Executive overview

"Behind every great business lies a secret that outsiders don't know".

A paraphrase of the ideas of Peter Thiel (co-founder of PayPal) in Zero to One

Evolution

1. In its broadest meaning, the concept of payments - like that of trade - dates back to the Neolithic period, where it was initially practiced as an exchange of products of equivalent value, in what is commonly known as the "barter era"[5]. This term was not coined by a specific figure or monetary authority but is a conceptual expression used in economic history and financial education to describe the period before the invention of money, when economic exchanges were carried out through the bartering of goods and services.

2. The introduction of the first coins in Lydia (a region in which is now western Turkey) in the mid-7th century B.C.[6], marked a revolution in the history of payments and gave rise to the so-called "era of metal". This era is characterized by the integration, in a single payment instrument, of the three fundamental functions of money: a unit of account, a medium of exchange and a store of value[7]. As in the previous case, the term "metal era " is not attributed to a specific author but is used in economic history to describe the era when precious metals – such as gold, silver and copper – were first used as commodity money and later as coined money.

3. The later introduction of paper money in 7th-century China - during the Tang dynasty, although its use was consolidated under the Song dynasty in the 11th century[8]- marked the beginning of fiat money. In this phase, the value of currency was based on social trust rather than intrinsic value, giving rise to the "paper era". This term, used conceptually and pedagogically, describes the historical period when paper money became the dominant medium of exchange. From the 17th and 18th centuries onwards, the growth of commercial banking and the institutional strengthening of banks helped to standardize the use of paper money. It was in this context that payment services, as we understand them today, first emerged[9].

4. In the mid-20th century, the invention and widespread adoption of the first payment cards[10] gave rise to the so-called "plastic era", another significant transformation in the payments ecosystem. This new medium allowed merchants to directly access funds available in customers' accounts, without the need for checks, cash or bank transfers, while keeping control of the payment process within financial institutions. The term "plastic era" does not have a specific origin either; it isa conceptual term that gradually emerged to describe the widespread use of plastic materials in everyday life, particularly in the financial industry, with the proliferation of credit, debit and prepaid cards as payment instruments.

5. The emergence of the Internet at the end of the 20th century introduced a new disruptive element in the evolution of payments: the rise of electronic commerce (e-commerce). Traditional means of payment soon proved inadequate for the dynamics of the digital environment, leading to the involvement of technology companies – initially outside the financial sector – that offered more agile payment solutions better suited to the new context. This gave rise to what is known as the "accounts era"[11], a phase characterized by the coexistence of traditional means of payment with new digital services offered by third parties, where traditional financial institutions are forced to compete with players from other economic sectors.

6. At present, various experts and monetary authorities agree that we are transitioning into a new phase whose name is not yet fully consolidated. Among the terms proposed are "decoupled era", " digital money era", " interoperable ecosystem era" or "era of programmable accounts and payments"[12]. This phase is characterized by the fact that it goes beyond the simple holding of a bank or digital account, focusing on automation, interoperability, digital intelligence and decentralization of financial services. In this new context, the very concept of currency is being redefined with the emergence of private cryptocurrencies and digital currencies issued by central banks (Central Bank Digital Currencies, CBDCs)[13].

[5] European Central Bank, What is money?, 2015 https://www.ecb.europa.eu/ecb-and-you/explainers/tell-me-more/html/what_is_money.en.html.

[6] Glyn Davies (1919 - 2003: Professor of Economics at the University of Wales and economic advisor to the British government), A History of Money: From Ancient Times to the Present Day -2002.

[7] European Central Bank, What is money?", 2015 https://www.ecb.europa.eu/ecb-and-you/explainers/tell-me-more/html/what_is_money.en.html.

[8] Niall Ferguson (1968 -): Professor at Harvard University, Stanford University and London School of Economics), The Ascent of Money: A Financial History of the World, 2008.

[9] European Central Bank, The role of banks (https://www.ecb.europa.eu).

[10] "In 1950 the first credit card appeared in the United States, issued by Diners Club. It was intended to facilitate payments in restaurants without the need for cash" - Banco de España, Blog del Cliente Bancario - Historia de los medios de pago (https://clientebancario.bde.es/pcb/es/blog/Historia_medios_pago.html). (https://clientebancario.bde.es/pcb/es/blog/Historia_medios_pago.html).

[11] "Having an account is the first step to financial inclusion. The current era is one of accounts: digital, mobile or bank accounts, enabling payments, savings and access to credit." - World Bank. Global Findex Database 2021(https://globalfindex.worldbank.org).

[12] "We are transitioning to an ecosystem where money is not only digital, but also programmable, interoperable and smart. This is a new paradigm in the architecture of money." - BIS, Blueprint for the future monetary system, 2022 https://www.bis.org/publ/arpdf/ar2022e.pdf.

[13] "The digital euro, one of the main CBDCs envisaged, would be a digital currency of the European Central Bank, an electronic equivalent of cash and would complement banknotes and coins, giving citizens an additional choice on how to pay" - European Central Bank - Digital Euro: Frequently Asked Questions (https://www.ecb.europa.eu/paym/digital_euro/html/index.en.html).

The decoupled era

7. The "decoupled era" is characterized by a shift from cash and cards as central elements to a model based on universal, instant and interoperable access to digital payments. This access is made through open accounts and open technologies, with financial inclusion as one of its main strategic objectives.

8. This new digital paradigm in the payments industry manifests itself on both the demand and supply sides:

   - On the demand side, the consumer is an increasingly sophisticated and digital agent, demanding payment solutions aligned with their consumption habits:

     - Digital payments: In the last decade, advances in electronic banking and the development of mobile applications have significantly contributed to the digitalization of financial services, facilitating the transition from physical means (cash, checks, cards) to digital payments, understood as those executed through the Internet or initiated from electronic devices.

     - Immediate payments: In an e-commerce environment with 24/7 availability, immediacy has become a key requirement. Digitalization is no longer enough: users demand instant, secure and always accessible payment services.

     - Integrated or invisible payments: Today's consumers increasingly prefer shopping experiences where payment is seamlessly integrated into the process. This preference has driven the adoption of solutions such as mobile payments and in-app systems.

     - Payments with low access friction: The perception that bank onboarding processes are complex has generated a growing demand for payment solutions that do not necessarily require a traditional bank account, driving the emergence of alternative services and more accessible financial products.

     At the same time, it continues to consider cash as an asset contingent on the external dependencies that a fully digital payments ecosystem would have, among which the following could be highlighted:

     - Electric power supply.

     - Internet connectivity.

     - Mobile communications networks.

     - Data center infrastructure.

     - DNS services and digital certificates.

   - On the supply side, the market is constantly expanding:

     - In terms of service providers: Alongside traditional players (financial institutions, card issuers and acquirers, payment gateways), new entrants such as fintechs, bigtechs and large technology corporations have emerged, attracted both by the sector's growth potential and by the strategic value of the data generated.

     - In terms of types of services: Traditional methods now coexist with new payment solutions, such as Account to Account (A2A) transactions, payments via QR codes, mobile devices, or via digital currencies, both public and private.

9. The evolution of the payments ecosystem in recent decades has contributed to its perception as a highly attractive sector, based on several key factors:

   - Sustained growth of the digital payments market: The rise of e-commerce, the digitalization of financial services and innovation in mobile banking have catalyzed the shift from physical methods to digital solutions.

   - Strategic value of data: The decoupling of payments from cash has transformed payments into a crucial source of data, coinciding with the development of technological capabilities for the large-scale exploitation of this data.

   - Reduction of intermediaries: The current ecosystem offers opportunities for disintermediation, allowing some companies to vertically integrate their payment and collection processes, thereby reducing costs per transaction.

   - Leveraging economies of scale: The growing volume of operations benefits those players capable of operating on a large scale, providing them with significant competitive advantages.

10. At the same time, the very concept of currency has evolved. Until just over a decade ago, money was primarily represented by coins and banknotes, which had three essential attributes:

    - Physical support (metal or paper).

    - Issuance and recognition by central banks, granting it legitimacy as a means of payment.

    - Fungibility, i.e. the possibility of being exchanged without loss of value.

This paradigm was radically altered on October 31, 2008 with the publication of the white paper "Bitcoin: A Peer-to-Peer Electronic Cash System"[14], a document that laid the foundations for using blockchain as the underlying technology for cryptocurrencies.

Cryptocurrencies have reached a significant degree of maturity. Their legalization in countries such as El Salvador, the initiatives in the United States to establish a federal reserve based on cryptoassets, or the upcoming regulation in Europe through the MiCA (Markets in Crypto-Assets) framework[15], expected to be deployed by 2025, are proof of this. This regulation will allow financial institutions to offer services linked to cryptoassets, favoring their mass adoption.

The operation of cryptocurrencies introduces a new paradigm in the field of payments, with technical and operational characteristics different from those of traditional currencies. In this context, three key concepts emerge as particularly relevant:

- Custody: The loss of the private keys associated with the cryptocurrency position implies the irreversible loss of the asset, making secure management of these keys critical.
- Wallet: Users operate through digital wallets, from where they sign and execute transactions.
- Decentralization: There is no intermediary financial entity; transactions are carried out directly between peers (peer-to-peer) or between users and merchants, without centralized banking supervision.

11. This transformation of the payments ecosystem has been accompanied by an equally dynamic regulatory process. Over the past decade, Open Finance has emerged as a new regulatory paradigm focused on financial data, with core principles that include:
    - Data liberalization: Financial and non-financial entities can access data with the client's explicit authorization.
    - Protection and control: A security framework, typically established through standardized APIs, allows the customer to control what data is shared and for what purpose.

    Although the scope of Open Finance extends beyond the payments sector, the first regulatory frameworks were implemented within this area, most notably the European Union's PSD2 Directive (Second Payment Services Directive). Since this pioneering regulation, the model has expanded globally (as of December 2024, 60 jurisdictions had already approved Open Finance regulatory frameworks, with another 10 having frameworks under development).

12. While priorities vary by region – such as financial inclusion in Latin America and Asia, or regulatory sovereignty in Europe, the United States and China - common elements that shape today's payments ecosystem can be identified.:
    - Centrality of digitalization and instant payments.
    - Growing prominence of digital accounts, electronic wallets and mobile solutions.
    - Promoting the interoperability of financial services.
    - Active focus on the development and evaluation of public digital currencies (CBDCs).

[14] https://bitcoin.org/bitcoin.pdf
[15] https://www.cnmv.es/portal/mica/regulacion-criptoactivos?lang=es

Challenges

13. As discussed, the payments ecosystem is undergoing a profound transformation, driven by digitalization, technological advancements and shifting consumer behaviors. This transformation presents considerable challenges for both financial and non-financial entities. In this context, it is crucial for organizations to understand the nature of these changes and adapt their strategies to remain competitive.

14. Technological development, exemplified by the well-known Moore's Law - which predicts exponential growth in processing capacity with minimal increases in costs[16] - can be considered the main driving force and, at the same time, the greatest challenge in advancing this new era in the payments industry. This progress has opened up significant opportunities for both traditional and emerging players, attracting technology companies capable of innovating in short cycles to the sector. Technologies such as Near Field Communication (NFC[17]), QR codes, tokenization and biometric systems have radically transformed payment services, improving their security and usability. However, this technological sophistication requires heavy up-front investments, with profitability potentially delayed over time.

15. Along with the challenge of extensive technology use, the pace of change in the payments industry is dizzying: innovative solutions are quickly becoming market standards. This requires organizations to cultivate a solid culture of agile change, enabling them to realign their capabilities with emerging trends and adopt more efficient solutions.

16. In payments, scale is a critical, though not exclusive, factor in achieving financial success. While the ability to handle large transaction volumes is essential, fee revenues are steadily declining and, in many models, do not guarantee the profitability needed to sustain technology investments. The real advantage of scale lies in its ability to enable complementary and more profitable services. A large customer base and high transaction volume provide institutions access to valuable transactional data, which can be used to offer products such as credit, insurance, investments and personalized financial services.

17. The proliferation of new payment methods and business models also brings about emerging risks associated with new forms of financial crime. It is crucial to continuously update risk detection and mitigation strategies, with financial fraud and money laundering being the most significant threats in the payment sector. In this regard, it is worth highlighting the potential of quantum computing[18] in fraud prevention (both for its ability to detect anomalous patterns, which can contribute to the analysis of transactions and the detection of possible fraud with greater precision, and to improve the security of financial transactions to prevent cyber-attacks).

Opportunities

18. Although the evolution of the payments ecosystem could be interpreted as a threat to the traditional, historically dominant players, this transformation also offers significant opportunities, particularly for those willing to embark on deep digital transformation journeys. Some of these opportunities include:

    - Access to new customer segments, either by filling gaps in traditional channels (especially with corporate customers) or by reaching underserved segments, such as SMEs, using tools such as marketplaces that allow centralizing payment demands waiting to be covered by a banking entity.

    - Expansion and innovation in product and service offerings, with examples such as:

        - Solutions related to cryptocurrencies.

        - Services under the Banking as a Service (BaaS) model.

        - Creation of innovation hubs.

        - Implementation of Decentralized Identity (DID) services.

[16] Moore's Law: An empirical observation made in 1965 by Gordon E. Moore, co-founder of Intel, on the progress of semiconductor technology (https://newsroom.intel.com/es/nuevas-tecnologias/intel-newsroom-archivo-2022).

[17] (NFC) Near Field Communication (NFC) is a short-range wireless communication technology that enables data exchange between compatible devices within a few centimeters (typically up to 4 cm), using radio frequency magnetic induction in the 13.56 MHz band. - Klaus Finkenzeller - RFID Handbook: Fundamentals and Applications in Contactless Smart Cards, Radio Frequency Identification and Near-Field Communication (2010).

[18] Quantum computing is an emerging field of computer science that takes advantage of the principles of quantum mechanics to perform computations in a radically different way than classical computing (Central Bank ofUruguay: (https://www.bcu.gub.uy/NOVA-BCU/SiteAssets/Disrupci%C3%B3n%20de%20la%20computaci%C3%B3n%20cu%C3%A1ntica%20en%20el%20sistema%20financiero%20y%20de%20pagos.pdf).

- Data monetization: Digitalization has generated large volumes of transactional data, which can be integrated with an entity's pre-existing data to create new revenue streams and improve the customer experience in the face of emerging competition.

- Collaboration with niche companies can act as an innovation accelerator through strategic alliances. These companies offer specialized solutions that allow banks to adopt advanced technologies and significantly improve the user experience - without incurring the costs of internal development[19].

- Proprietary digital currency issuance capability, as in the case of Kinexys Digital Payments (formerly JPM Coin), an authorized blockchain-based system, which functions as a real-time, 24/7 payment rail and deposit ledger between J. P. Morgan clients.[20].

19. In an expanding ecosystem, where commissions to intermediaries account for a significant portion of transaction costs, many non-traditional players have opted to integrate payment services into their offerings, competing directly with financial institutions as payment service providers.

20. However, entering the market as a direct payment service provider is not the only avenue for new entrants. Other opportunities include:

    - Leveraging Open Banking solutions by integrating with bank accounts to offer specialized services:

        - Account aggregation
        - Payment initiation
        - Scoring/debt advice model development
        - Overdraft coverage

    - Payment services in Web 3.0 through NFTs: Within virtual environments such as the metaverse, payments are made through digital wallets that allow transactions with non-fungible tokens (NFTs[21]).

    - Decentralized Finance (DeFi) based solutions: financial applications built on blockchain that operate without intermediaries, using smart contracts to automatically execute agreed terms[22].

    - Banking as a Platform Model: Leveraging payment data to scale the offering to other financial services, emulating the digital platform model dominant in other sectors, such as transportation, e-commerce or tourist accommodation.

Conclusion

21. While the complete disappearance of cash, which remains a contingent asset, is not anticipated, the trend towards its decline in favor of digital means of payment is clear and persistent.

22. This transition implies a profound transformation in the provisioning of payment services, redefining the way we pay and get paid. This structural change affects all members of the payments ecosystem in a cross-cutting way.

23. Adapting to this environment implies that all players must evolve towards digital models. In the coming years, we foresee an ecosystem where:

    - The intensive use of technologies will continue to grow, with a special focus on offering more agile, secure and personalized experiences.

    - New players will continue to join, intensifying competition and innovation.

24. The opportunities that arise in this scenario are significant, both for traditional players in the financial system - who have the potential, for example, to access new customer segments and innovate their product and service offerings - and for new participants, who can explore business alternatives through direct competition with financial institutions as payment service providers, or through the development of complementary services (such as open banking solutions, payment services through NFTs or decentralized finance solutions, for example).

25. In this context, only those participants capable of agile evolution towards digital models, with a global and integrated vision of their processes and technological architectures, and with robust control systems, will be able to lead the payment services industry, generate value for their customers, and consolidate themselves as relevant players in the new ecosystem.

[19] Banco de España – *Taxonomy of the Spanish FinTech ecosystem and the drivers of FinTechs' performance.* (https://repositorio.bde.es/bitstream/123456789/13545/1/Taxonomy_Fintech.pdf).

[20] J.P. Morgan – Kynexys Digital Payments (https://developer.payments.jpmorgan.com/docs/treasury/globalpayments/capabilities/global-payments-2/jpm-coin-system/index).

[21] European Banking Authority (EBA): "An NFT is a unique cryptographic token representing an asset, digital or physical, not exchangeable for another of equal value. It can confer rights over an underlying asset, but its legal nature depends on the specific use, the type of asset linked and the applicable regulatory framework." (https://www.eba.europa.eu).

[22] Harvard Business Review, "DeFi and the Future of Finance" (2021) (https://store.hbr.org/product/decentralized-finance/UV9021?sku=UV9021-PDF-ENG).