range from boosting savings to helping people get out of poverty.
- We now know that special considerations should be given in the case of providing financial inclusion services since consumers are not the same as those who live in large urban areas, who have large incomes and who have financial education for example.
- Aside from the low penetration of traditional financial services in Peru, there is a significant disparity in the cost of basic financial services among the providers. Therefore, there are many opportunities for FinTech that promise to deliver faster services, with lower prices and access for more people.
- Bim has 440 thousand affiliated accounts (which represents just 1.3% of the Peruvian population). It is evident that with this result is still insufficient to scale the Bim's operation massively.

5.2 Discussion

- From the interview, we can deduce that PDP does not have the full support of the Peruvian government, nor of all its shareholders (banks + telecoms). While the theory and the success cases such as M-Pesa confirm that the support of the government is more than crucial in this type of project. In Bayero (2015) research, it was also concluded that FI requires many resources, efforts and confidence in the concept of FI by governments and all institutions involved.
- According to the interview, we know that PDP failed to agree on a social rate with telecommunications companies, so PDP leaves the SMS to develop the app and messenger. We strongly believe that the government should have intervened to improve this agreement since we know that not everyone excluded from the system has a smartphone with internet access.
- From the results of the survey, we can see that the majority have no information and are unaware of the benefits of mobile wallets. We can see that financial education is a factor to improve in Peru, we have confirmed that the Peruvian government is making efforts to improve it; however, there is still a lot to do. According to Cole et al. (2009), his study presents new and convincing evidence that financial literacy is an essential predictor of financial behaviour in developing countries. It is therefore essential to promote financial literacy as a means of broadening the depth and scope of the financial system.
- From the analysis of the business case, we can appreciate the efforts that the Peruvian government is making to foster financial inclusion and education (financial literacy in 2014 was 28%). However, we have not yet seen proposals in other areas as proposed by the WBG (2014) in his study. For example, the digitalisation of payments made by the G2P, which was already a success story in Colombia (Davivienda, 2017), we believe that the government should set an example on the road to the digitalisation of its transactions.
- From the competitive analysis carried out, we can appreciate that Fintech in Peru is still in its initial phase, as indicated in its study Thakor (2019). This is an

opportunity for new business models to enter the market. Bim, on the other hand, does not seem to have any direct competitors, since the Fintech companies that are in the market only provide essential services.

- According to Global Findex, 36% of Peruvians report cost as a barrier to entering the financial system. This result has been proven by the analysis of prices of the main financial products, finding those cost transactions are expensive even via Internet banking. That is why in his study Ozili (2018) observed the rejection of traditional banks as being expensive, complicated and time-consuming.
- Researchers Bayero (2015) and Kabakova & Plaksenkov (2018), identified three characteristics for a respectable financial system of which to date we can say that only available costs are applied in Perú with BIM recently. Then it is missing to improve the supply of financial services, and much work remains to be done in terms of access.

5.3 Limitations and future research

This study has certain limitations. First, there is not extensive academic information as FI through mobile money is still a new phenomenon in developing countries such as Peru, there is little theoretical academic literature devoted to it and a lack of current statistical data, which constitutes a significant limitation. Second, talking about the business case, the ideal target audience to be surveyed should be people who are not currently within the traditional financial system, since they are the ones who could give us a better insight about the problem and object of study. However, it is also true that surveying such people may demand to conduct face-to-face interviews and even in remote areas of the country, which by the scope of the project could not be possible. Moreover, the sample size could be more significant for better generalisation.

Moreover, finally, it was observed that the possibility of accepting digital payments is higher in metropolitan cities. Because culture and economic factors play an essential role in the adoption of the mobile wallet, hence, we can say that the results of this questionnaire may be biased and limited since the people surveyed belong mainly to the country's capital Lima (86% of respondents).

Regarding the future studies we propose four pieces of research, (1) A study looking for the drivers that allow governments to promote FI (2) Collect information from the vulnerable population (the unbanked), understand their reasons and barriers for the use or not use of FI instruments in countries such as Peru. (3) The question of whether financial technology companies provide more efficient services than traditional financial institutions remain an issue worth exploring empirically. (4) This study focused on analysing the impact on people, but we know that financial inclusion can also benefit SMEs; therefore, it would be interesting to analyse this impact.

5.4 Conclusions

After reviewing the bibliography related to our research object, we can answer our question. How can the digital transformation in the banking sector foster Financial Inclusion? We have witnessed the tremendous digital revolution, its power and its influence. Therefore we can take advantage of this technological revolution not only to develop new markets, create new products, generate new sources of income but also, on the other hand, bringing new services to people who for many years have been relegated and without access to the benefits of the financial system. The revised bibliography helps us realise two crucial milestones in this research.

The first one, to understand that the technological revolution in the banking sector has given rise to new companies called FinTech, companies that are much more dynamic, flexible and with the power to reach more types of segments than traditional banking has neither wanted nor was able to attend. Therefore, we can take advantage of the scope that FinTech has to serve the unbanked because these companies are more efficient, modern, and technologies with lower costs that allow them to be more competitive than banks.

Proof of this is the success stories in the countries of Africa where financial inclusion was one of the worst in the world. Nowadays many people living there have gone from using cash to making transactions through their mobile phones (skipped the use of cards). These people are now part of the system, starting to enjoy financial benefits, experiencing the convenience and better fees. Moreover, improving the quality of their lives and their relatives as the studies have shown.

The second milestone that emerges after this research is the importance and value of Financial Inclusion, previous studies in different contexts and countries confirm the positive relationship that exists between greater financial inclusion and the development of nations. Therefore, governments should not hesitate to make the maximum efforts to reduce the rates of financial exclusion in their countries; they

should bet and invest in developing robust programs for financial education, in addition to seeking strategic partners to carry out projects for financial inclusion.

Finally, with the case of BIM Peru, we have observed that developing an ecosystem favourable to financial inclusion is not easy. We have appreciated that the Peruvian government has deployed many initiatives. Regarding BIM, we can conclude that BIM is not taking the expected success. Some reasons would be because it has failed to foster an ecosystem to encouraging and promoting the use of the mobile wallet. Moreover, we understand that perhaps the strategy of bringing together more than 20 private financial institutions has not been the most appropriate since we assume that these companies, as well as telecom operators, have an interest more oriented to generate profit than to the social side. We hope shortly, PDP managed to solve its internal conflicts, improve its network of agents and expand its services to all Peruvians, achieving a real financial inclusion that the country needs so much.

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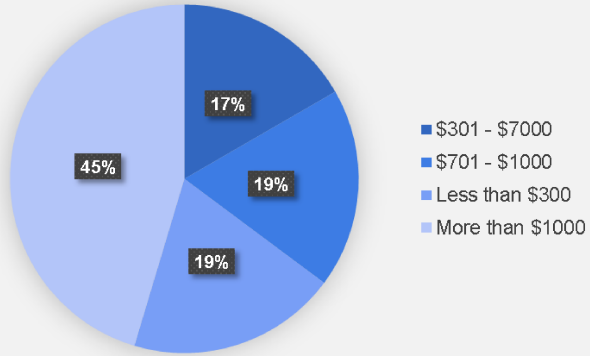
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Attachments

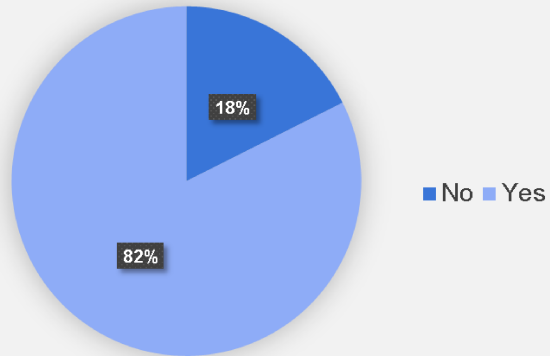
Attachment 01- Questionary's questions and general results.

First Part	What gender do you identify as?	<p>A pie chart showing the distribution of gender. The chart is divided into two segments: a larger dark blue segment representing 65% (Female) and a smaller medium blue segment representing 35% (Male). A legend to the right identifies the colors: dark blue for Female and medium blue for Male.</p> <table border="1"><thead><tr><th>Gender</th><th>Percentage</th></tr></thead><tbody><tr><td>Female</td><td>65%</td></tr><tr><td>Male</td><td>35%</td></tr></tbody></table>	Gender	Percentage	Female	65%	Male	35%			
	Gender	Percentage									
	Female	65%									
	Male	35%									
What is your age?	<p>A pie chart showing the distribution of age groups. The chart is divided into four segments: 18-25 (18%, dark blue), 26-35 (25%, medium blue), 36-45 (37%, light blue), and More than 45 (20%, very light blue). A legend to the right identifies the colors for each age group.</p> <table border="1"><thead><tr><th>Age Group</th><th>Percentage</th></tr></thead><tbody><tr><td>18-25</td><td>18%</td></tr><tr><td>26-35</td><td>25%</td></tr><tr><td>36-45</td><td>37%</td></tr><tr><td>More than 45</td><td>20%</td></tr></tbody></table>	Age Group	Percentage	18-25	18%	26-35	25%	36-45	37%	More than 45	20%
Age Group	Percentage										
18-25	18%										
26-35	25%										
36-45	37%										
More than 45	20%										
Where is your home located?	<p>A pie chart showing the distribution of gender. The chart is divided into two segments: a larger dark blue segment representing 65% (Female) and a smaller medium blue segment representing 35% (Male). A legend to the right identifies the colors: dark blue for Female and medium blue for Male.</p> <table border="1"><thead><tr><th>Gender</th><th>Percentage</th></tr></thead><tbody><tr><td>Female</td><td>65%</td></tr><tr><td>Male</td><td>35%</td></tr></tbody></table>	Gender	Percentage	Female	65%	Male	35%				
Gender	Percentage										
Female	65%										
Male	35%										
What is the level of education you have completed?	<p>A pie chart showing the distribution of education levels. The chart is divided into four segments: High School (7%, dark blue), Bachelor's Degree (48%, medium blue), Master's Degree (29%, light blue), and Other (16%, very light blue). A legend to the right identifies the colors for each education level.</p> <table border="1"><thead><tr><th>Education Level</th><th>Percentage</th></tr></thead><tbody><tr><td>High School</td><td>7%</td></tr><tr><td>Bachelor's Degree</td><td>48%</td></tr><tr><td>Master's Degree</td><td>29%</td></tr><tr><td>Other</td><td>16%</td></tr></tbody></table>	Education Level	Percentage	High School	7%	Bachelor's Degree	48%	Master's Degree	29%	Other	16%
Education Level	Percentage										
High School	7%										
Bachelor's Degree	48%										
Master's Degree	29%										
Other	16%										

What is your monthly income?

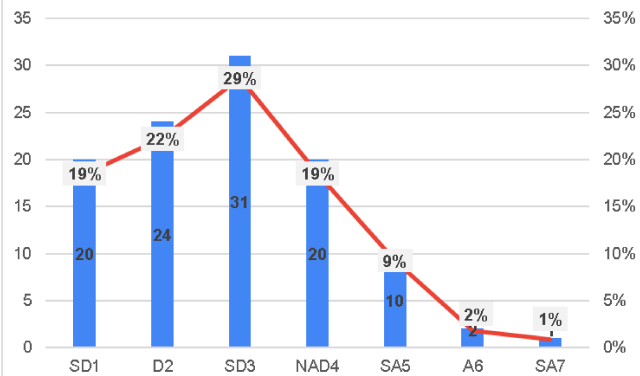


Do you have or have you ever had a bank account?

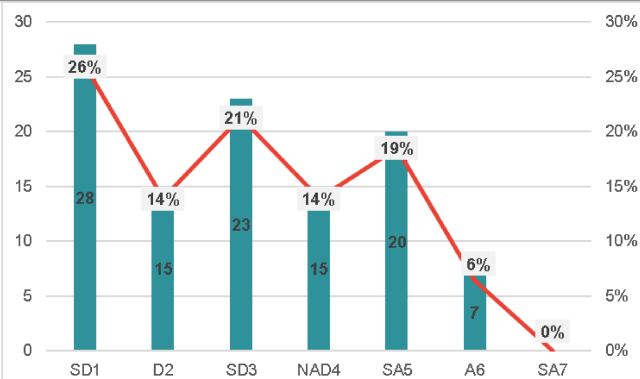


Second Part

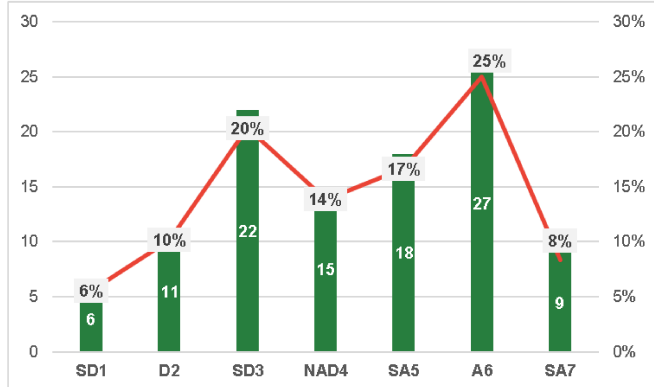
I reckon that there is enough information available about e-wallet



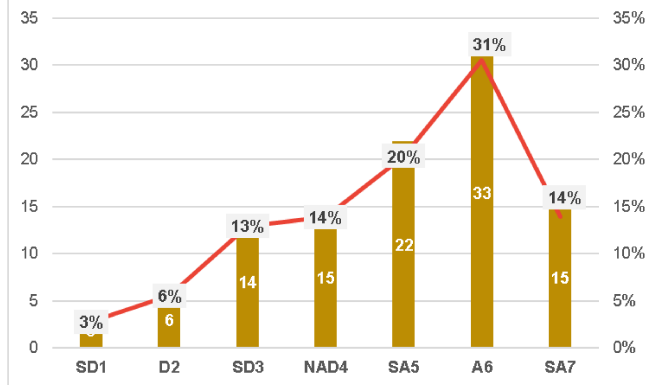
I think that I am aware of the benefits of e-wallet



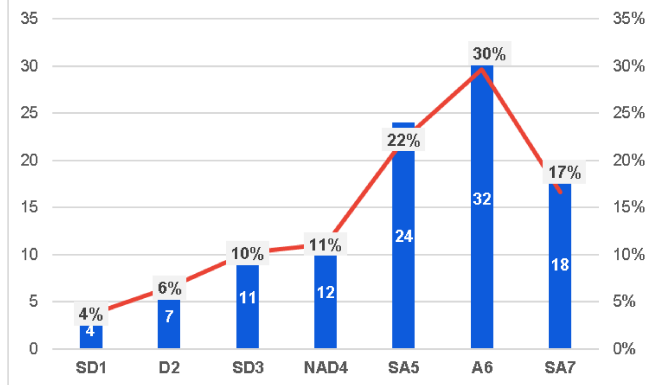
I think e-wallet puts personal details at risk for confidentiality



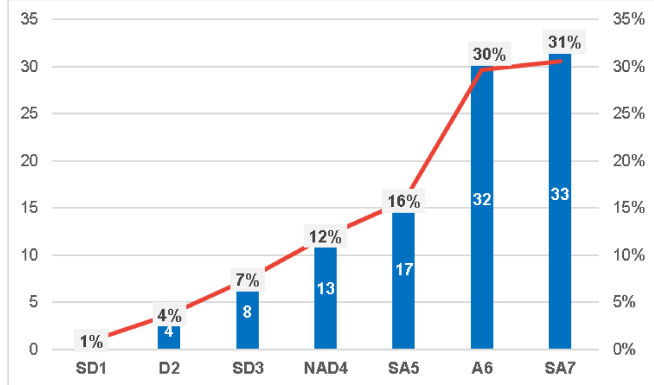
I believe the e-wallet is appropriate for buying goods in stores.



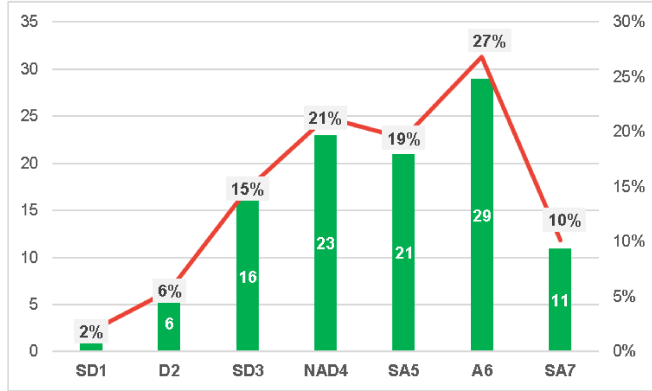
I believe the e-wallet is appropriate for paying services



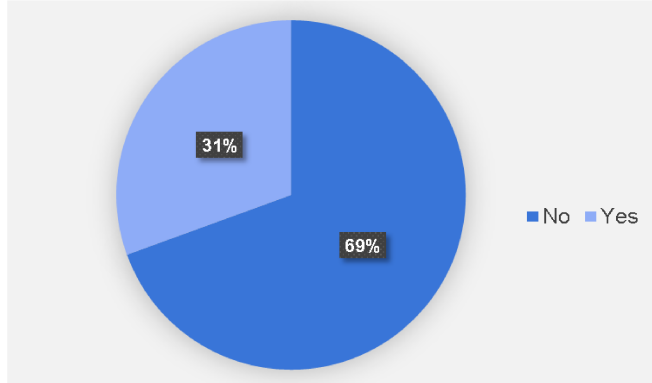
With the e-wallet, I could save time



I believe that e-wallet is easy to operate

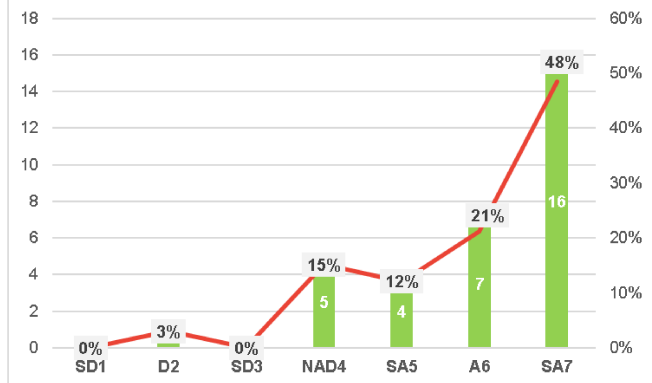


Have you used or do you use any e-wallet

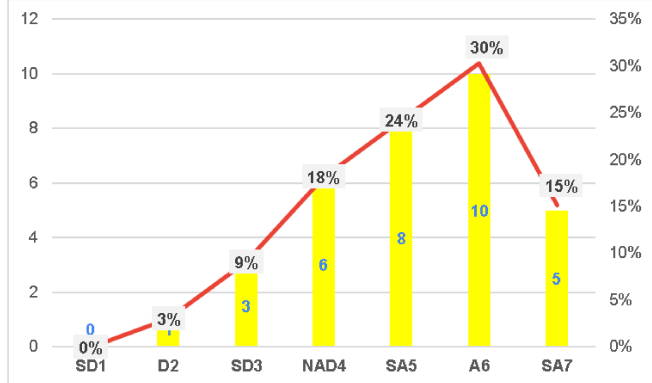


Third Part

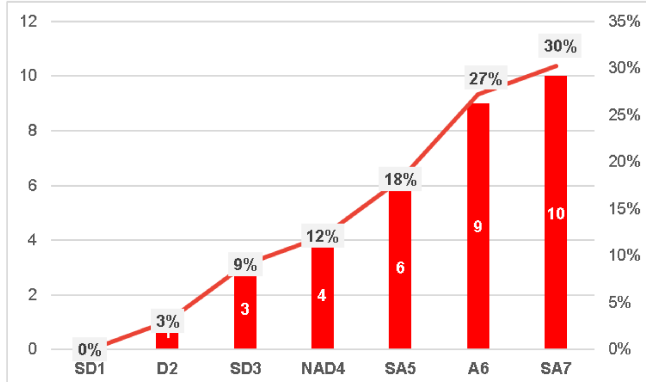
I think e-wallet is more practical than carrying cash.



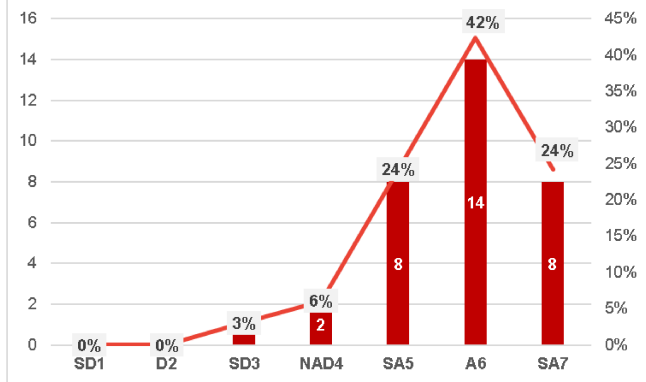
I think e-wallet is more convenient than traditional banking services.



I think e-wallet is safer than carrying cash.

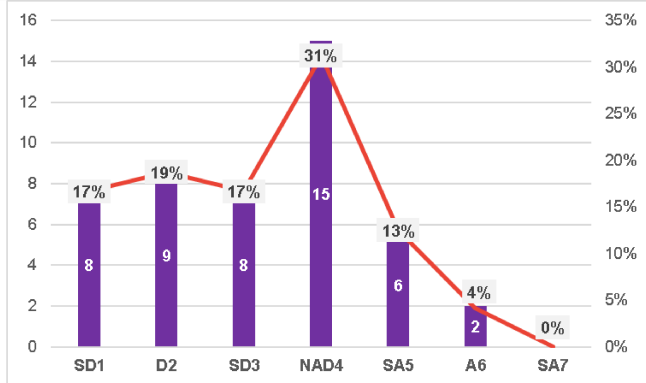


I think e-wallet transactions are cheaper than banks.

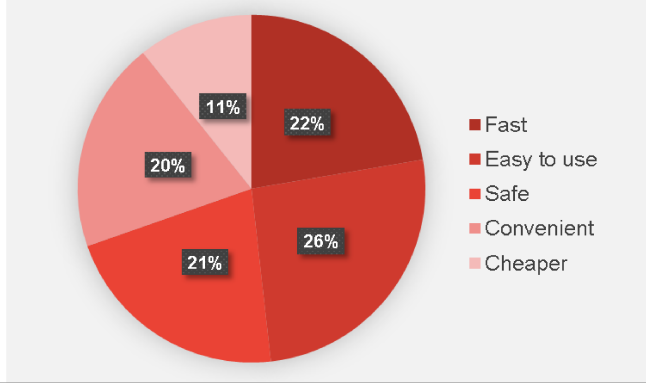


Fourth Part (non-users)

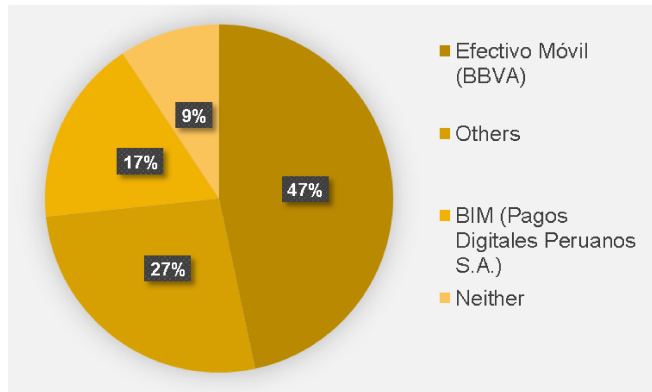
Using e-wallet requires knowledge and learning



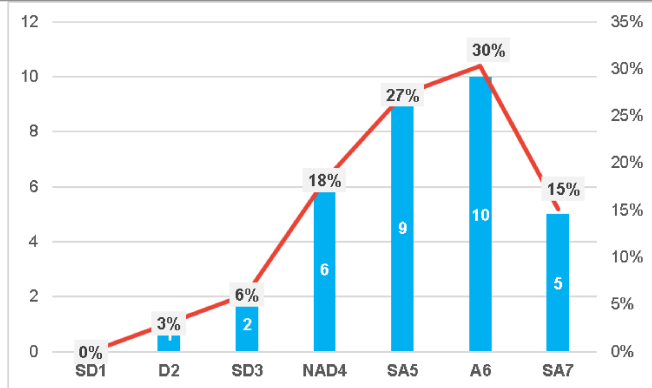
I would mainly use an e-wallet because it is



Which one of these e-wallets do you know?

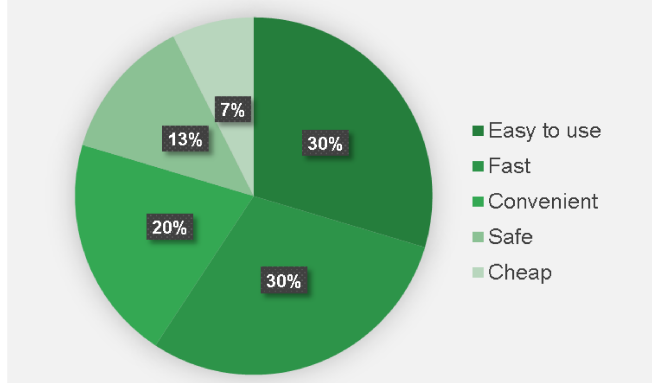


I feel comfortable and safe using my e-wallet

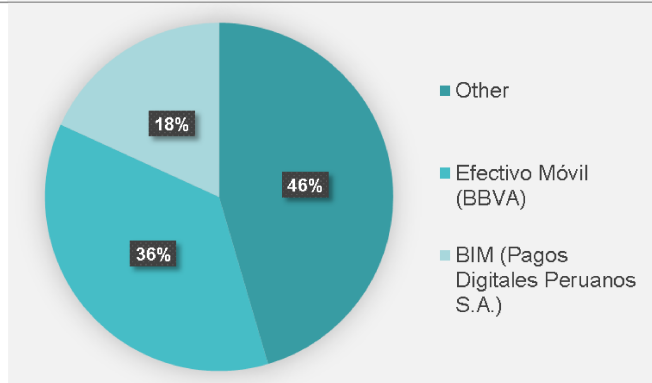


Fourth Part (users)

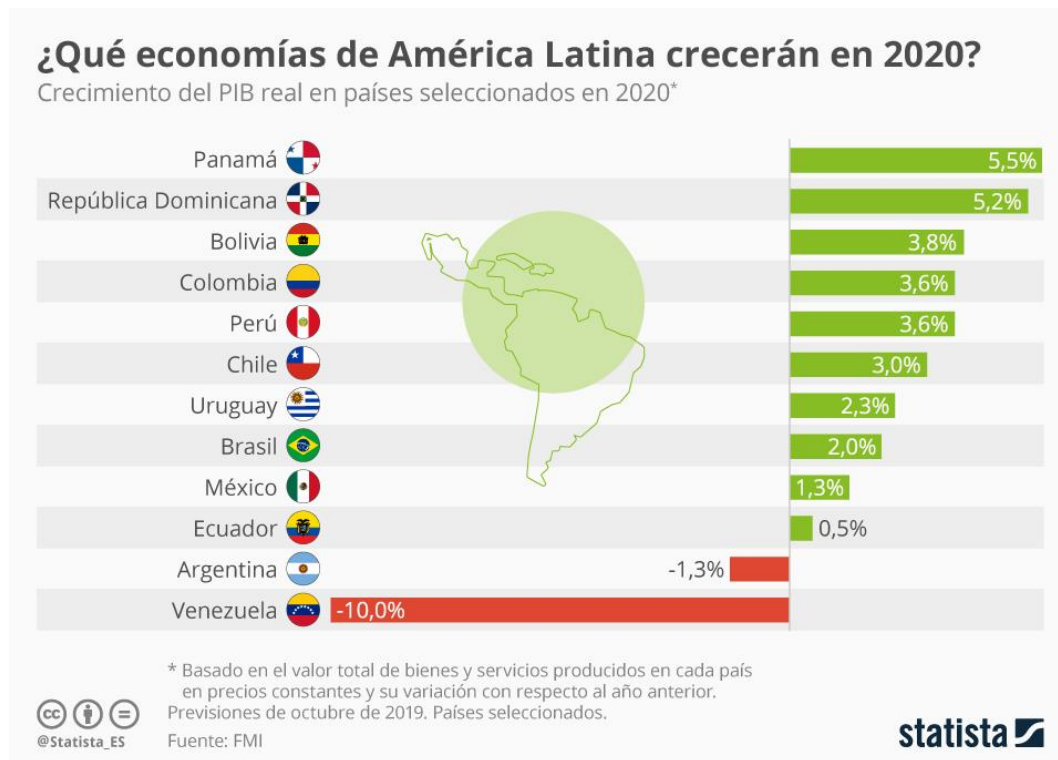
Which is the main reason you use an e-wallet?



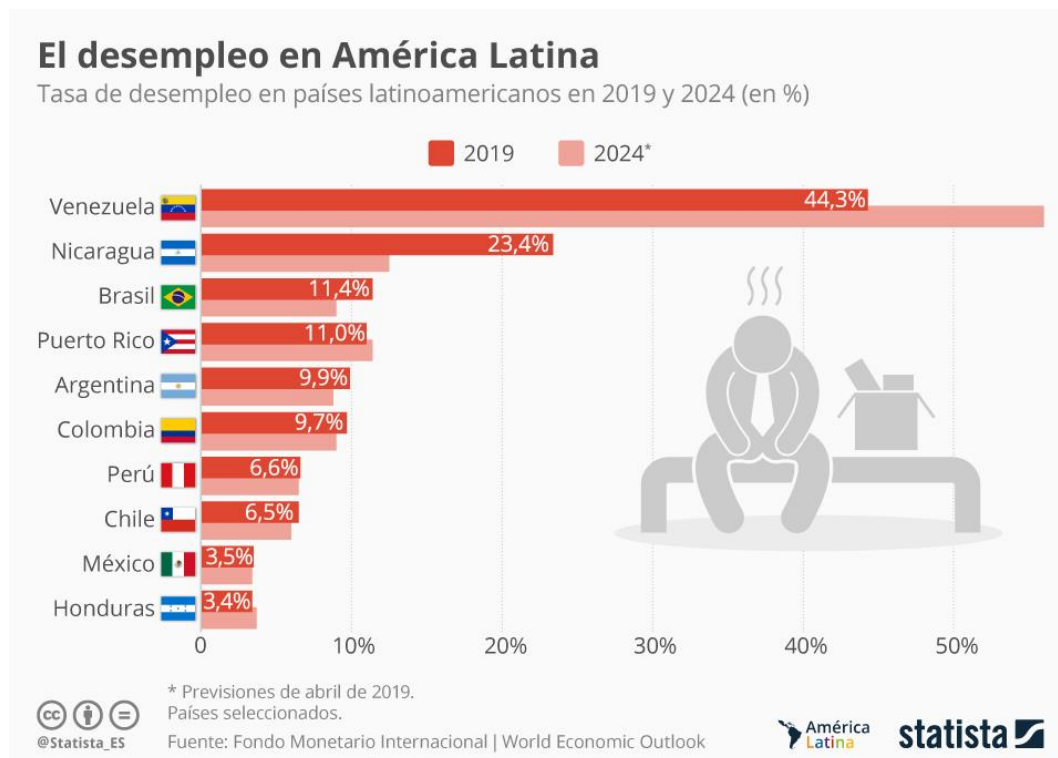
Which one of these e-wallets are you using?



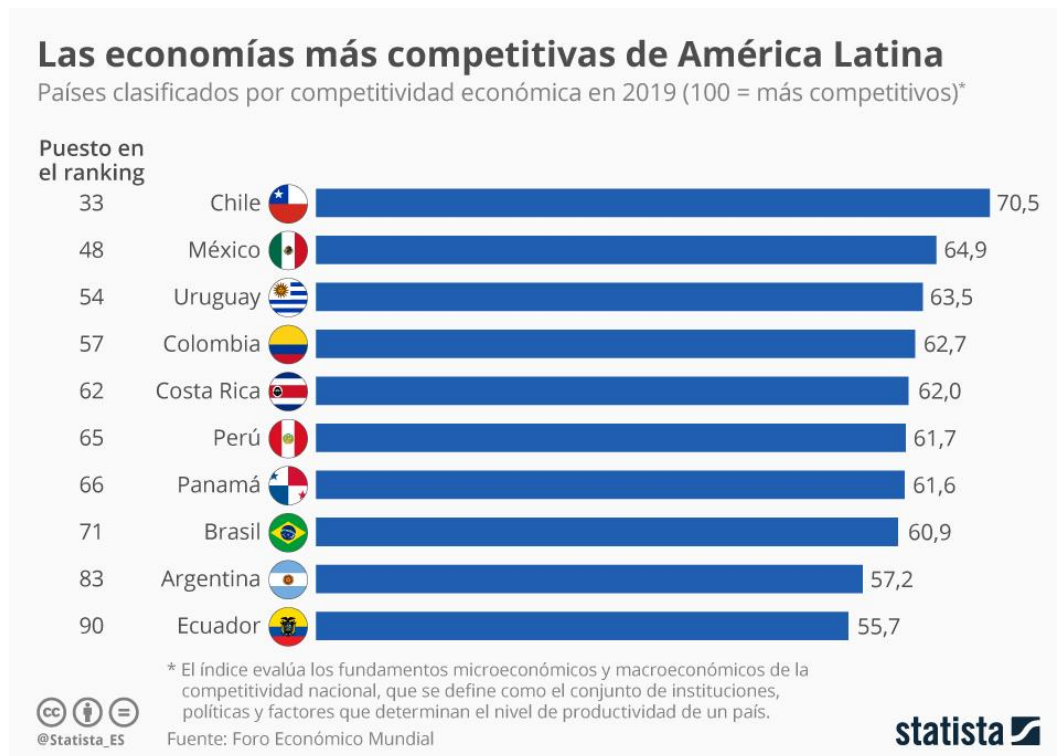
Attachment 02- What economies in Latin America will grow in 2020



Attachment 03- Unemployment in Latin America



Attachment 04- The most competitive economies in Latin America



Attachment 05- Evolution of total monetary poverty⁴²



⁴² INEI