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"DIGITAL BANKS AS DIGITAL PLATFORMS: THE CASE OF *REVOLUT*"

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1. Introduction

Over the past decade, the financial services landscape has been profoundly reshaped by the emergence and diffusion of digital-native institutions. Among them, Revolut has risen to prominence as one of the most iconic and fast-growing examples of a new breed of financial intermediaries: digital banks, or more broadly, fintech platforms. Originally launched in 2015 as a mobile application for foreign exchange, Revolut rapidly evolved into a multi-service platform offering banking, payments, investing, and insurance functionalities within a unified digital ecosystem. This extraordinary trajectory prompts a fundamental question: *To what extent does Revolut exhibit the economic and structural characteristics of a digital platform, and can its growth trajectory be explained through platform theory — particularly via network effects and critical mass dynamics?*

This research question lies at the heart of the present thesis. In addressing it, the aiming is to understand whether Revolut's expansion can be interpreted not merely as the outcome of marketing efforts or product innovation, but rather as a manifestation of structural dynamics typical of multi-sided platforms. Specifically, the scope is to examine whether network effects — both direct and indirect — have played a decisive role in accelerating user adoption, and whether the firm has passed through a phase of "critical mass" that fundamentally changed the slope of its growth curve and the nature of its profitability.

To answer this question, the thesis develops and implements an econometric model inspired by platform theory, adapting conceptual foundations from seminal economic literature to the specific case of Revolut. The model captures the interplay between spontaneous adoption, endogenous user-to-user reinforcement, and marketing-induced virality. Furthermore, a threshold-based specification is introduced to test the presence of a structural shift in adoption dynamics — a shift that, if validated, would point to the achievement of critical mass.

Before delving into the model itself, it is essential to articulate the conceptual framework that informs this analysis, and to situate the case of Revolut within the broader literature on digital platforms and financial innovation.

Literature and Conceptual Framework

The analytical foundations of this thesis rest on two main bodies of literature: platform economics, and the diffusion of innovations. Within platform economics, the concept of

network effects is paramount. Originally formalized by Katz and Shapiro (1985), network effects describe situations where the utility of a product or service increases with the number of users. While the phenomenon was already observable in earlier technology markets (such as telephony or fax machines), the digital economy has brought it to the forefront of business strategy and economic theory.

In their early work, Katz and Shapiro modeled user utility as a function of both intrinsic product quality and the expected size of the network. This insight was subsequently refined by later authors such as Rochet and Tirole (2003), who introduced the concept of two-sided markets, where platforms serve as intermediaries between distinct user groups. Parker and Van Alstyne (2005) emphasized the feedback loops inherent in platform growth: more users attract more complements, which in turn attractsmore users — a dynamic that may lead to explosive growth once critical thresholds are passed. Eisenmann et al. (2006) articulated the strategic challenges of platform competition, including tipping, multi-homing, and pricing strategies to accelerate adoption.

Meanwhile, the diffusion of innovations literature provides complementary insights. Bass (1969) famously proposed a parsimonious model that separates adopters into innovators and imitators, capturing the dual role of exogenous marketing and endogenous peer influence. Though initially developed for durable goods, the Bass model has been widely adapted to contexts involving digital adoption, particularly when coupled with network-based perspectives (Mahajan et al., 1990).

Other contributions have helped clarify the institutional and strategic characteristics of digital platforms, distinguishing them from traditional firms and single-sided intermediaries. In the fintech space, researchers have increasingly applied these theories to the case of neobanks and digital payment services. Studies by Zetzsche et al. (2017) and Vives (2019) underscore the transformative potential of platforms in financial intermediation, especially when combined with mobile penetration and data analytics.

Against this backdrop, Revolut emerges as an ideal case study. Its evolution from a single-purpose application to a full-fledged financial platform suggests that platform theory may provide a more comprehensive explanatory framework than traditional banking models. Moreover, the platform's rapid adoption — reaching millions of users within a few years — raises the hypothesis that network effects, in conjunction with marketing strategies and user experience design, may have played a central role.

The Case for Network Effects in Revolut

Several observations suggest that Revolut's growth dynamics may be structurally like those of other successful digital platforms. First, the nature of its services — particularly peer-to-peer (P2P) payments — is inherently conducive to direct network effects: a user derives more value from the platform when her friends, family, or colleagues are also using it. The presence of features such as instant money transfers, bill splitting, and shared vaults makes user density a key determinant of perceived utility.

Second, Revolut has actively promoted user acquisition through referral programs and incentives. Although granular data on referral conversion rates or marketing spend by channel are not publicly available, macro-level data indicates a correlation between user base growth and total marketing expenditures. This suggests a feedback mechanism whereby a growing user base makes marketing campaigns — especially viral ones — more effective.

Third, indirect network effects may also be at play. As Revolut adds new financial products (e.g., stock trading, crypto, insurance), the attractiveness of the platform increases. Merchants, partners, and developers are more likely to integrate with a widely used platform, further enriching its ecosystem. But perhaps most importantly, in the domain of banking, user base size contributes to perceived reliability. Especially for a young and digital-only institution, widespread adoption can act as a form of social proof. This may help reduce trust barriers and increase the willingness of marginal users to join — particularly once a minimum scale has been reached.

This last observation has deep implications. If platform adoption is contingent upon perceived reliability, and reliability is itself a function of adoption, then we are in the presence of a self-reinforcing dynamic. Such dynamics often feature a critical mass threshold — a tipping point beyond which adoption accelerates non-linearly, and the platform becomes self-sustaining. The achievement of profitability by Revolut in 2019, just a few years after its founding, lends empirical support to this idea.

Modeling Strategy and Research Design

To capture these mechanisms, the thesis develops a model inspired by the Katz and Shapiro framework, enriched with extensions to reflect virality, marketing interactions, and threshold effects. Rather than modeling individual utility functions, the analysis focuses on aggregate user dynamics: how the total number of users evolves over time, and what factors explain its growth trajectory.

The model posits that new user adoption in each period is a function of three components: spontaneous adoption (representing baseline growth), endogenous adoption driven by the current user base (reflecting direct network effects), and a virality component that scales with both the user base and marketing expenditure. Furthermore, the model allows for non-linear scaling in this last component, to account for the possibility that marketing effectiveness changes with platform density.

In the second stage, the model is augmented with a threshold parameter: network effects are assumed to be active only after a critical user base has been reached. This specification is designed to empirically test the existence of a "critical mass" — a core concept in platform theory — and to quantify its impact on growth dynamics.

The data used in this model are derived from Revolut's annual financial reports, which include figures for revenues, marketing expenditures, and user counts.

Structure and Contribution

The work is organized as follows. First, there is an in-depth analysis of the literature, including some of the works cited in this part. Second, there is a sector analysis in which there is an overview of the fintech sector and its dynamics, specifically regarding the neobanks, with some case studies as example. In the chapter ahead there is a focus on Revolut, with its history, strategies adopted, and results obtained. It follows a detailed chapter presenting the modeling framework and the rationale behind each component. Then, results are presented in two parts: first, those related to the extended network model; and second, those pertaining to the threshold model and its implications.

Finally, the concluding chapter synthesizes the findings and reflects on their theoretical and managerial implications. In particular, it considers whether Revolut's trajectory aligns with the predictions of platform theory, and what this means for the future of fintech and digital banking. By bridging economic theory with real-world data, the thesis aims to contribute to our understanding of how platforms grow, how trust and adoption interact, and what strategic levers can be used to foster sustainable expansion in digital financial services.

2. Literature Review

The rapid advancement of digital technologies has profoundly reshaped many industries, and financial services are among the most affected sectors. In recent years, digital banks have

emerged as key players transforming traditional banking by operating predominantly through digital platforms rather than physical branches. These so-called digital banks, also known as neobanks or challenger banks, leverage the power of platform business models to deliver banking and financial services with increased agility, scalability, and customer centricity.

This chapter synthesizes extensive academic and industry literature regarding digital banks as digital platforms, focusing on their platform dynamics, network effects, fintech ecosystems, regulatory environment, and technological enablers. By examining these themes, the aim is to understand the structural and strategic shifts that characterize digital banks, placing them within the broader framework of digital platform theory.

Unlike analyses that focus narrowly on single firms, this review adopts a sector-wide perspective, recognizing the heterogeneity of digital banking models and the varying approaches taken globally. Furthermore, the review contrasts digital banks with other platform-based industries such as e-commerce and ride-hailing, highlighting differences in data utilization, monetization, governance, and the delicate balance between openness and control. This broader perspective illuminates not only the opportunities but also the inherent challenges and vulnerabilities faced by digital banking platforms.

2.1 The Rise of Digital Banking

Digital banking represents the transformation of traditional banking services into digital formats accessible primarily via mobile devices, web interfaces, or APIs. This shift is driven by technological innovation, evolving user expectations, and policy initiatives such as PSD2 and open banking directives that aim to foster competition and interoperability (Zetzsche et al., 2020). Importantly, digital banks do not simply replicate legacy banking functions online; they redesign the customer journey end-to-end. For example, digital onboarding replaces cumbersome in-branch paperwork with fully remote, paperless processes often powered by biometric verification and AI-based risk assessment. Real-time data analytics facilitate personalized financial advice, tailored offers, and dynamic pricing models.

Key features of digital banks include cloud-native architectures, microservices-based design, and agile development practices that allow rapid deployment of features and continuous user-centric iteration (Gomber et al., 2017). These institutions prioritize user experience, often redesigning customer journeys end-to-end, including biometric onboarding and AI-enabled

risk assessment (Arner, Barberis, & Buckley, 2016). Unlike traditional banks that adapt legacy systems, digital banks build architecture from scratch to support embedded finance, personalization, and data-driven cross-selling strategies.

Compared to other platform industries such as e-commerce, where transactions are often one-off, or ride-hailing platforms, which facilitate immediate services, digital banks manage ongoing customer relationships with high levels of trust and security requirements. This persistent engagement necessitates sophisticated data management and regulatory compliance frameworks. The monetization models for digital banks frequently leverage cross-selling within their ecosystems, subscription services, and data-driven product innovation.

2.2 Platform Theory in the Context of Financial Services

In economic and management scholarship, a platform is broadly understood as a business model that facilitates interactions between two or more interdependent groups, typically producers and consumers, to create value through their exchanges (Parker, Van Alstyne, & Choudary, 2016). Unlike traditional pipeline businesses, where value is created via a linear progression of inputs transformed into outputs, platforms operate by enabling and managing networks of users and providers. This network-centric model leverages interactions rather than direct production, giving rise to unique dynamics such as network effects, data aggregation, and ecosystem orchestration.

Within the financial services industry, digital banks represent a prominent case of platforms reshaping sectoral logic. By moving away from siloed product offerings, digital banks integrate multiple third-party services — ranging from payment processing to personal financial management and insurance — through open APIs and regulatory frameworks like PSD2 (Payment Services Directive 2) in Europe. This connectivity allows digital banks to foster vibrant ecosystems that continuously evolve as new partners join, enabling rapid innovation and diversification of service portfolios (Gawer, 2021).

This platform approach fundamentally changes how banking products are delivered and consumed. While traditional banks bundled financial services into comprehensive packages, often locking customers into limited options, digital banking platforms encourage unbundling and rebundling of services tailored to individual preferences. Customers can select discrete components — such as budgeting tools, investment advisory, or credit monitoring — integrated

seamlessly within the platform environment. This modularization democratizes access to financial tools and promotes competition from fintech startups and technology giants venturing into financial services. This is made possible via the use of vast amounts of data produced through user interactions. The capacity to aggregate, process, and leverage data not only improves customer experience but also introduces complex governance challenges, especially regarding data privacy, security, and ethical use.

A critical tension in platform governance lies between openness and control. Digital banking platforms must balance the benefits of openness — such as fostering innovation, expanding service variety, and attracting partners — with the necessity of controlling access to protect security, maintain regulatory compliance, and preserve user trust. Unlike less regulated platforms like e-commerce marketplaces or ride-hailing services, digital banks operate under stringent financial regulations and heightened expectations around confidentiality and fraud prevention. This unique context intensifies the need for robust governance frameworks that carefully calibrate platform openness, data sharing, and partner relationships.

Financial platforms must carefully calibrate the degree of openness to maintain a secure environment. Excessive openness may increase vulnerability to cyber threats or misuse of data, while overly restrictive policies can stifle innovation and limit user benefits (Böhme, Christin, Edelman, & Moore, 2015). The governance challenge includes enforcing strict access controls, implementing robust identity management, and ensuring regulatory compliance without undermining the collaborative dynamics that foster platform growth (Zhu & Iansiti, 2019).

Moreover, trust in banking platforms is not only a technical or regulatory issue but also a social one. The platform orchestrator must ensure transparency and accountability to users and partners, balancing competitive pressures with ecosystem health (Gawer & Cusumano, 2014). This tension shapes strategic decisions on platform architecture, data sharing policies, and partner selection.

Compared to other digital platforms, neobanks and digital banks operate under significantly stricter trust requirements. In e-commerce or social media, trust is built through community-driven ratings and user reviews, whereas digital banks must comply with legal and institutional definitions of trust, including KYC, AML, and GDPR requirements (Pasquale, 2015). Trust failures in digital banking—such as data breaches, regulatory violations, or unethical data use — can rapidly erode user confidence and trigger reputational damage, legal action, or mass attrition (Zetzsche et al., 2020). Moreover, the dynamics of network effects in

digital banking are fragile and potentially reversible. While increased users and partners can amplify platform value, any breakdown in perceived trust or security can cause cascading exits by users and partners alike. Digital banks often rely on third-party services (e.g., API providers, fintech integrations) which, if unstable or misaligned in incentives, pose ecosystem vulnerabilities (Kenney & Zysman, 2016). This underscores the need for sophisticated governance mechanisms that balance openness with stringent data control and risk management, especially in sectors where the cost of failure is high and irreversible.

To illustrate these dynamics, consider the following hypothetical graph:

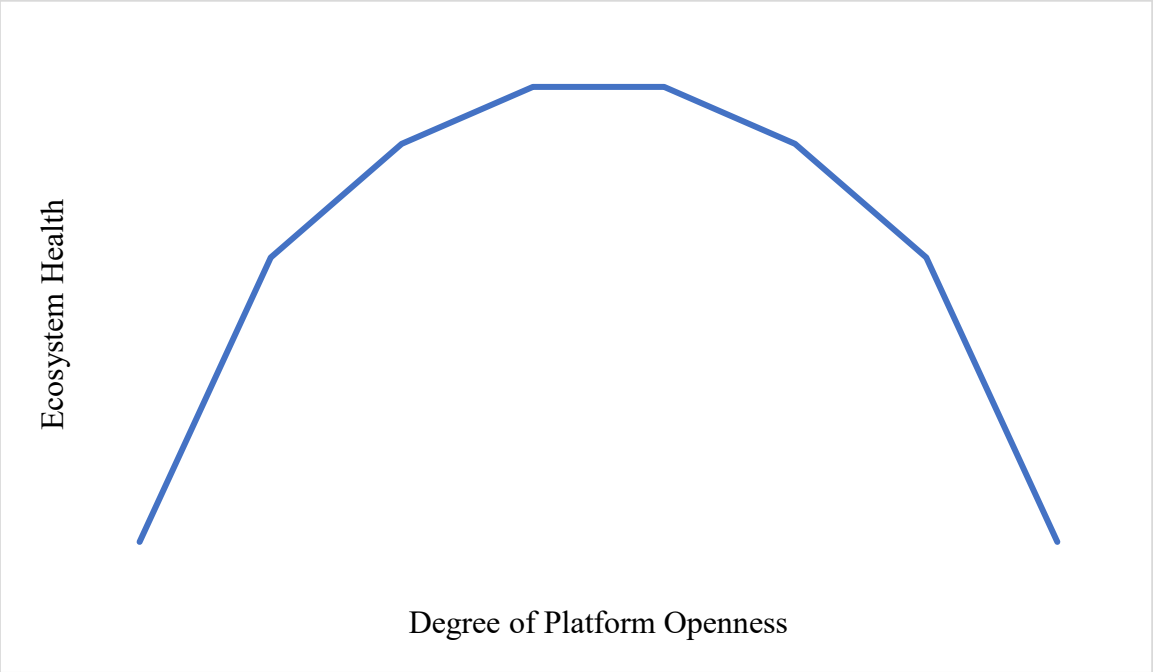

Figure 1*:Relationship Between Ecosystem Health and Degree of Platform Openness.*

This visual helps emphasize that while openness is crucial for growth and innovation, unrestrained openness can jeopardize platform sustainability, especially in banking where trust and security are paramount.

In conclusion, digital banks exemplify a complex form of platform governance that must reconcile competing demands for openness, control, innovation, and trust. Compared to other platform types, their challenges are amplified by regulatory scrutiny and the sensitive nature of financial data. This context necessitates a careful orchestration of ecosystem partners, robust data governance policies, and continuous investment in trust-building measures to sustain network effects and long-term platform viability.

2.3 Network Effects and Critical Mass

Network effects — where the value of a platform increases as more users join — are fundamental to platform success (Katz & Shapiro, 1985). Digital banks experience both direct network effects (such as peer-to-peer payments where more participants enhance utility) and indirect effects (where a larger user base attracts more third-party service providers).

However, achieving critical mass is often challenging. Unlike social media or content-sharing platforms, which often rely on virality and low switching costs, banking platforms must overcome regulatory friction, high trust barriers, and longer user conversion cycles (Evans & Schmalensee, 2016). To accelerate adoption, digital banks frequently deploy referral incentives, freemium models, and streamlined onboarding flows.

But the inherent fragility of network effects in this sector cannot be overstated. User loss due to trust failure or service interruptions can rapidly reverse growth, a risk rarely present in other platform types (Floridi, 2019).

Case studies have shown that over-reliance on third-party APIs or unstable partners can lead to service disruptions and reputational fallout. For instance, the collapse of certain neobank ecosystems in emerging markets has been traced to unsustainable dependencies and governance oversights (McWaters & Galaski, 2017). Thus, sustainable growth in digital banking platforms hinges not only on user acquisition strategies but also on carefully designed ecosystem architecture and proactive governance frameworks.

2.4 Regulatory Drivers of Digital Banking Innovation

Regulation plays a paradoxical role by both limiting and enabling innovation. Anti-money laundering (AML), know-your-customer (KYC), and data protection laws impose strict compliance requirements, potentially slowing product development and raising costs.

Conversely, regulatory innovations like open banking mandates and regulatory sandboxes promote experimentation and ecosystem openness. These regulations mandate data portability, forcing incumbent banks to expose customer data to authorized third parties, thus lowering entry barriers for fintech startups and new platforms.

Regulatory technology (regtech) solutions have become increasingly vital in managing the complexity of compliance. These systems automate tasks like transaction monitoring, reporting, and identity verification, helping digital banks scale efficiently without compromising on oversight. Though effective, implementing regtech often requires substantial investment in technology and expertise, especially for new entrants seeking to grow while maintaining full compliance (Arner et al., 2017).

Regulatory pressures also shape data governance models, influencing platform strategies on data ownership, consent management, and transparency.

Technological Enablers: APIs, Cloud, and AI

The rise of cloud computing has revolutionized banking IT infrastructures, enabling scalable, flexible, and cost-efficient operations. APIs serve as the connective tissue for ecosystems, allowing seamless integration of third-party services, fostering innovation, and supporting new business models like embedded finance. This modularity supports new business models like embedded finance and Banking-as-a-Service (BaaS), where banks become platforms for others to build upon (Gozman et al., 2018).

Artificial intelligence (AI) enhances customer experience through chatbots, personalized recommendations, fraud detection, and credit risk modelling. Machine learning enables continuous improvement of service quality and risk controls.

Blockchain, while still emerging, holds promises of secure, transparent transactions and programmable contracts, potentially disrupting traditional clearing and settlement processes.

The convergence of these technologies distinguishes digital banking platforms from more transactional platforms like e-commerce or ride-hailing by enabling complex, ongoing financial interactions embedded into diverse user contexts.

User-Centric Design and Behavioural Aspects

User experience is a core competitive advantage for digital banks. Employing principles from design thinking and behavioural economics, platforms create engaging, intuitive, and transparent interfaces.

Features such as instant push notifications, gamified savings goals, and detailed spending insights encourage active financial management and foster loyalty. The literature suggests that user-centric design reduces cognitive load and financial stress, enhancing overall satisfaction and retention (Brahim et al., 2021).

Compared to platforms like ride-hailing where interaction frequency may be low, digital banks maintain persistent engagement, necessitating continuous innovation in user experience to meet evolving customer expectations.

Competitive Dynamics in the Digital Banking Sector

The competitive landscape of the financial services industry has undergone significant transformation with the advent of digital banking platforms. Unlike traditional banks, which operate on legacy infrastructures and established but often rigid business models, digital banks have emerged as agile, technology-driven entities capable of rapid innovation and customer-centric service delivery (Müller & Vogel, 2020). This shift has intensified competition, compelling incumbents to rethink their strategies and compelling new entrants to navigate complex regulatory and market environments.

One of the core competitive advantages of digital banks, in fact, lies in their lean organizational structures and adoption of cutting-edge technology stacks. Freed from the burden of maintaining extensive physical branch networks and legacy IT systems, digital banks can operate with significantly lower fixed costs, allowing them to price services competitively and invest heavily in user experience and innovation (Gomber, Koch, & Siering, 2017). Their technology-first cultures encourage agile development methodologies, continuous deployment, and data-driven decision-making, which contribute to faster product iterations and responsiveness to market demands. An example on cost advantage of neobanks over traditional banks, is shown in the Figure 2, in which there is a comparison between the average cost per user sustained by the institutes.

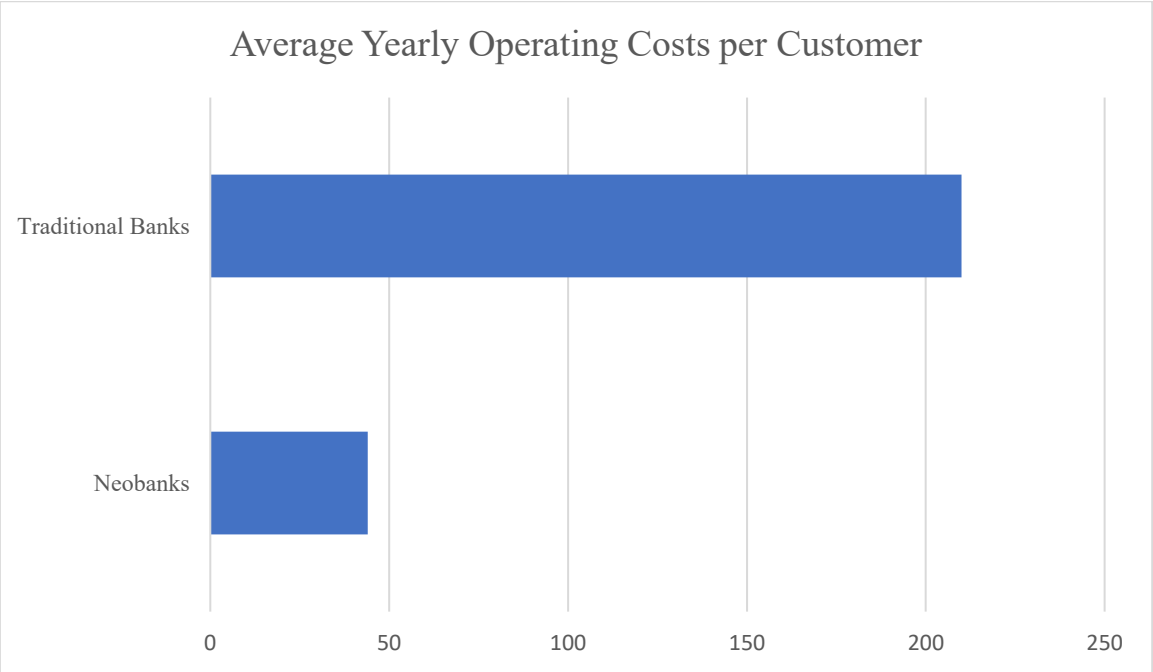

Figure 2: *Comparison between the Average Yearly Operating Costs per Customer for Neobanks and Traditional Banks (Source: https://www.paysafe.com/en/resource-center/neobanks-vs-traditional-banks-who-has-the-advantage)*

Challenges in Building Trust and Profitability

Despite these advantages, digital banks face critical challenges that impact their long-term sustainability. Trust remains a central concern, as banking inherently involves handling sensitive financial information and funds. Consumers may be hesitant to entrust their money to institutions without physical presence or established reputations (Zhu & Iansiti, 2019). Building and maintaining trust requires investments in cybersecurity, transparent communication, and robust customer service.

Furthermore, while digital banks often focus initially on rapid customer acquisition, achieving profitability is a notable hurdle. The “freemium” or low-fee models common among many neobanks necessitate scale and cross-selling of additional services to generate sustainable revenue streams. Many digital banks have yet to demonstrate consistent profitability, highlighting the tension between growth strategies and financial viability.

Impact of Big Tech and Platform Ecosystem Competition

An increasingly important dimension of competition in the digital banking sector is the role of Big Tech firms such as Google, Apple, Amazon, and Facebook. These companies possess substantial technological capabilities, extensive user bases, and financial resources that enable them to offer embedded financial services or even develop their own banking-like offerings (Evans, 2021). Their entry reshapes competitive dynamics, as they leverage cross-sector ecosystems to integrate banking services seamlessly into broader digital experiences, such as e-commerce, social media, or device ecosystems.

Digital banks must therefore not only compete with traditional incumbents but also position themselves strategically against these tech giants. Strategic alliances, and co-branding partnerships have become common as digital banks seek to extend their reach and create value-added services that complement rather than directly compete with Big Tech offerings.

The Role of Data Control and Ecosystem Orchestration

Data has emerged as a critical strategic asset in the competitive environment of digital banking. Platforms that successfully harness and monetize user data through analytics, personalized product offerings, and risk management enjoy a significant edge. However, control over data also raises governance and ethical issues, necessitating transparent data policies and regulatory compliance.

Moreover, digital banks increasingly adopt the role of ecosystem orchestrators, curating partner networks and enabling third-party services through open banking APIs. This orchestration creates network effects and enhances customer value but also introduces complexity in partner management and platform governance (Tiwana, 2014). Effective orchestration strategies involve balancing openness with control to foster innovation while safeguarding platform integrity and user trust.

Future Outlook

Looking ahead, competitive dynamics in digital banking will continue to evolve with technological advances such as AI-driven personalized banking, blockchain-enabled financial instruments, and the expansion of embedded finance models (Schär, 2021). The ability to innovate, build trust, orchestrate ecosystems, and navigate regulatory landscapes will determine which players thrive in this rapidly changing sector.

2.5 Comparison Between Digital Banks and Other Digital Platform Types

Digital banks share fundamental characteristics with other digital platforms, such as e-commerce marketplaces, ride-hailing services, and social media networks, particularly in their reliance on network effects, data utilization, and platform governance. However, critical distinctions arise in their operational context and regulatory environment, digital banks operate within the highly regulated financial sector where trust, privacy, and security are paramount (Parker, Van Alstyne, & Choudary, 2016).

In terms of data usage, digital banks collect and process highly sensitive personal and financial information, necessitating robust data governance and compliance with regulations such as GDPR and PSD2 in Europe (Zetzsche et al., 2017). Unlike many e-commerce or social media platforms where data monetization often involves advertising or personalized recommendations, digital banks leverage data primarily for risk management, fraud prevention, and personalized financial services, reflecting stricter constraints on data exploitation (Arner, Barberis, & Buckley, 2016).

Governance structures also differ significantly. Whereas ride-hailing platforms exercise centralized control over pricing and driver-partner relationships, digital banks must balance openness via APIs and open banking with stringent controls to prevent systemic risks and maintain consumer trust (Gawer, 2021). This unique regulatory overlay creates a complex governance environment distinct from less regulated platform sectors.

2.6 When and Why Network Effects Might Fail in Digital Banking Ecosystems

While network effects underpin platform success, they are neither automatic nor guaranteed in digital banking. Trust breakdowns, data misuse, and partner misalignment can severely undermine network growth and sustainability (Eisenmann, Parker, & Van Alstyne, 2009).

Trust is particularly fragile in financial platforms, where any perceived security breach or privacy violation can trigger user attrition and reputational damage. For instance, if a platform suffers a data breach or fails to protect user funds, network effects may reverse as users abandon the platform for more trusted alternatives. Misuse of data, such as unauthorized sharing or discriminatory AI-driven credit decisions, can similarly erode confidence.

Moreover, ecosystems dependent on volatile third-party services or fintech partners face additional risks. Partner misalignment — whether in technology standards, strategic priorities, or compliance approaches — can lead to service interruptions or fragmentation, weakening platform coherence. Digital banks often rely on fintech providers for critical capabilities like credit scoring or payments; disruptions or failures in these nodes can cascade, destabilizing the whole ecosystem (Gawer, 2021).

These frictions highlight the importance of ecosystem governance, continuous partner vetting, and contingency planning to sustain network effects over time.

2.7 Ethical and Data Governance Implications in Digital Banking Platforms

Data governance frameworks must address issues such as informed consent, data minimization, and user control over personal information. Failure to do so risks regulatory sanctions and erosion of user trust. Additionally, the “black-box” nature of some AI algorithms challenges conventional accountability mechanisms, complicating the detection of discriminatory practices (Pasquale, 2015).

Ethical governance in digital banking platforms requires a multidisciplinary approach that integrates technical safeguards, transparent policies, and stakeholder engagement. It also

necessitates proactive management of AI risks and alignment with evolving regulatory standards like the EU's AI Act (European Commission, 2021). Ultimately, robust ethical governance is essential to maintain platform legitimacy and sustain user trust in the long term (Floridi, 2019).

2.8 Future Perspectives and Emerging Challenges for Digital Banking Platforms

Digital banking platforms stand at the forefront of financial innovation but face evolving challenges and opportunities shaped by technological, regulatory, and societal trends. Emerging technologies such as blockchain and decentralized finance (DeFi) hold potential to transform traditional banking models by enabling peer-to-peer transactions and disintermediation.

However, integrating these innovations into regulated financial ecosystems presents challenges around scalability, interoperability, and compliance (Catalini & Gans, 2020). Additionally, digital banks must address broader societal issues including financial inclusion and bridging the digital divide, ensuring that innovations do not exacerbate inequalities.

Sustainability concerns are also gaining prominence, as platforms explore how to embed environmental, social, and governance (ESG) criteria into their operations and offerings (Eccles, Ioannou, & Serafeim, 2014).

Viewing digital banks as platforms broadens strategic perspectives beyond mere customer acquisition to include ecosystem management, technological capabilities, and data governance.

Future research should address:

- How platform openness vs control impacts innovation and risk;
- Ethical implications of AI and data monetization;
- Cross-sector comparisons to identify universal and sector-specific platform dynamics;
- Causes and consequences of ecosystem failures and frictions.

These evolving dynamics underscore the importance of agile governance, innovative business models, and ethical leadership to navigate the future trajectory of digital banking platforms.

3. Sector Analysis: Fintech

In the past two decades, the financial services landscape has undergone a profound transformation, catalysed by the rapid proliferation of digital technologies and a broader shift toward platform-based economies. Among the most prominent manifestations of this shift is the emergence and proliferation of financial technology, or fintech, which refers broadly to the application of new technological solutions to improve, automate, and reimagine financial services. Within this diverse ecosystem, neobanks — fully digital banking institutions without physical branches — have come to symbolize a disruptive force that challenges the traditional banking paradigm while leveraging many of the principles seen in other digital platform industries. This chapter seeks to provide a comprehensive and critical overview of the fintech sector with an in-depth focus on neobanks, examining the economic and technological drivers of their rise, their operational strategies, the role of regulation, interdependencies within fintech ecosystems, and the challenges they face in achieving sustainable growth.

The origins of fintech can be traced to the early 2000s, but the sector experienced significant acceleration after the global financial crisis of 2007–2008. This pivotal moment exposed critical vulnerabilities within traditional banking systems and created fertile ground for innovation. Trust in incumbent institutions eroded, opening up opportunities for new entrants to offer more transparent, efficient, and user-friendly alternatives. Technological advancements in cloud computing, mobile connectivity, artificial intelligence (AI), and blockchain have enabled the creation of innovative financial products and services that would have been unimaginable under the legacy constraints of brick-and-mortar institutions. According to Gomber, Koch, and Siering (2017), fintech represents not just an upgrade of financial tools but a fundamental transformation of how financial value is created, distributed, and consumed. The shift is also evident in the democratization of financial tools, where individuals, even without formal banking relationships, can now access credit scoring, mobile wallets, peer-to-peer lending platforms, and investment services through apps and websites. These developments have redefined inclusion and widened the scope of financial participation.

Neobanks emerged within this context as digitally native entities that redefine the banking experience. Unlike traditional banks, which rely on physical branches and legacy IT systems, neobanks operate through digital platforms that prioritize user-centricity, agile development, and real-time data analytics. They typically offer core banking services such as current accounts, savings, payments, and sometimes lending, but do so through intuitive mobile interfaces, often emphasizing financial wellness tools, instant notifications, and personalization

features. The success of these banks hinges on their ability to offer seamless user experiences, rapidly iterate based on feedback, and operate at a lower cost base than their incumbent counterparts. As highlighted by Arner, Barberis, and Buckley (2016), this digital-first approach enables neobanks to pursue operational scalability, enhanced customer engagement, and data-driven innovation. Their technological infrastructure allows for automated compliance checks, real-time fraud detection, and personalized product recommendations, which further drive customer satisfaction and retention.

Crucially, neobanks can be understood not just as banks with better technology, but as digital platforms in the economic sense. A platform is a business model that creates value by facilitating interactions between multiple interdependent user groups, often leveraging network effects to scale. Platforms differ from traditional pipeline businesses by decentralizing value creation, enabling third-party innovation, and exploiting data flows to optimize operations and services. Neobanks, particularly those that integrate third-party services through APIs, exemplify this logic. They often adopt open banking architectures that allow customers to link external accounts, integrate fintech apps for budgeting or investing, and access personalized financial services beyond the core offerings of the bank itself. This modular approach mirrors developments in other industries, such as e-commerce or ride-hailing, where platforms serve as ecosystems rather than monolithic providers.

The analogy with other platform sectors also reveals key differences. For instance, while a ride-hailing platform like Uber scales primarily through user acquisition and driver onboarding, and monetizes through service fees, digital banks face a more complex regulatory landscape that requires careful balancing between openness and control. Monetization is less straightforward; advertising-based revenue models are uncommon, and income is typically derived from interchange fees, subscription models, and partnerships with third-party service providers. Moreover, financial platforms must prioritize security, identity verification, and compliance, making the governance of neobanks more constrained and centralized than many other digital platforms. Platform governance must adapt to the specific institutional logics of its sector, and nowhere is this more evident than in financial services, where the trust and security requirements are exceptionally high.

3.1 Neobanks as Digital Platforms

A growing body of literature has begun to frame neobanks not only as financial service providers, but as digital platforms embedded within broader platform ecosystems (Kenney & Zysman, 2016; Parker, Van Alstyne & Choudary, 2016). This perspective reveals important structural and strategic parallels between neobanks and well-established digital platform firms such as those in other sectors. Like these digital platforms, neobanks increasingly mediate interactions between multiple user groups — notably, between individual consumers, third-party service providers (e.g., fintech APIs, insurance partners), and sometimes merchants or small businesses. Their role extends beyond banking transactions, evolving toward the orchestration of multi-sided digital ecosystems where value is co-created through user interactions and third-party integrations.

Crucially, this platform-like logic enables neobanks to benefit from network effects, particularly indirect network effects. As more users join the platform, it becomes more attractive to third-party developers and service providers, whose presence in turn enhances the value of the platform for end users. For instance, a neobank that integrates seamlessly with accounting software, payment platforms, or budgeting apps can become a more compelling option for small businesses and tech-savvy consumers. The modular architecture of many neobanks supports this interoperability, encouraging app-based ecosystems similar to those seen in the Apple or Android app stores (Gawer & Cusumano, 2014).

Network externalities also play a central role in the diffusion of neobanks. These externalities can be positive, when increased adoption improves service efficiency or social validation, but also negative, especially when platform growth outpaces the capacity to ensure trust, data security, or regulatory compliance. In banking, where reputational capital is critical, even small failures — such as data breaches, payment delays, or customer service breakdowns — can undermine user trust and stifle network-driven growth. As a result, the governance of digital trust becomes a core strategic concern for platform-based neobanks). This dynamic is particularly sensitive in financial ecosystems, where legal frameworks and consumer protection norms are more stringent than in other platform categories.

While positive feedback loops can accelerate the scaling of neobanks, these effects are not guaranteed and may falter under specific conditions. Network effects can fail or plateau if user acquisition does not translate into deeper engagement or if early adopters do not find sufficient value in the network itself. Furthermore, if the platform becomes overly dependent on volatile third-party services — such as unstable API providers or unregulated fintechs — ecosystem frictions or failures may emerge. This was evident in certain neobanks whose integrations with

lending or crypto platforms led to operational risks or reputational damage during periods of market turbulence.

Then network effects are central to understanding how neobanks grow and scale. In theory, as more users join a platform, the value of the platform increases for each user, thereby accelerating further adoption. In practice, neobanks aim to create both direct network effects — such as enabling peer-to-peer payments among users — and indirect network effects by attracting fintech partners whose services enhance the utility of the bank. However, achieving critical mass is difficult. Many neobanks offer freemium models or referral incentives to acquire users, yet monetizing these users sustainably remains a challenge. As noted by Katz and Shapiro (1985), network effects can also reverse; if user trust declines due to data breaches or service failures, the network can quickly unravel. In the financial sector, where trust is both a prerequisite and a fragile asset, even small disruptions can have outsized reputational impacts.

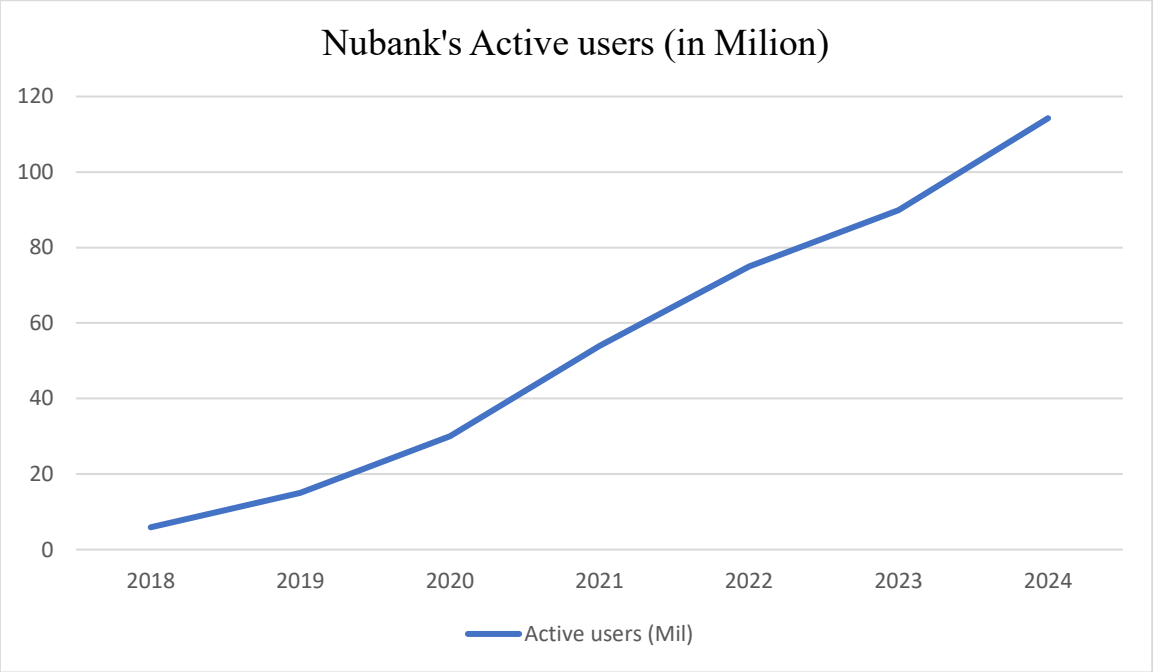

Figure 3: *Nubank's (largest neobank in the world) Active users' growth (Source: Statista)*

An example of positive Network Effects is shown in the Figure 3, where these generated an organic growth of users during the time, for the largest Neobank in the world as of today, Nubank.

Moreover, neobanks face a structural tension between openness and control, akin to other platform-based firms. On one hand, openness to third-party innovation allows for flexibility, responsiveness, and rapid ecosystem expansion. On the other, excessive openness may jeopardize brand coherence, data governance, or compliance integrity. This trade-off is

particularly pronounced in banking, where platforms must balance user-centric innovation with institutional responsibilities, including anti-money laundering protocols, Know Your Customer (KYC) procedures, and cross-border regulatory harmonization. However, proactive regulatory initiatives such as the European Union's PSD2 directive, open banking standards, and the implementation of regulatory sandboxes have enabled new entrants to test and scale innovative services in controlled environments. These enabling regulations are critical levers for fintech development, providing clarity, reducing uncertainty, and fostering collaboration between regulators and innovators. Yet, the global regulatory landscape remains fragmented. A neobank operating across multiple jurisdictions must navigate a complex patchwork of rules, often necessitating local partnerships or adaptations that complicate scaling strategies.

To sum up, conceptualizing neobanks as platform enterprises underscores the centrality of network-centric growth strategies, but also reveals the vulnerabilities inherent in this model. Network effects can be powerful growth enablers, yet their sustainability hinges on the design of governance architectures, quality of partnerships, and resilience to regulatory and technological shocks. Future research should continue to examine the thresholds at which network-based advantages convert into liabilities, especially in financial ecosystems where trust asymmetries and risk externalities are amplified.

3.2 The Interdependence between Neobanks and the Fintech Ecosystem

The interdependence between neobanks and the broader fintech ecosystem is another key feature. Neobanks rarely operate in isolation; rather, they rely on partnerships with fintech startups, regtech providers, and data analytics firms to extend their service offerings. This ecosystemic logic allows them to innovate faster and offer more personalized solutions, but it also introduces new vulnerabilities. Dependency on third-party providers for critical services — such as cloud infrastructure, payment gateways, or customer verification — creates operational risks and governance challenges. Ecosystem failures may arise from partner misalignments, API incompatibilities, or shifts in regulatory interpretation. Platform architecture and ecosystem governance are crucial determinants of sustainability, particularly in sectors with high interdependence and regulatory scrutiny.

Technology remains a central enabler of neobanking success. APIs facilitate modular architectures, allowing different services to be plugged into the platform with relative ease.

Cloud computing enables scalable and resilient infrastructure without the capital expenditures associated with traditional data centres. AI supports fraud detection, credit scoring, customer service via chatbots, and personalized recommendations, enhancing both efficiency and user satisfaction. While blockchain remains more speculative, some neobanks and fintechs are exploring its use in cross-border payments, digital identity, and decentralized finance (DeFi). McWaters and Galaski (2017) highlight the transformative potential of these technologies not only for operational efficiency but also for redefining the boundaries between financial and non-financial services, paving the way for embedded finance. In the following Figure there is an example of how the technological architecture behind a Neobanks is structured, with all the Layer of IT infrastructure and application.

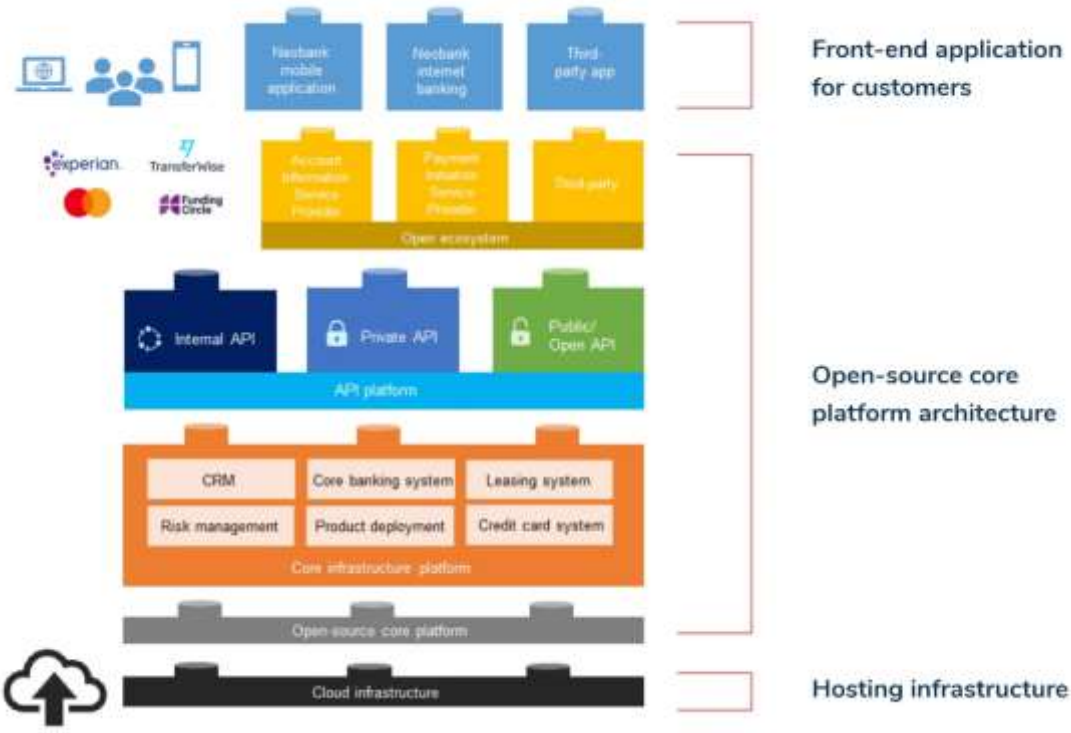

Figure 4: *Platform Architecture Diagram for Neobanks (Source: https://twimbit.com/insights/technology-stack-of-a-neobank)*

Another defining characteristic of neobanks is their focus on user-centric design. Drawing from principles in behavioural economics and user experience (UX) research, neobanks prioritize intuitive interfaces, real-time notifications, and gamified tools that encourage saving, budgeting, and financial literacy. Features such as spending categorization, goal-based savings pots, and subscription management tools are increasingly common. These tools not only enhance user engagement but also position the bank as a proactive financial coach rather than

a passive service provider. This shift in user engagement represents a move from transactional to relational banking, where long-term value is derived from continuous interaction and trust.

Yet for all their innovations, neobanks face substantial challenges. Profitability remains elusive for many players, especially those that rely heavily on venture capital and prioritize user acquisition over monetization. The "race to scale" can sometimes come at the expense of sustainability, leading to cost overruns, service downtimes, or strategic incoherence. Moreover, competition from Big Tech firms looms large. Companies like Apple, Google, and Amazon have already launched or are exploring financial services, leveraging their vast user bases, technological infrastructure, and brand loyalty. Their entry into the market could significantly alter competitive dynamics, raising questions about data monopolies, cross-sector regulation, and market fairness.

3.3 Case Studies

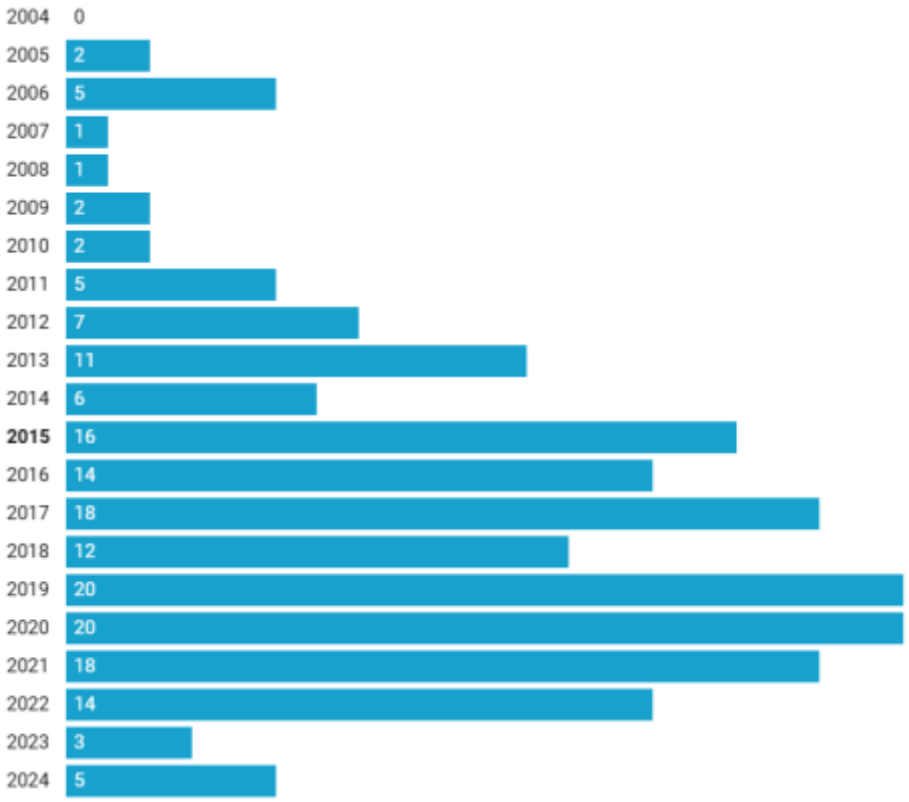

Figure 5: *Number of neobanks founded by year (Source: https://neobanque.ch/blog/top-10-neobanks-world-2024/)*

The evolution of neobanks is best understood through the lens of specific case studies that demonstrate the diversity of strategic approaches, growth trajectories, and operational outcomes. Figure 5 helps to understand the magnitude of this phenomenon, but an in-depth analysis is needed. It follows a closer look at major players in the UK, Germany, and Brazil which reveals the multiple pathways digital banks have pursued to establish themselves in the financial sector, with a closer look to their financial performances over the years with some graphs showing it.

Monzo (United Kingdom)

Monzo, founded in 2015, quickly established itself as a frontrunner among UK neobanks. Initially launched as Mondo, the bank's early strategy centred on building a strong community of users through transparency and open communication. It ran one of the most successful crowdfunding campaigns in UK fintech history, raising £1 million in just 96 seconds via Crowdcube in 2016. Monzo adopted a mobile-first model with an intuitive interface, instant transaction notifications, and budgeting features that differentiated it from incumbent banks. As part of its growth strategy, Monzo emphasized user acquisition over short-term profitability, offering fee-free services such as foreign transactions and cash withdrawals abroad. This customer-centric model allowed the bank to grow rapidly, reaching over 5 million users by 2022. However, its high operating costs, reliance on venture capital, and limited monetization strategy led to persistent losses. By 2020, Monzo began shifting towards revenue generation by introducing premium accounts and expanding into lending services, including overdrafts and personal loans. Despite these efforts, profitability remained elusive, revealing the challenge of scaling a freemium banking model sustainably.

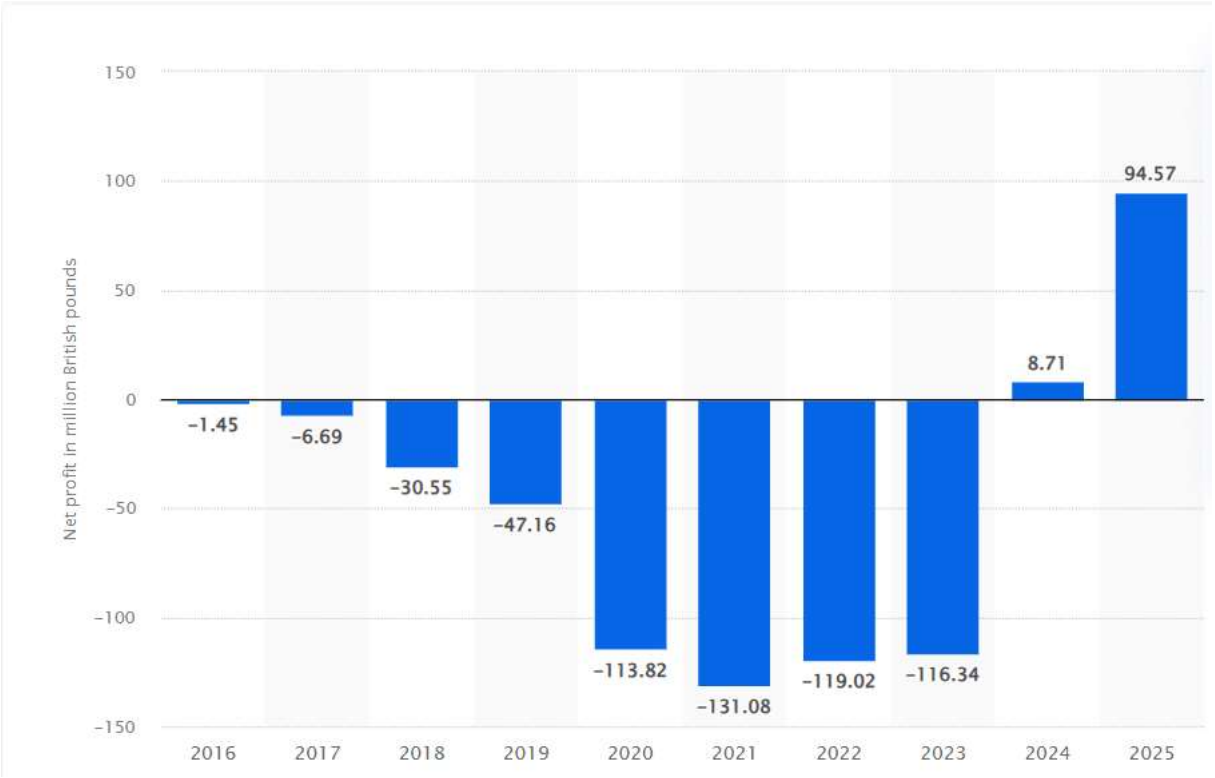

Figure 6: *Monzo Net Profit/Loss since 2015 (Source: Statista)*

Starling Bank (United Kingdom)

Founded in 2014 by Anne Boden, Starling Bank distinguished itself early on by focusing on both retail banking and SME (small and medium-sized enterprise) services. Its strategic vision was to become a full-service bank with a broad suite of products, and it became one of the first digital-only banks in the UK to obtain a banking license. Unlike Monzo, Starling pursued a more balanced approach between user growth and financial sustainability, and this is demonstrated by its financial performance. In fact by 2020, Starling became one of the few neobanks to reach profitability, supported by its successful SME lending program and government-backed loans distributed during the COVID-19 pandemic. The bank also invested in a proprietary banking platform that allowed it to scale efficiently and license its technology to third parties. By 2022, Starling had over 2 million customer accounts and managed over £10 billion in deposits. Its founder's departure in 2023 raised questions about long-term leadership, but its diversified business model remains a strong case for sustainable digital banking.

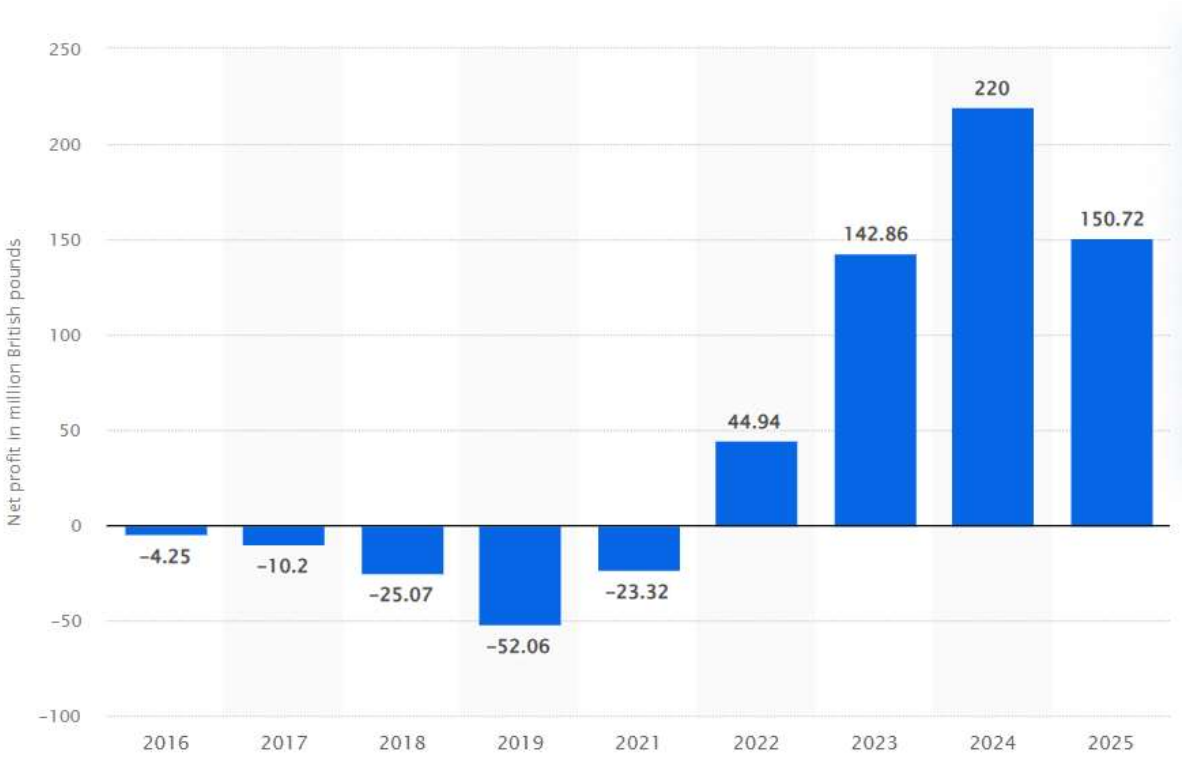

Figure 7: *Starling Bank Net Profit/Loss since 2016 (Source: Statista)*

N26 (Germany)

N26 was launched in 2013 in Berlin and quickly gained traction by offering a minimalist, user-friendly mobile banking app. Its early growth strategy focused on rapid international expansion, with operations launched in more than 25 countries. Backed by substantial venture capital investment, N26 raised over $900 million and achieved a $9 billion valuation by 2021.

N26's international ambitions were tested by regulatory and compliance issues, notably its exit from the UK market in 2020 following Brexit. The move exposed the limitations of passporting banking licenses across jurisdictions and highlighted the need for localized regulatory strategies. In Germany, the bank faced scrutiny from BaFin over anti-money laundering controls, prompting internal reforms. Despite these challenges, N26 maintained a strong brand presence in continental Europe and continued to expand its product suite to include investment and insurance products (Müller & Vogel, 2020).

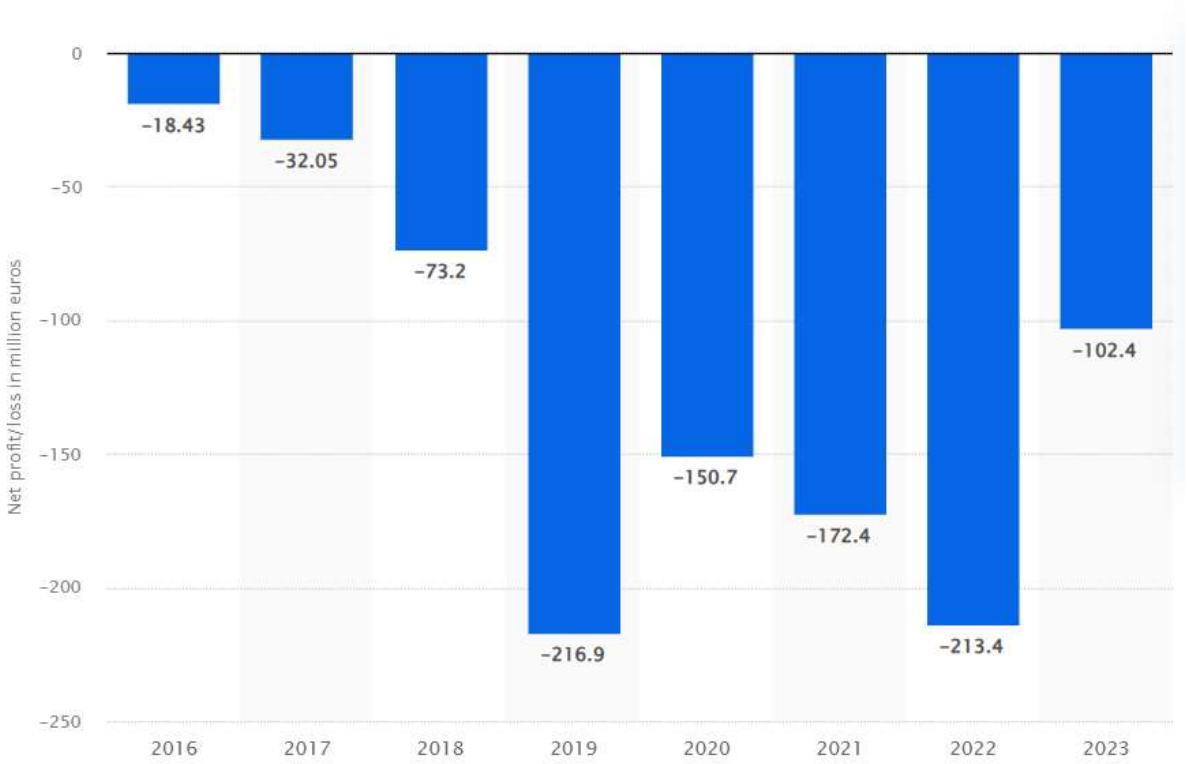

Figure 8: *N26 Net Profit/Loss from 2016 to 2023 (Source: Statista)*

Nubank (Brazil)

Founded in 2013, Nubank capitalized on the widespread dissatisfaction with traditional banks in Brazil, characterized by high fees, poor customer service, and limited access for the underbanked. The company launched with a simple, no-fee credit card managed via a sleek mobile app. Nubank's in-house technology stack enabled it to iterate rapidly, control costs, and deliver superior customer experiences.

Nubank's strategy involved gradual product diversification — first into personal loans, then savings accounts, life insurance, and investment services. It also expanded beyond Brazil into Mexico and Colombia, targeting underserved markets. By 2022, Nubank had over 70 million customers and had become one of the largest independent digital banks in the world. In 2021, it raised $2.6 billion in its IPO on the NYSE, signaling strong investor confidence. Despite

macroeconomic volatility and rising interest rates in Latin America, Nubank achieved profitability in 2022, showcasing the viability of its model.

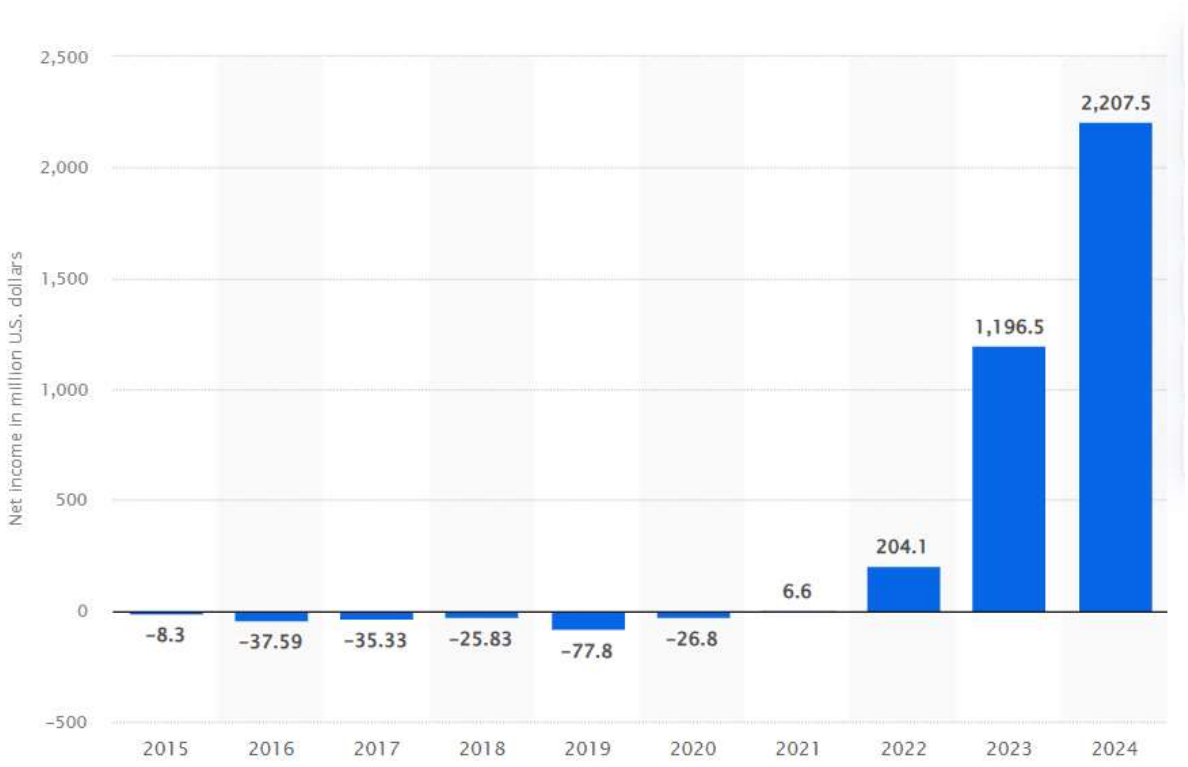

Figure 9: *Nubank Net Profit/Loss since 2015 (Source: Statista)*

These case studies illustrate varied strategic approaches: Monzo's emphasis on community and design; Starling's focus on SME services and infrastructure; N26's international expansion; and Nubank's technological autonomy and regional targeting. Together, they underscore the interplay between regulatory adaptability, technology-driven efficiency, and market-specific strategies in determining neobank outcomes.

In addition to independent neobanks, an increasingly relevant phenomenon within the fintech ecosystem is the emergence of neobanks launched as spinoffs or subsidiaries of traditional banking institutions. These initiatives reflect a strategic adaptation by incumbent banks seeking to respond to digital disruption without overhauling their core operations. Two significant examples in the European context are Isybank, developed by Intesa Sanpaolo, and Buddybank, an initiative of UniCredit. Both cases offer distinct insights into how legacy financial institutions are experimenting with digital-native banking formats to retain younger customers, reduce operational costs, and modernize service delivery.

Isybank

Isybank, officially launched in 2023 by Italy's largest banking group, Intesa Sanpaolo, is emblematic of a deliberate dual-platform strategy. Rather than digitalizing its legacy systems, Intesa opted to create a parallel infrastructure tailored to mobile-first users. Built on a cloud-native architecture in collaboration with Thought Machine, Isybank targets digitally savvy consumers with a simplified, app-based experience that includes low-fee services, instant transfers, and real-time expense tracking. One of its distinctive features is the separation from traditional branch operations, allowing Isybank to operate more like a fintech than a bank. This spinoff strategy also reflects a broader organizational transformation at Intesa, which aims to migrate a significant portion of its customer base — up to four million retail clients — toward digital channels by the end of 2025 (Intesa Sanpaolo, 2023). The move illustrates a hybridization of digital banking where the parent bank retains strategic control while fostering an agile, tech-driven subsidiary.

Buddybank

On the other hand, Buddybank, launched in 2018 by UniCredit, experimented with a more lifestyle-oriented approach. Initially available exclusively on iOS devices, buddybank positioned itself not merely as a digital bank, but as a concierge-based financial platform integrating banking with lifestyle services such as travel booking and 24/7 chat-based customer support. Its business model attempted to capitalize on customer intimacy and daily engagement, with an emphasis on user experience and personalized services. Despite initial enthusiasm and media attention, Buddybank struggled to scale meaningfully and faced questions about its long-term sustainability. In 2022, UniCredit decided to discontinue the Buddybank brand, integrating its services back into the core bank's offerings. This outcome reflects some of the inherent tensions in spinoff strategies, including brand identity fragmentation, unclear monetization paths, and difficulty in achieving independence within rigid corporate structures (Banca Finanza, 2022).

Both Isybank and buddybank underscore the complexities traditional banks face when attempting to innovate through structural separation. While such spinoffs offer greater freedom

to test digital-native models and escape legacy system constraints, they also risk duplication of resources, strategic misalignment, or market confusion. These cases contribute to the broader understanding of how neobanks interact with, or diverge from, their parent institutions and reveal that successful outcomes often depend on clear governance models, technological autonomy, and precise market segmentation strategies.

3.4 Conclusion

In conclusion, the fintech sector — and neobanks in particular — represents one of the most dynamic and contested frontiers in financial innovation. Their rise illustrates broader shifts in consumer expectations, technological possibilities, and business model innovation. Yet their success is not guaranteed. Navigating the tensions between openness and control, scalability and profitability, innovation and regulation will require strategic foresight, ecosystem orchestration, and adaptive governance. By analysing neobanks not merely as banks with better apps but as digital platforms embedded in complex socio-technical systems, we gain deeper insights into the future of financial services and the evolving architecture of the digital economy.

4. The case of Revolut LTD

Figure 10: *Revolut LTD logo*

Following the broader analysis of the fintech sector and the emergent role of neobanks as digital platforms, this chapter offers a comprehensive examination of Revolut, one of the most emblematic and controversial fintech players in the European and global context. As the central case study of this thesis, Revolut's trajectory is particularly instructive not only for its remarkable speed of expansion and product diversification but also for its hybrid identity straddling banking, technology, and platform models. This chapter reconstructs the brand's history, unpacks its core strategies, analyses the platform logics underlying its architecture, and evaluates its growth in terms of user base, geographic footprint, and product metrics.

4.1 Genesis and Evolution of Revolut

Revolut was founded in 2015 in London by Nikolay Storonsky, a former Lehman Brothers and Credit Suisse trader, and Vlad Yatsenko, an experienced systems developer. The company was launched out of Level39, a prominent London fintech accelerator, and initially positioned as a low-cost alternative to traditional foreign exchange services. The launch product — a multi-currency card paired with a mobile app — allowed users to hold, exchange, and spend money in various currencies at interbank rates. This initial value proposition was tightly aligned with the needs of a highly mobile, urban, and tech-savvy demographic, particularly digital nomads, freelancers, and early adopters operating across borders.

The company's initial traction was fueled by its strong value proposition, targeting a common pain point in consumer finance: the high fees and poor transparency of international money exchange and spending. Within two years, Revolut had raised substantial venture funding from prominent firms such as Index Ventures and Balderton Capital, and began expanding its product suite with new features including cryptocurrency exchange, peer-to-peer payments, and analytics-based budgeting tools. Revolut's ability to iterate rapidly — through continuous app updates and agile deployment — became one of its hallmarks. These agile cycles allowed the company to respond quickly to customer feedback and competitive pressure, a key factor in user retention and product-market fit.

By 2018, Revolut had moved decisively towards becoming a "financial superapp", seeking to consolidate all financial needs into a single interface. This ambition materialized in the form of high-frequency updates introducing savings vaults, metal cards, stock trading, business accounts, insurance, and premium subscription plans. By 2024, Revolut operated in over 35 countries, counted more than 50 million individual users and 500,000 business clients, and held banking licenses in key jurisdictions including the EU and Lithuania, while continuing to apply for full banking licenses in the UK and US.

4.2 Strategic Architecture and Critical Success Factors

Revolut has pursued a strategy of aggressive product diversification, transforming from a foreign exchange-focused mobile app into what it describes as a "financial superapp." This evolution has not been linear but has occurred in iterative waves, with successive feature additions and ecosystem expansions carefully tailored to extend user lifetime value and cross-sell opportunities.

In fact, since its founding in 2015, Revolut has undergone a rapid and continuous expansion of its functional scope, transitioning from a single-purpose currency exchange app to a multi-featured financial platform. Initially, the company gained traction by offering zero-fee foreign exchange at interbank rates, a feature that positioned it as a compelling alternative to traditional banks and travel money services. This core proposition was soon complemented by the introduction of multi-currency prepaid debit cards, enabling users to seamlessly spend in multiple currencies without conversion fees — a capability made possible through its

collaboration with Mastercard and later Visa, which provided the issuing infrastructure and global reach necessary for card-based transactions.

In 2017, Revolut began integrating peer-to-peer (P2P) payments, allowing users to send and request money instantly within the app. This functionality deepened network effects by increasing the interdependence among users. Around the same time, Revolut launched vaults, a feature that enabled micro-savings and rounding up purchases, further enhancing customer stickiness. By 2018, the platform introduced cryptocurrency trading — initially for Bitcoin, Ethereum, and Litecoin — through partnerships with third-party providers such as Bitstamp, who served as custodians and liquidity providers. This marked the company's first foray into investment services, later followed by stock trading capabilities that allowed users to buy fractional shares of U.S.-listed equities. The stock trading functionality was powered via partnerships with DriveWealth (a U.S.-based brokerage infrastructure platform), while custody services were outsourced to regulated financial entities compliant with international market rules.

From 2019 onward, Revolut significantly expanded into business banking, offering multi-currency accounts, APIs for payments and reporting, and team spending controls for small and medium-sized enterprises (SMEs). In parallel, the company launched insurance products, starting with device insurance (in collaboration with Qover) and travel insurance (through White Horse Insurance), embedding these services natively into the app via simple opt-in mechanisms.

Crucially, Revolut also made significant strides in licensing and regulatory coverage. It obtained an Electronic Money Institution (EMI) licence from the UK's Financial Conduct Authority (FCA), and in 2018 it was granted a specialized banking licence from the Bank of Lithuania, allowing it to operate as a bank within the European Economic Area (EEA) through Revolut Bank UAB. This legal framework enabled the rollout of credit products, including personal loans and overdrafts, starting in selected European countries. Loan underwriting and credit scoring were initially facilitated via partnerships with credit reference agencies and later supplemented by Revolut's proprietary algorithms.

By 2021, Revolut introduced subscriptions plans (e.g., Plus, Premium, and Metal), bundling advanced features such as higher ATM withdrawal limits, cashback, airport lounge access (via LoungeKey), and travel perks. In fact each level offers incremental features:

- Standard: basic account, currency exchange, debit card;

- Plus: purchase protection, higher customer support priority;
- Premium: travel insurance, disposable virtual cards, airport lounges;
- Metal: cashback on purchases, exclusive card design, higher withdrawal limits, concierge services.

These tiers are designed to address different user segments and to enable smooth transitions as users' needs evolve. Revolut tracks feature usage and provides dynamic prompts to upgrade, based on behavioural data. Moreover, in the same year, the company began testing Junior accounts for children, promoting family-based user acquisition, and launched donation features through collaboration with various non-profits and NGOs.

Recently, Revolut has moved into payroll services, cross-border salary payments, and instant salary advance schemes, indicating a strategic push toward becoming a comprehensive financial lifestyle platform. It also launched Revolut <18, an expanded version of the Junior accounts, and began testing early-stage BNPL (Buy Now, Pay Later) functionalities in selected markets, often through internal development rather than third-party reliance.

Revolut has also experimented with third-party app integrations and mini-apps within its ecosystem. These include donation portals, carbon offsetting tools, and travel booking engines, echoing platform strategies used by WeChat or Grab.

Capital strategy was also aggressive. Revolut raised over $1.7 billion through various funding rounds, reaching a $33 billion valuation in 2021. Strategic investors such as SoftBank and Tiger Global allowed the firm to expand during unfavourable market cycles, and the capital war chest enabled Revolut to experiment with acquisitions, such as Nobly POS (2021) and planned expansion into lending and mortgage services.

Throughout this evolution, Revolut has embraced a modular partnership model, choosing best-in-class providers for backend functionalities while retaining control over user experience and front-end design. This approach has allowed the company to scale rapidly across product verticals, reduce time-to-market, and maintain agility in regulatory environments. The cumulative effect has been the progressive transformation of Revolut from a niche fintech startup into an integrated financial platform offering banking, investment, insurance, and lifestyle services under a single digital umbrella.

4.3 Revolut Marketing Strategies

Revolut's marketing approach has been pivotal in its rapid ascension within the fintech sector. From its inception, the company recognized that traditional financial services suffered from reputational baggage, characterized by opaque pricing, poor digital interfaces, and slow innovation cycles. Consequently, Revolut sought to define itself not merely through financial utility but through a disruptive, modern, and accessible brand image that could resonate globally with a tech-savvy, mobile-first generation.

Revolut's initial marketing was driven heavily by virality and network-based referrals. The company implemented a highly successful referral program that provided both the referrer and the invitee with tangible benefits such as cash bonuses, free premium subscriptions, or stock gifts. These incentives were tailored dynamically, with variations depending on geographic location, user behaviour, and marketing objectives. For instance, in markets like the UK and France, where competition among fintech was intense, the referral bonuses were temporarily increased to secure rapid acquisition. These campaigns often used psychological triggers such as scarcity ("only this week"), urgency ("only the first 10,000"), and social proof ("X million users joined already").

Crucially, Revolut did not treat referral marketing as a stand-alone activity but integrated it tightly into the product's UX. The app featured prominent referral prompts, gamified progress bars, and push notifications reminding users of their incomplete referral chains. This embedded growth engineering ensured constant exposure and conversion opportunities. According to an internal report cited in TechCrunch (2021), referral-driven users accounted for over 55% of Revolut's organic user acquisition in some quarters.

Performance marketing further amplified Revolut's reach. The company invested heavily in Google Ads, Facebook, Instagram, YouTube and more recently, TikTok, where younger audiences proved receptive to disruptive financial messaging. Paid campaigns were tightly optimized using A/B testing frameworks. Messaging emphasized cost-savings, speed, and global access, e.g., "No FX Fees Worldwide" or "Trade Crypto Without Commissions." Unlike traditional banks that focused on safety and stability, Revolut adopted a startup-like tone — bold, provocative, and dynamic. The firm's global marketing team, headquartered in London

with satellite hubs in New York, Vilnius, and Singapore, ensured campaigns were customized for local sensitivities while retaining brand consistency.

In addition to paid channels, Revolut relied extensively on influencer and content marketing. Collaborations with fintech bloggers, YouTubers, and Instagram personalities became central to Revolut's outreach strategy, particularly in the launch phase in new markets. Influencers were often given early access to new features or invited to closed beta tests, building anticipation and creating a sense of exclusivity. In France and Italy, Revolut partnered with digital lifestyle and travel influencers who documented their seamless experience using Revolut cards abroad — an effective strategy for building trust through relatability.

Branding has played a crucial role in Revolut's differentiation. The company developed a strong visual identity, characterized by gradient backgrounds, minimalist UI, and futuristic typography. These design decisions were intentional, aiming to align Revolut with consumer tech brands like Spotify or Uber rather than legacy financial institutions. The branding was not only about aesthetics but also embedded in the product experience. For example, the launch of the Metal card, with its heavy, premium design, was as much a status symbol as it was a product feature — turning cardholders into brand ambassadors.

Moreover, Revolut leveraged event-based marketing and sponsorships to increase its visibility. It sponsored fintech conferences, tech festivals, and startup accelerators, reinforcing its presence in the innovation economy. The company also experimented with seasonal campaigns (e.g., "Save for the Holidays") and contextual product marketing tied to global events like travel reopening post-COVID.

Localization was another pillar of Revolut's marketing. Unlike competitors that launched homogenized products in multiple countries, Revolut adapted both messaging and product offerings to specific national contexts. In Germany, for instance, campaigns emphasized financial discipline and budgeting features; in Italy, they focused on travel and lifestyle; while in Eastern Europe, messaging often underscored currency conversion savings. Localization extended to hiring local marketing teams, securing regulatory endorsements, and establishing relationships with domestic media outlets.

4.4 Geographic Expansion

Geographic expansion was another strategic vector. Rather than seeking deep penetration in a few markets, Revolut pursued a strategy of wide surface expansion, often launching in multiple countries within months. Localization included adapting to domestic banking infrastructures (e.g., SEPA, ACH), language support, and regulatory compliance. Regulatory navigation was managed by setting up regulated entities in the EU (Lithuania), Australia, and the US, often before full product localization was complete. This "be-first" approach gave Revolut first-mover advantage in several fintech markets, though it also introduced compliance risks.

In fact, the most significant challenge Revolut faced in its global expansion is regulatory fragmentation. Financial services are one of the most tightly regulated sectors in the world, and each country presents its own set of licensing requirements, compliance frameworks, and supervisory bodies. While Revolut initially benefitted from passporting rules within the European Economic Area (EEA) through a Lithuanian banking license acquired in 2018, this model quickly encountered limits when the company began targeting non-EEA countries such as the United States, Japan, Singapore, and Australia.

In the United Kingdom, Revolut's home market, the firm's application for a UK banking license — submitted in early 2021 — remained pending for several years. The delay, attributed to ongoing scrutiny by the Prudential Regulation Authority (PRA) and Financial Conduct Authority (FCA), raised concerns about Revolut's risk management practices, particularly around internal controls and auditing. According to Financial Times reports (2022–2023), UK regulators were especially cautious after the firm's auditors at BDO noted material uncertainty in the 2021 accounts, casting doubt on some of the reported revenues. These audit concerns complicated licensing decisions and stalled full authorization for deposit-taking and lending within the UK.

In Germany, Revolut's operation faced scrutiny from BaFin, the German financial regulator, especially regarding its approach to anti-money laundering (AML) compliance. Although Revolut was not licensed as a full bank in Germany, its presence in the market via European passporting raised questions about operational oversight. Following the high-profile Wirecard scandal, BaFin increased its vigilance over fintech firms, and Revolut was one of the firms flagged for internal compliance lapses.

In the United States, where the firm launched in partnership with Metropolitan Commercial Bank rather than as a licensed bank, the challenge was twofold: first, adapting to a highly decentralized regulatory environment; and second, differentiating itself in a highly saturated

digital finance market. Regulatory hurdles were compounded by Revolut's limited ability to offer credit and lending products without a banking license, making the value proposition weaker than in Europe. Revolut submitted a US banking license application to the Federal Deposit Insurance Corporation (FDIC) and California Department of Financial Protection and Innovation, but withdrew it in 2023, citing an increasingly "uncertain regulatory landscape."

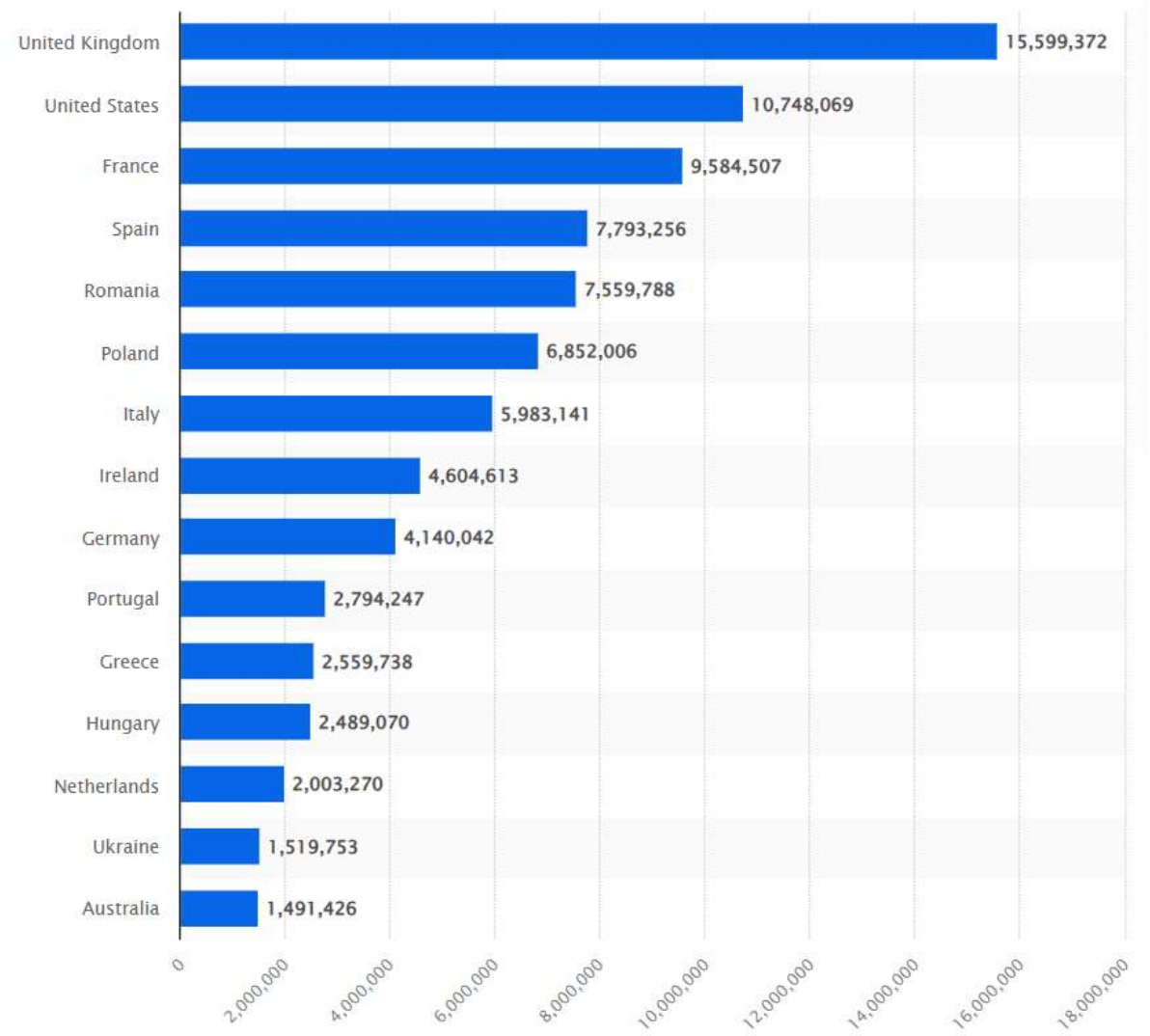

Figure 11: *Number of Downloads by Countries as of January 2025 (Source: Statista)*

4.5 Revolut as a Digital Platform: Affinities and Tensions

Beyond being a fintech company, Revolut operates with structural logic akin to multi-sided digital platforms. This resemblance is best understood through its layered architecture and interaction dynamics.

First, Revolut functions as a modular platform. At the centre lies the user account — essentially a programmable wallet — from which users can access a constellation of services: FX, investments, crypto, budgeting, insurance, donations, etc. Each of these is either developed natively or plugged in through APIs, reflecting a core-periphery structure typical of digital platforms.

Second, Revolut deploys algorithmic and data-driven personalization, segmenting users based on behaviours and preferences to serve them tailored offerings. These include financial insights, nudges for savings, personalized subscription recommendations, and credit pre-approval. Such data capabilities reinforce monetization and retention by deepening engagement, mirroring the business models of Amazon or Netflix.

Third, Revolut embodies network effects, albeit in constrained forms. Peer-to-peer payment becomes more valuable with more users onboard; the broader the user base, the richer the transaction history, and the stronger the social embeddedness of the app. Referral schemes, and social incentives were designed to create a positive feedback loop, amplifying user acquisition. However, network effects in financial services are tempered by regulatory frictions and trust requirements — critical mass can be reversed quickly if trust fails.

To sum up, and to better understand the traits of Revolut as a platform, here there is a *Multisided Value Proposition canva*, a tool ideated by Paul Belleflemme & Nicolas Neysen in 2023, to highlight the main value generated by a platform when connecting the various users' side which join it.

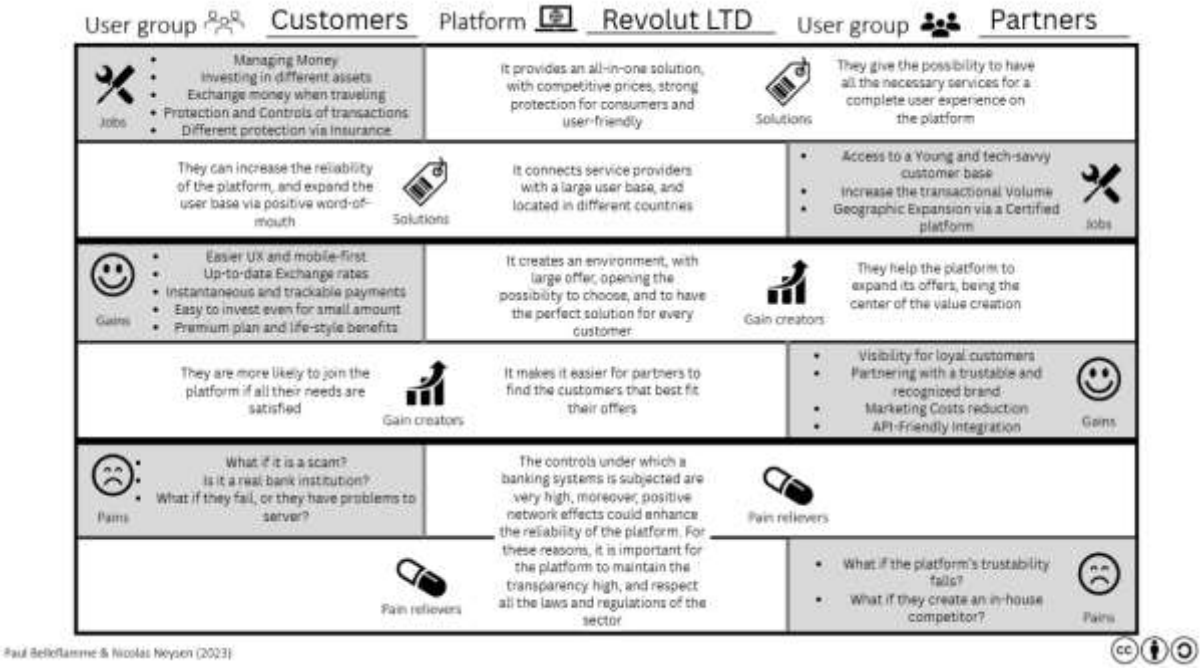

Figure 12: *Multisided Value Proposition Canva for Revolut*

Thanks to this instrument it is possible to have a wider view on what make Revolut a Platform, more than a simple online bank, understanding how it operates to connect Customers and Partners, and why they decide to join it.

In conclusion, the networks effects generated by Revolut are a proper trait of platforms both on: indirect network effects, attracting service providers in the finance sector, due to a strong and loyal user base; and direct user base, becoming a powerful instruments for everyone joining it, creating a positive word-of-mouth, and thanks to a referral program, which influenced the exponential growth of the company.

4.6 Results, Growth Metrics and Comparative Position

Revolut's scale is unmatched among European neobanks. From 100,000 users in 2016, it reached 1 million in 2017, 10 million by 2019, and surpassed 50 million by 2024. Its daily active user base and transaction volumes also scaled dramatically. As of Q1 2024, the platform processed over 500 million transactions monthly, with a total monthly volume exceeding $140 billion.

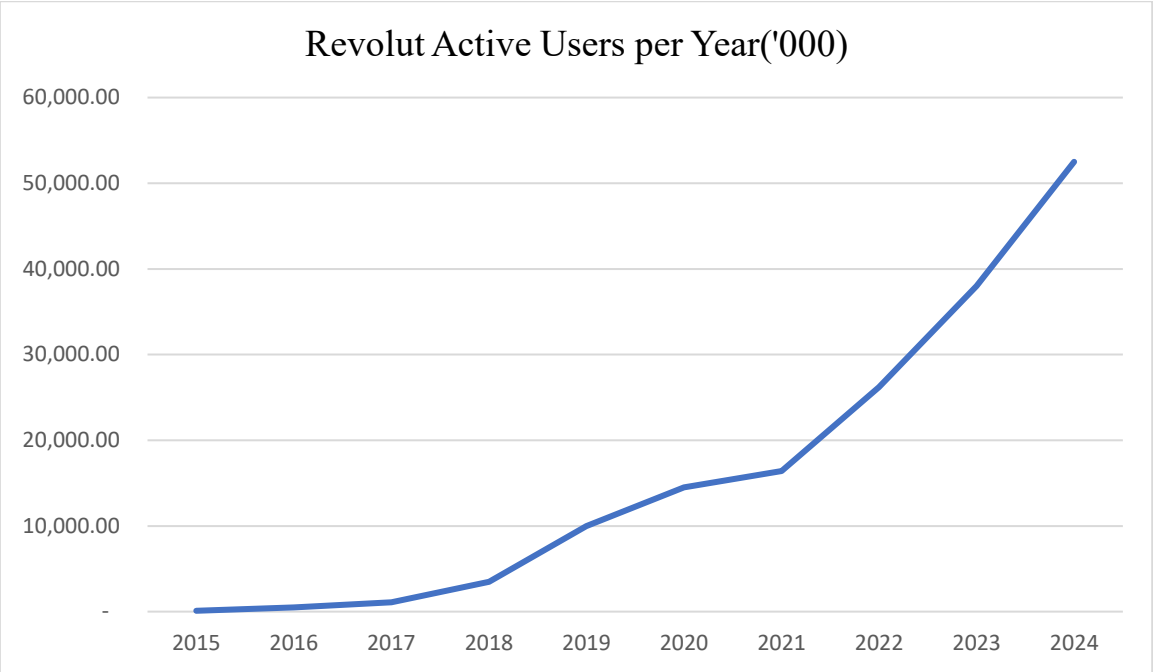

Figure 13: *Growth of Revolut's User Base by Year (in thousands)*

The company diversified revenue across multiple lines. The core remains interchange fees and premium subscriptions, but Revolut has increasingly monetized via trading spreads (stocks, crypto), insurance commissions, currency exchange margins, and business services. Revolut Business, launched in 2017, reached 500,000 clients by 2024, offering features like payroll, invoicing, FX, and expense management.

Profitability has been a long-standing challenge, but 2021 marked its first profitable full year. The road to profitability was driven by premium subscriber growth, cost optimization, and increased fee capture from trading and business services. Still, margins remain under pressure due to global expansion costs, compliance investments, and platform R&D.

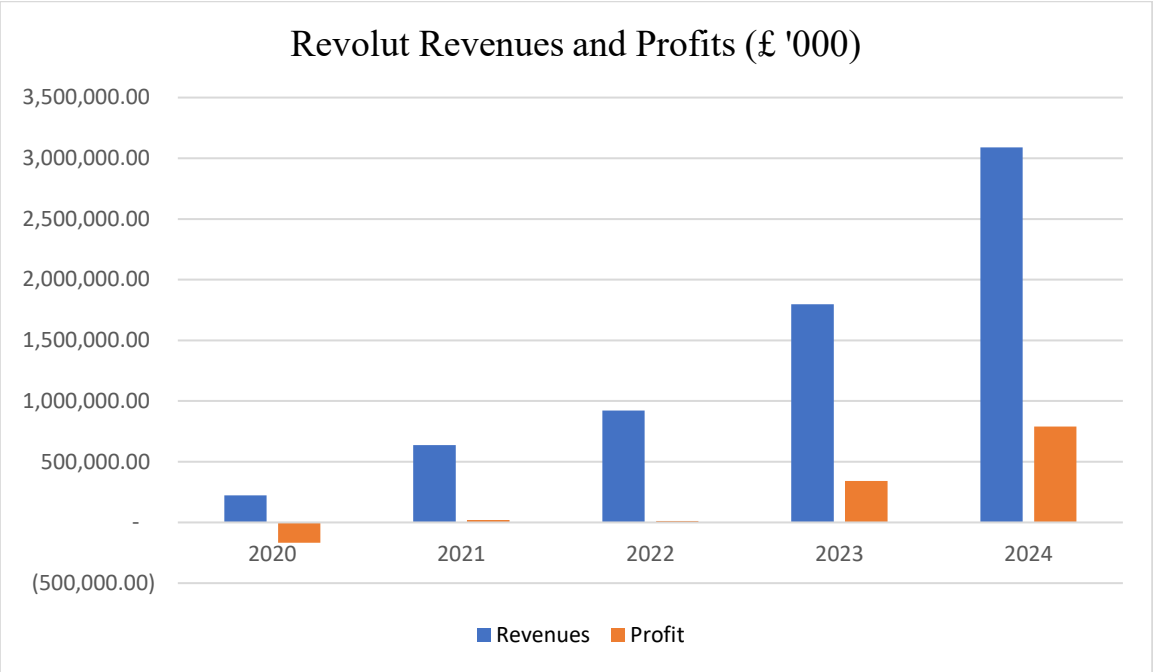

Figure 14: *Revenues and Net Profit (Loss) for Revolut in the last 5 years*

Revolut competes not only with neobanks but with an ecosystem of digital financial services and platform businesses. Unlike N26 or Monzo, which focused narrowly on banking functions with a clear geographic orientation, Revolut positioned itself as a horizontal aggregator. Its breadth of services makes it more comparable to Alipay or Grab than to European peers.

This platformization allows Revolut to pursue cross-subsidization: profitable services (e.g., premium subscriptions) can support loss-leaders (e.g., free FX). The ecosystem strategy allows for internal data synergies, such as using transactional data to offer credit or personalize insurance, and creates exit barriers for users embedded in multiple services.

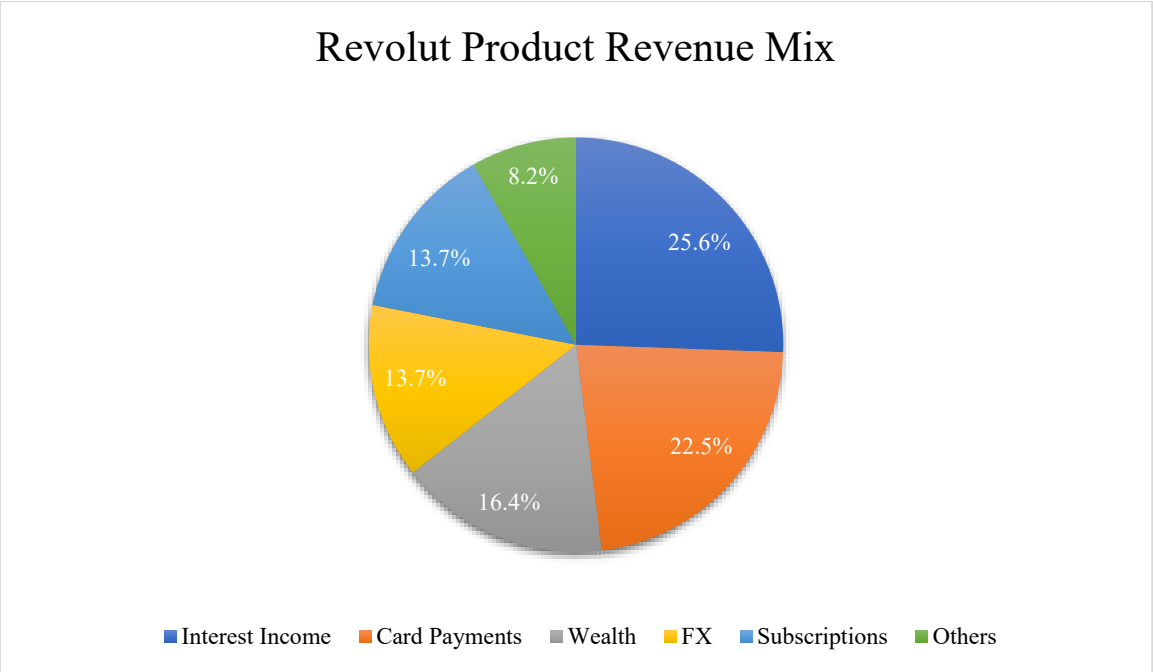

Figure 15: *Split of Revolut's 2024 Revenues by Product Category (Source: Revolut 2024 Annual Report)*

4.7 Controversies

As one of the fastest-growing fintech companies in the world, Revolut's international expansion has been a defining element of its corporate strategy. However, scaling a highly regulated financial service across borders entails navigating an intricate web of legal, cultural, technical, and organizational challenges.

One of the most persistent controversies surrounding Revolut's expansion has been related to anti-money laundering (AML) and know-your-customer (KYC) processes. As a digital-first bank relying on automation for user onboarding, Revolut had to find a balance between seamless UX and robust customer verification. However, multiple reports suggest that this balance was not always achieved.

In 2019, the UK's FCA initiated an investigation into Revolut's AML systems after whistleblowers alleged that the company disabled an automated sanctions screening system for several months in 2018. Although the firm denied any malicious intent and stated that no breaches occurred, the episode damaged Revolut's reputation and attracted increased regulatory scrutiny. Internal sources described a "move fast and break things" culture that clashed with the caution typically expected in banking compliance.

Further concerns were raised by Revolut's rapid onboarding of customers in new markets without adjusting screening mechanisms to local AML risks. In Eastern Europe and parts of Asia, journalists reported that Revolut accounts were being used for suspicious transactions, prompting inquiries by national regulators. In 2022, the Bank of Lithuania, which had granted Revolut its European banking license, announced a review of the company's AML controls, signaling unease within its main regulatory partner.

Revolut's internal culture has also come under scrutiny, particularly regarding allegations of employee burnout, high turnover, and a pressurized work environment. In multiple exposes published by outlets such as *Wired* and *The Telegraph* between 2019 and 2022, former employees described a culture marked by excessive demands, long hours, and performance metrics driven by top-down directives. A notable controversy arose when it was revealed that job candidates were sometimes asked to work for free as part of their interview process—a practice Revolut later discontinued after public backlash.

While aggressive culture may have contributed to the company's early scaling speed, it also undermined long-term operational stability, particularly when entering regulated markets where governance structures and internal audit systems must meet high standards. Organizational opacity and rapid decision-making cycles, while conducive to agile product development, were less compatible with regulators' expectations of accountability, documentation, and role segregation.

Leadership controversies have further fueled governance concerns. CEO Nikolay Storonsky, while admired for his vision, has been criticized for centralizing decision-making and allegedly ignoring internal dissent. These organizational frictions have sometimes been cited by regulators as reasons for delayed approvals or rejections of license applications.

Expanding to new countries has not always translated into market success. In some regions, Revolut's core offering did not align well with local financial behaviors, competition, or infrastructure. A striking example is the exit from Canada in 2021, less than a year after a beta launch. Revolut cited the lack of sufficient market penetration and an inability to offer a full product suite due to licensing restrictions. Users complained about limited functionalities, such as the inability to receive direct deposits or open joint accounts, which made the app less useful than domestic alternatives.

In India, Revolut announced its intention to launch in 2021 after acquiring local fintech Arvog Forex and hiring a country CEO. However, as of 2024, the platform had yet to fully

operationalize in the Indian market, citing delays in obtaining necessary approvals from the Reserve Bank of India (RBI) and difficulties in adapting to complex domestic financial regulations.

In Japan, where user expectations for financial reliability are extremely high, Revolut struggled to gain traction. The company launched with a reduced set of services — limited to prepaid cards and international transfers — and was met with skepticism from local consumers who typically value longstanding institutional trust and local brand familiarity. Cultural misalignment, lack of product localization, and a strong presence of domestic digital players like Rakuten Bank made it difficult for Revolut to grow.

Revolut's global footprint has also exposed it to geopolitical volatility. The Russian invasion of Ukraine in 2022 had direct and indirect implications for the company. Revolut's co-founder, Vlad Yatsenko, is Ukrainian, and the company quickly took a public stance by supporting humanitarian donations and facilitating free remittances to Ukraine. However, the firm faced calls for greater transparency about its exposure to Russian users, partnerships, and suppliers. Regulatory authorities in countries like Poland and the Baltic States, where tensions were high, demanded more robust verification procedures for Eastern European customers.

In the United States, increasing scrutiny over foreign influence in tech and finance raised flags for firms like Revolut with multinational ownership. While no direct accusations were leveled at the firm, the broader atmosphere of economic nationalism and data sovereignty placed additional constraints on Revolut's data handling and partnership strategies, particularly with cloud providers and third-party vendors.

Revolut's rapid growth and charismatic leadership initially attracted positive media attention, but as the firm matured, it increasingly became a target of investigative journalism. Coverage of its corporate governance, financial disclosures, and customer support practices turned more critical. In particular, several consumer rights publications documented cases of users being locked out of their accounts without timely resolution — a reputational risk for a company operating as a financial custodian.

Additionally, its marketing tactics, while effective in user acquisition, were occasionally criticized for lack of transparency. Referral bonuses, stock giveaways, and cryptocurrency promotions were sometimes accompanied by complex terms and conditions that users found difficult to understand or redeem. These practices, although legal, contributed to a perception of overpromising and underdelivering — especially in newer markets.

4.8 Conclusion

Revolut's ambition to become a global financial superapp is both its greatest strength and its primary source of challenge. Unlike traditional banks that grow incrementally within clear jurisdictional boundaries, Revolut sought to scale horizontally across multiple markets simultaneously. While this enabled impressive growth and brand visibility, it also magnified the operational and regulatory risks.

The controversies and obstacles analysed in this chapter highlight a key paradox: as Revolut scales globally, it must increasingly operate like the traditional institutions it sought to disrupt — more bureaucratic, more compliant, and more risk-averse. Reconciling its start-up ethos with the demands of international banking regulation will be central to Revolut's long-term success. Whether it can maintain its platform agility while satisfying increasingly complex legal frameworks remains an open question, one that will define the next phase of its evolution.

To conclude, Revolut exemplifies the fusion of fintech and platform capitalism. It is not merely a challenger bank, but a scalable, data-driven, and multi-modal platform seeking to dominate the digital financial interface. Its strategies — ranging from modular architecture to viral marketing, from global expansion to hyper-personalized UX — demonstrate the potential of fintech to evolve into a platform economy. However, long-term success will depend on resolving tensions between scale and compliance, innovation and regulation, openness and control. The Revolut case thus offers valuable insights for understanding the future of financial services in a platform-driven world.

5. Model

5.1 Intuition

The modeling approach adopted in this thesis is grounded in a set of structured intuitions that emerge from both observed empirical patterns and theoretical constructs within the economics of digital platforms. The central hypothesis underpinning the entire modeling framework is that Revolut's user growth and economic performance are significantly driven by network effects,

which manifest through both direct and indirect mechanisms. These network effects not only influence the pace of user adoption but also affect key performance indicators such as revenues, profitability, and marketing efficiency.

At the heart of this analysis lies the assumption that Revolut behaves not simply as a financial institution, but as a platform-based digital ecosystem, where the value of the service increases as a function of the size and density of its user base. This idea is aligned with the classical literature on platform economics (Katz & Shapiro, 1985; Rochet & Tirole, 2003), where user participation on one side of the market increases the attractiveness and utility of the platform for other users, thereby generating self-reinforcing feedback loops.

The first layer of network effects assumed in the model are direct network effects, primarily stemming from peer-to-peer (P2P) functionalities such as money transfers, payment splitting, and socialized financial interactions. In such services, the utility of the platform for each user is inherently tied to the number of other users they can interact with. This follows the Metcalfe's Law logic, where the network value scales approximately with the square of the number of users. In practical terms, the broader the adoption of Revolut within a user's personal or professional circle, the more reasons they have to use the app, increasing retention and acquisition through social and functional reinforcement.

Another core mechanism involves referral systems, which serve as a hybrid of marketing expenditure and user-driven growth. Though granular data on the precise structure and conversion effectiveness of Revolut's referral campaigns is unavailable, there is indirect evidence that suggests these programs scale with the size of the user base. Specifically, the data shows a rising trajectory of marketing expenditure over time, which correlates strongly with the growth in the number of active users. This implies a form of viral coefficient effect, whereby existing users indirectly amplify marketing effectiveness by acting as distribution channels for user acquisition. Such dynamics are often formalized in viral growth models (e.g., Leskovec et al., 2007; Hinz et al., 2011) and justify the inclusion of interaction terms between users and marketing in the model.

However, the most nuanced and theoretically rich element of the intuition lies in the presence of indirect network effects, particularly in the context of Revolut's identity as a digital bank. Unlike purely social or transactional platforms, financial institutions must earn and maintain trust to gain adoption. In this sense, the accumulation of users functions as a signal of platform reliability: the larger the user base, the greater the perceived legitimacy, robustness, and institutional credibility of the service. This is especially important in the financial sector, where users are more cautious and risk-averse.

The model integrates this logic through the critical mass hypothesis, which is empirically supported by Revolut's performance trajectory. The company achieved profitability in 2019, relatively early in its lifecycle compared to peer neobanks and traditional institutions. This suggests the existence of a non-linear tipping point in user adoption and platform economics. Before reaching this threshold, the marginal effect of additional users on profitability and platform attractiveness is modest; beyond the threshold, user growth may trigger disproportionate gains in revenue efficiency and market appeal. This critical mass dynamic is a cornerstone of platform theory (Arthur, 1989; Parker et al., 2016), where the system experiences a phase transition once a sufficient density of participation is achieved.

The threshold model thus reflects a more realistic representation of platform dynamics, incorporating both saturation effects and non-linear amplification, and is structurally aligned with the empirical phenomena observed in Revolut's historical growth. The intuition is that prior to reaching a sufficient level of user credibility, growth must be artificially fueled by marketing and organic channels. Once critical mass is reached, however, the platform enters a self-sustaining regime, where additional users generate disproportionate returns via trust, social proof, and increased transactional intensity.

These assumptions have profound implications for business strategy and policy design. For instance, the identification of a reliable threshold can guide resource allocation decisions: platforms should focus on aggressively accelerating user acquisition in the pre-threshold stage, even at the cost of short-term losses, with the expectation that post-threshold dynamics will compensate through network-enabled scaling efficiencies. Similarly, the non-linear structure of virality implies that the effectiveness of marketing is not constant over time, and is contingent on achieving sufficient platform density.

In summary, the theoretical intuitions behind the model are informed by a convergence of insights from network economics, platform theory, and empirical growth modeling. By explicitly modeling a phase transition in platform dynamics, the threshold-based extension of the Katz and Shapiro model allows for a nuanced understanding of how Revolut may have leveraged structural network properties to accelerate growth, improve profitability, and differentiate itself from competitors in the highly regulated and trust-sensitive domain of financial services.

5.2 Models Set-Up

Network Effects

As anticipated before, the modeling strategy employed in this research originates from the foundational theory of network effects developed by Katz and Shapiro (1985). In their seminal contribution, Katz and Shapiro introduced the concept of demand-side economies of scale, whereby the utility that a consumer derives from adopting a product increases with the number of users of the same product. Their model, grounded in microeconomic theory, provides the analytical foundation for understanding how platforms benefit from self-reinforcing adoption dynamics.

In its original formulation, the model does not directly describe the growth in the number of users over time. Instead, it focuses on the individual utility function that determines whether a consumer will adopt a platform. For any user *i*, the utility derived from using a product is defined as:

$$U_i = V(x_i, n) - p_i$$

where:

- $V(x_i, n)$ is the gross utility, which depends on individual preferences x_i and the total number of adopters n;
- p_i is the price paid by the user.

The key assumption is that V is increasing in n, meaning that the utility from adopting the product grows as more users join the platform. This captures the essence of network externalities: users benefit from the participation of others.

In simplified linear form, the function can be expressed as:

$$V(x_i, n) = v_0(x_i) + \varphi \cdot n$$

where:

- $v_0(x_i)$ represents the intrinsic value the product provides to the user in isolation;
- $\varphi \cdot n$ captures the positive network externality.

This representation shows that the incentive to adopt increases with the size of the user base — the larger the network, the greater the utility, and the higher the probability of adoption.

To operationalize this into a dynamic model of user acquisition, this individual-level utility is reinterpreted in aggregate terms. That is, as more users find the network valuable, the aggregate adoption rate accelerates. This leads to a behavioral transition from utility to adoption, formalized as:

$$\Delta n_t = f(n_t, m_t, M)$$

where:

- $\Delta n_t = n_{t+1} - n_t$ is the change in the number of users over time;

- n_t is the number of current users;
- m_t is marketing expenditure;
- M is the total potential market size.

This formulation allows to model platform growth as a function of endogenous (network) and exogenous (marketing) drivers. In particular, it reflects the aggregate response to increasing marginal utility due to network effects.

At this stage, the model draws inspiration from the Bass diffusion model (Bass, 1969), which captures innovation adoption as a process driven by two components: external influence (e.g., advertising) and internal influence (e.g., word-of-mouth). The standard Bass model is:

$$\Delta n_t = \alpha(M - n_t) + \beta \cdot n_t \cdot (M - n_t) / M$$

where:

- $\alpha(M - n_t)$ represents the spontaneous adoption rate (innovation effect),
- $\beta \cdot n_t \cdot (M - n_t) / M$ represents adoption due to word-of-mouth (imitation effect).

This expression already reflects the presence of network effects through the interaction of current users with potential users. However, it does not explicitly capture virality or marketing amplification — critical mechanisms for digital platforms like Revolut.

Therefore, to better model the growth dynamics of a digital platform, an additional virality term that reflects marketing-fueled referral dynamics is incorporated. The extended model becomes:

$$\Delta n_t = \alpha(M - n_t) + \beta \cdot n_t \cdot (M - n_t)/M + \delta \cdot {n_t}^{\gamma} \cdot m_t$$

where:

- δ is the coefficient of viral amplification,
- γ is the non-linear scaling parameter,
- m_t is marketing expenditure at time *t*.

This equation introduces two major improvements:

1. The term $\delta \cdot {n_t}^{\gamma} \cdot m_t$ accounts for the fact that the effectiveness of marketing may depend on the size of the existing user base. For instance, marketing campaigns may generate more referrals in a denser network due to stronger word-of-mouth.
2. The exponent γ captures the non-linear relationship between user base size and viral amplification. If $\gamma > 1$, we observe increasing returns to virality; if $\gamma < 1$, diminishing returns.

In this structure:

- The first term (α) reflects organic adoption not driven by network or marketing.
- The second term (β) captures the pure network externality as in the Bass model.

- The third term (δ) captures referral-based amplification and indirect effects — such as enhanced platform credibility or financial reliability — that scale with users.

This framework aligns with theoretical intuition: as more users adopt the platform, it becomes more useful (utility increases), referrals are more effective, and the platform is perceived as more trustworthy — particularly relevant in the fintech domain. In fact, for a neobank like Revolut, a large user base not only attracts new users via referrals but also boosts platform credibility, facilitating further adoption and revenue generation.

To further refine the model, a threshold dynamic is introduced, motivated by the theory of critical mass. Specifically, the network effect coefficient β is activated only after the platform has reached a certain number of users n_c. The rationale is that below a critical mass, network effects are negligible, while above it, they become self-reinforcing.

The complete model is formalized as follow:

$$\Delta n_t = \begin{cases} \alpha(M - n_t) + \delta \cdot n_t^{\gamma} \cdot m_t & if\ n_t < n_c \\ \alpha(M - n_t) + \beta \cdot \dfrac{n_t(M - n_t)}{M} + \delta \cdot n_t^{\gamma} \cdot m_t & if\ n_t \geq n_c \end{cases}$$

Where:

- Δn_t is the change in the number of users at time *t*;
- n_t is the cumulative number of users at time *t*;
- *M* is the potential market size;
- m_t is marketing expenditure at time *t*;
- α is the spontaneous adoption coefficient;
- β is the coefficient for pure network effects;
- δ is the viral amplification coefficient from marketing;
- γ is a non-linear scaling parameter;
- n_c is the estimated threshold level (critical mass).

This conditional structure enables the model to detect phase transitions in platform growth — from early-stage slow growth to later-stage accelerated expansion — consistent with the empirical dynamics of many digital ecosystems.

Critical Mass

Once the threshold n_c is calculated, this is used in the following section as a critical mass value, to outline the econometric strategy adopted to investigate the relationship between user base expansion, marketing investments, and platform revenues. The approach is rooted in the hypothesis that the economic return to user acquisition efforts changes substantially once a critical mass is reached — a central tenet in the literature on digital platforms and network externalities (Evans & Schmalensee, 2010; Rochet & Tirole, 2003). To empirically test for the presence of such a threshold effect in the revenue generation process of the platform, a segmented regression analysis is conducted, distinguishing between observations before and after the identified critical mass.

The baseline empirical model is designed to capture both direct effects (of marketing spend and user base size) and interaction effects (e.g., nonlinearities and network-based amplification). The dependent variable is the natural logarithm of total platform revenues at time *t*, denoted as $log(Revenues_t)$. Independent variables include:

- $log(Marketing_t)$: the natural *log* of marketing expenditures, capturing scale effects in promotional activity;
- $log(Users_t)$: the natural *log* of the cumulative user base at time *t*, capturing the scale of the platform;
- $log(Users_t)^2$: a quadratic term for the user base to capture potential concavity or convexity in returns to scale;
- $log(Marketing_t) \cdot log(Users_t)$: an interaction term capturing how the effectiveness of marketing varies with the user base.

This model specification allows for flexible, nonlinear relationships between the variables, particularly enabling to assess whether marketing becomes more or less productive as the platform scales, and whether user growth itself drives increasing or diminishing returns in revenue terms.

The regression is estimated separately for two subsamples:

- Pre-threshold sample, where the cumulative number of users is less than or equal to n_c;
- Post-threshold sample, where the user base exceeds n_c.

The interpretation here is not purely heuristic: in platform economics, reaching a minimum viable scale often marks the transition from fragile to self-sustaining growth, and more importantly, from user acquisition being cost-intensive to profit-generating.

The decision to use a *log-log* functional form has both theoretical and econometric justifications. Economically, *log* specifications allow elasticities to be estimated directly from coefficients, which is particularly relevant when studying how responsive revenues are to

proportional changes in users or marketing effort. Econometrically, this transformation helps to stabilize variance and minimize the influence of outliers, a common challenge in digital platform datasets.

The final model is thus specified as follows, for both pre- and post-threshold subsamples:

$$log(Revenues_t) = \beta_0 + \beta_1 log(Marketing_t) + \beta_2 log(Users_t) + \beta_3 log(Users_t)^2 + \beta_4 (log(Users_t) \cdot log(Marketing_t)) + \varepsilon_t$$

Where ε_t is an i.i.d. error term. Estimation proceeds via Ordinary Least Squares (OLS), and heteroskedasticity-consistent standard errors were used to evaluate the precision of estimates.

5.3 Data

The empirical analysis presented in this work relies on financial and operational data obtained from the annual reports of Revolut Ltd, the parent holding company of the Revolut group. These reports provide consolidated figures for key metrics such as user base, revenues, and marketing expenditures, spanning the period from 2015 to 2024. However, since these data are only available at an annual frequency, a methodological effort was undertaken to construct quarterly observations suitable for the estimation of dynamic models.

To achieve this, quarterly data were collected for Revolut Bank UAB, the principal subsidiary of the group and a significant contributor to the consolidated performance. Although these subsidiary-level figures are not directly representative of the entire holding, they offer a reasonable proxy for intra-year temporal dynamics due to the relative weight and operational centrality of Revolut Bank UAB within the group.

Specifically, the relative weight of each quarter in terms of user acquisition, revenue generation, and marketing expenditure was calculated as a percentage of the annual total for Revolut Bank UAB. These quarterly shares were then applied proportionally to the corresponding annual values reported by the holding. This approach yields quarterly estimates that preserve the aggregate scale of the official group-level figures while incorporating intra-annual variation informed by the operational profile of Revolut's core banking entity.

While this estimation strategy involves certain assumptions — particularly that the temporal distribution of activities in the main subsidiary reflects that of the overall group —I t allows for a more granular and analytically tractable dataset without compromising consistency with publicly disclosed financial data.

6. Results

6.1 Katz and Shapiro Extended Model

Considering the model constructed before:

$$\Delta n_t = \begin{cases} \alpha(M - n_t) + \delta \cdot n_t^{\gamma} \cdot m_t & if\ n_t < n_c \\ \alpha(M - n_t) + \beta \cdot \dfrac{n_t(M - n_t)}{M} + \delta \cdot n_t^{\gamma} \cdot m_t & if\ n_t \geq n_c \end{cases}$$

The estimation of the parameters is made using Python, using the *'matplotlib.pyplot'* library, which allows to construct a function/model and estimate it, once the data are imported. The Data used are those collected by the official financial statements made by the company, as stated before. In particular, for Δn_t and n_t are used respectively the delta number of users between time *t* and *t-1,* and the number of users at time *t*; the value of *M* is estimated as a total market size Revolut could reach in the future, considering the current one, as a value of 200 million of users; m_t is the marketing expenditure for each period. The results for the other parameters are the following:

α = 0.000003;

β = 0.071281;

δ = 0.000008;

γ = 0.501;

n_c = 10,813,000;

Which provide meaningful insights into the internal logic of user acquisition and the broader economic behavior of the platform. Here, in Figure 16, is possible to observe how the growth of users behaves before and after the critical mass is reached, giving an important advice on how the activation of network effects influences the number of new users.

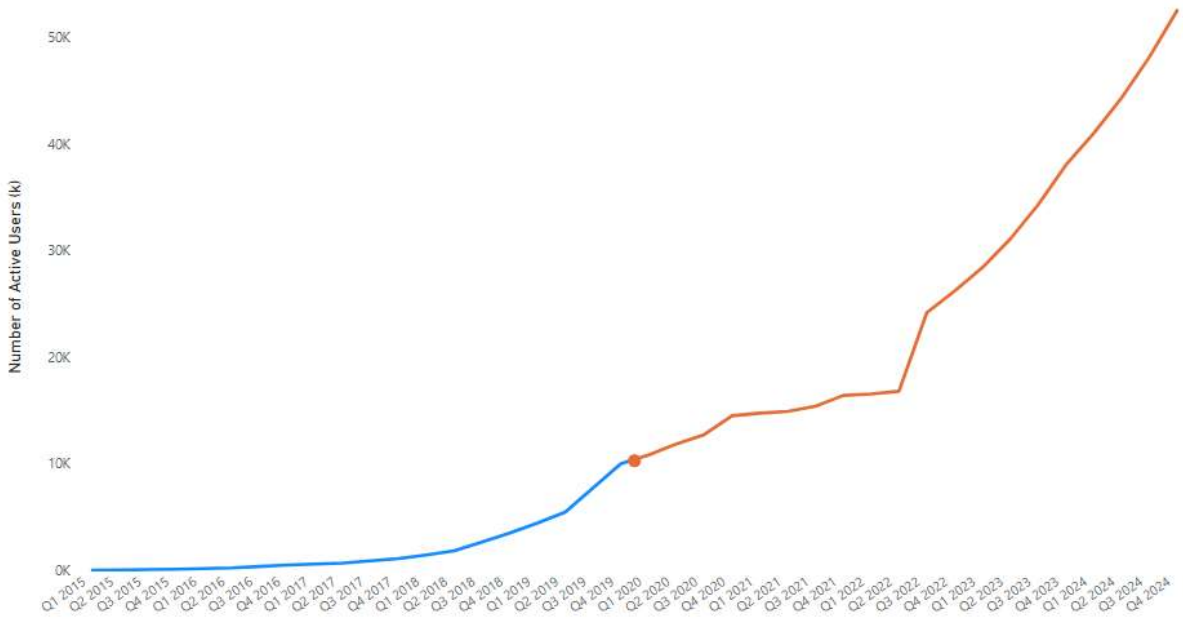

Figure 16: *Active users per Period, highlighting the critical mass (orange dot), and the differences in the curve after that point.*

Spontaneous Adoption (α)

The value of $\alpha = 0.000003$ suggests that a very small proportion of the untapped market adopts the service spontaneously, without marketing influence or peer effects. This finding aligns with expectations in digital banking, where user inertia, switching costs, and the complexity of financial services typically constrain organic diffusion. It reinforces the idea that early-stage growth depends almost entirely on proactive strategies, not passive discovery.

Network Effects (β)

The network effect coefficient $\beta = 0.071281$ is meaningful but only becomes active after the threshold n_c is passed. This reflects classic increasing returns to scale: once a sufficient user base is reached, each additional user raises the attractiveness of the platform to others. In economic terms, this confirms the two-stage platform growth theory: a costly, externally fueled first phase, followed by an internal, self-sustaining second phase. The relatively large value of β implies that once the network reaches maturity, it accelerates growth at low marginal cost, a crucial condition for long-run profitability and valuation.

Viral Amplification (δ) and Non-linear Scaling (γ)

The viral coefficient $\delta = 0.000008$, while seemingly small in absolute terms, must be interpreted in conjunction with marketing intensity and the scaling parameter $\gamma = 0.501$. The sub-linear exponent suggests that although the effectiveness of marketing increases with platform size, it does so at a decreasing rate. This dynamic reflects diminishing marginal returns to virality: as the user base grows, each dollar of marketing buys fewer new users. This might result from user saturation, less enthusiastic referrals, or lower engagement at scale.

In operational terms, this means that marketing is more powerful when the platform is small or emerging, and less effective once the user base grows. For managers, this underscores the strategic importance of allocating heavier marketing budgets early on and gradually shifting to retention and engagement strategies later.

Critical Mass (n_c)

Perhaps the most conceptually and empirically significant result is the estimated threshold of $n_c = 10{,}813{,}000$ users. This marks the inflection point beyond which the economics of the platform shift fundamentally. Prior to reaching this threshold, the platform must invest heavily, without expecting compounding effects from the user base. Once surpassed, however, both network externalities and marketing amplification become activated.

From a business strategy standpoint, this has deep implications:

- Funding rounds and investor expectations should be aligned with the effort needed to reach critical mass;
- KPIs should differ pre- and post-threshold: marketing efficiency matters more early on, while user-driven growth becomes more important later;
- Growth accounting shifts from external (spending-driven) to internal (structure-driven), which also impacts risk evaluation and platform defensibility.

Conclusion

The extended Katz and Shapiro model, enhanced with a critical mass threshold, offers a robust and empirically grounded framework to understand the non-linear and self-reinforcing nature

of growth in digital platforms like Revolut. Far from being a mere statistical exercise, the estimated parameters convey distinct and economically meaningful insights into the mechanisms of platform scaling:

- $\alpha = 0.000003$ quantifies the organic baseline growth — the rate at which new users adopt the platform in the absence of network or marketing effects. Although small, this value reflects the initial inertia typical of early-stage platforms;
- $\beta = 0.071281$ captures the strength of the direct network effect after reaching scale. This parameter indicates that once the platform surpasses a critical density of users, each additional user contributes significantly more to reinforcing adoption, driving a self-sustaining cycle of growth;
- $\delta = 0.000008$ and $\gamma = 0.501$ describe how marketing efforts interact with the user base to generate viral adoption. The interaction effect (δ) remains modest on its own, but the marketing elasticity (γ) being close to 0.5 reveals a strongly non-linear dynamic: the effectiveness of marketing is not constant but amplified in the presence of an existing user network;
- The critical mass threshold (n_c = 10,813,000) represents a pivotal inflection point — the minimum user base required for network effects to activate at full scale. Crossing this threshold marks the transition from externally fueled growth (marketing-driven) to endogenous growth (user-driven).

Together, these results support the hypothesis that Revolut's growth is not simply the cumulative effect of marketing and product design, but the result of platform-specific dynamics consistent with the theory of multi-sided networks. The model empirically validates the notion that scalability is not linear: only beyond a certain tipping point do the self-reinforcing effects of the platform fully activate.

From a strategic perspective, this model does more than explain past growth — it provides a forward-looking analytical tool. The identification of n_c as a measurable milestone allows platform managers to strategically plan investment in user acquisition, knowing that once the threshold is surpassed, returns on marketing and user engagement begin to compound. Furthermore, understanding the interaction between user base and marketing (δ and γ) allows for better resource allocation: campaigns deployed after critical mass are likely to be more cost-effective and virally amplified.

In conclusion, the model quantifies the transition from push-based to pull-based growth, offering a clear demonstration of what it means for a digital bank to achieve platform scalability. It reinforces the view that platforms are not simply digitalized services, but structurally distinct economic entities governed by their own laws of growth and momentum.

6.2 Critical Mass Regression

Before delving into the interpretation of the regression outcomes, it is important to acknowledge a methodological limitation: the historical dataset spans only 10 annual observations (2015–2024). This limited time frame reduces the degrees of freedom and increases the risk of overfitting. Consequently, the results should be interpreted as exploratory rather than definitive. The regression results reveal significant differences in the determinants and elasticities of revenue generation before and after the platform surpasses the critical mass of users. These findings substantiate the theoretical proposition that the economic structure of platform performance transforms as the network matures — a hallmark of demand-side scale effects. Nonetheless, the exercise remains valuable as an application of platform theory to real-world financial data, and as a demonstration of the analytical methods relevant for network effect modeling.

In particular, the methodology used is a threshold regression approach, with an OLS estimation. The analysis aimed to detect structural differences in the relationship between platform scale and revenues before and after reaching a specific user base size. The threshold found in the previous model is 10,813,000 users. Then the empirical model is estimated using Python with the *`statsmodels`* library. The dataset was split into two subsamples: pre-threshold (Users ≤ 10,813,000) and post-threshold (Users > 10,813,000). Two separate OLS regressions are performed for each subsample using robust standard errors. All explanatory variables were first log-transformed to reduce heteroskedasticity and facilitate interpretation of elasticities. Interaction terms and polynomial components were generated programmatically in Python using *'pandas'* and *'numpy'*. The results are the following:

Pre-threshold Analysis

	coef	std err	t	P>|t|
const	0.2894	1.633	0.177	0.862
log Marketing	1.8859	0.674	2.796	0.014
log Users * log Marketing	-0.2793	0.107	-2.619	0.019
log Users	-0.7205	0.975	-0.739	0.471
log Users Squared	0.2775	0.137	2.029	0.061

Figure 17: *Results of the OLS regression before the threshold is reached.*

In the early stage of the platform's life cycle — before reaching 10,813,000 users — the estimated model achieves a very high R^2 of 0.984, indicating that approximately 98.4% of the variation in $log(Revenues_t)$ is explained by the selected variables. However, this explanatory power masks some important nuances in coefficient interpretation and significance.

The coefficient on $log(Marketing_t)$ is positive and statistically significant at the 5% level (1.8859, $p = 0.014$), suggesting that marketing efforts are strongly associated with increases in revenues in the early stage. This elasticity implies that a 1% increase in marketing expenditure is associated with a nearly 1.89% increase in platform revenues, all else equal — a high return likely driven by the need to build visibility, attract early adopters, and initiate network formation.

Interestingly, the interaction term $log(Users_t) \cdot log(Marketing_t)$ has a negative and significant coefficient (-0.2793, $p = 0.019$). This suggests that the marginal return to marketing diminishes as the user base grows, at least in the pre-threshold phase. Economically, this can be interpreted as a reflection of marketing inefficiency in a context where the user base is not yet large enough to organically reinforce marketing signals. In other words, marketing in this phase is largely pushing adoption rather than amplifying pre-existing network dynamics.

The coefficient on $log(Users_t)$ is negative (-0.7205), but not statistically significant ($p = 0.471$), implying that in the early stage, an increase in the number of users is not directly correlated with higher revenues when controlling for other variables. However, the squared term $log(Users_t)^2$ is positive and marginally significant (0.2775, $p = 0.061$), suggesting a weak concavity in the revenue-user relationship. This implies that as the platform begins to grow, the revenue function starts bending upward, albeit at a pace not yet statistically robust. Combined, these results point to the initial fragility of network effects, where user growth alone is not yet self-reinforcing or revenue-generating until scale is achieved.

Post-threshold Analysis

	coef	std err	t	P>|t|
const	77.3542	35.575	2.174	0.046
log Marketing	8.2173	4.001	2.054	0.058
log Users * log Marketing	-0.7300	0.408	-1.789	0.094
log Users	-22.1133	10.584	-2.089	0.054
log Users Squared	1.4681	0.726	2.022	0.061

Figure 18: *Results of the OLS regression after the threshold is reached.*

After crossing the critical mass of 10,813,000 users, the regression reveals a marked shift in the revenue generation dynamics. The adjusted R^2 rises slightly to 0.982, and all variables become either statistically significant or borderline significant.

The coefficient on $log(Marketing_t)$ remains positive and marginally significant (8.2173, p = 0.058). While higher in magnitude than in the pre-threshold phase, the wider standard error reflects greater volatility in marketing efficiency post-threshold. Nevertheless, the elasticity suggests that marketing remains an important lever, but now interacts differently with the user base.

The interaction term becomes less significant (−0.7300, p = 0.094), but the negative sign persists. This indicates that although marketing is effective, its marginal productivity still diminishes as the platform grows. However, in the post-threshold context, this is likely due to saturation effects rather than inefficiency. In mature networks, additional marketing may have diminishing returns simply because most potential users are already onboard or aware of the platform.

Most crucially, both the linear and quadratic terms for $log(Users_t)$ reverse signs and become economically significant. The linear coefficient becomes strongly negative (−22.1133, p = 0.054), while the quadratic term becomes significantly positive (1.4681, p = 0.061). This "U-shaped" curvature in the revenue function indicates that revenue per user initially declines as the platform scales, potentially due to rising acquisition costs or lagging monetization, but then begins to recover, possibly through cross-side network effects, upselling, or increased user engagement. The post-threshold elasticity dynamics points to a tipping point: only once the platform reaches sufficient density does user growth begin to enhance revenue generation in a statistically meaningful way.

From a network economics standpoint, these findings support the hypothesis that digital platforms undergo a structural transformation upon reaching a minimum viable scale. In the early phase, the platform must expend significant resources on marketing to compensate for the absence of self-reinforcing growth. Network effects, while theoretically present, are not strong

enough to drive revenue autonomously. Post-threshold, however, the structure changes: user growth and marketing become increasingly interdependent, and the user base begins to play a more prominent role in driving monetization, either directly or through indirect network mechanisms.

Conclusion

The shift in significance and sign of key coefficients before and after the threshold provides empirical support for the theoretical concept of a critical mass — a minimum number of users required before network effects become strong enough to drive organic growth and economic returns. Pre-threshold, the platform is in the "investment" phase, characterized by high marketing sensitivity and relatively inefficient user-based monetization. Post-threshold, the platform enters a "return" phase, where users not only contribute to revenue more directly but also enhance the productivity of other growth levers such as marketing.

The statistical significance of the quadratic term in the post-threshold model adds further nuance. It confirms the presence of nonlinear returns to user growth, suggesting that efficiency and monetization improve disproportionately as the network scales. These findings resonate with established theories on positive feedback loops in platforms, whereby more users lead to better services, attracting even more users — a virtuous cycle that is not possible without first overcoming the initial friction of insufficient scale.

Moreover, the high R^2 values across both phases suggest that the model captures a large portion of the dynamics at play, even as the underlying economics evolve. The results justify the decision to segment the dataset at the identified threshold and affirm the theoretical rationale behind the inclusion of non-linear and interaction terms in the regression specification.

7. Conclusion

This thesis set out to understand whether and to what extent network effects have played a role in Revolut's rapid growth and emerging profitability. Starting from theoretical frameworks well-established in the economic literature, it constructed and estimated models designed to simulate user growth, account for marketing amplification, and isolate viral dynamics in a highly regulated and competitive environment.

One of the key outcomes of the modeling phase was the estimation of a non-linear, threshold-based user adoption model, where network effects are dormant until a platform reaches a

sufficient user base. The estimated critical mass threshold — roughly almost 11 million users — marks a turning point in the platform's dynamics. Prior to this, growth appears to rely more heavily on spontaneous adoption and direct marketing. Afterward, however, the interaction between users and marketing effort produces accelerated growth, consistent with the presence of network effects.

Furthermore, regressions on log-transformed revenue data show that the number of users, once squared or interacted with marketing, significantly affects revenue only after crossing the threshold. This aligns with the theoretical prediction that platforms become more efficient, more valuable, and more "contagious" after a sufficient base of users is achieved.

From an economic standpoint, this work suggests that Revolut's success cannot be attributed to linear scaling or isolated marketing pushes. Instead, a recursive, user-driven mechanism likely played a critical role, amplifying the returns to scale and enabling a rapid shift from early-stage growth to structural profitability.

Implications and Limitations

The implications of these findings are substantial. First, they validate the strategic use of virality-based growth — referrals, P2P features, and trust-based accumulation — in financial platforms. Second, they highlight how network effects do not only lower acquisition costs but enhance monetization potential, as platforms become central to user financial behavior.

However, limitations exist. The model is based on a limited quantity of data, which makes it difficult to assess the consistency of the results, in particular for the OLS regression, even though the structure reflects the adhesion dynamics behind users' growth for platforms. Moreover, the lack of granular referral data makes it impossible to directly quantify some viral loops. The disaggregation method for quarterly estimates introduces approximation bias, and the estimation of user profitability assumes homogeneity across users.

Nonetheless, the overall model presents a robust theoretical framework, capable of being applied to other neobanks or digital platforms, and it opens the door to future research combining micro-level user behavior with macro-level network dynamics.

Policy and Strategic Implications

The empirical evidence and modeling strategy developed throughout this thesis yield a series of important implications for both policymakers and strategic decision-makers within fintech

firms. From a regulatory perspective, understanding the non-linear dynamics of user growth and profitability — as mediated by network effects — calls for a reconsideration of how digital banking platforms are assessed in terms of systemic risk, market power, and user dependence. If user acquisition is driven not only by product quality but also by the endogenous momentum generated through network effects, then the emergence of dominant actors in digital banking may occur more rapidly than previously anticipated.

For strategic planners within fintech organizations, the findings suggest that user acquisition strategies should not be uniformly applied across the growth trajectory. The existence of a critical mass threshold implies that marketing and referral efforts may yield disproportionate returns only after a certain inflection point. Before that point, investment in trust-building, interoperability, and core functionality may be more effective than direct user incentives. After crossing the threshold, however, virality and peer influence become key growth engines, and strategies should pivot toward maximizing network connectivity and usage density.

Moreover, the structure of the model indicates that the scaling behavior of marketing virality γ can significantly alter the profitability trajectory of a platform. Firms should thus monitor not only the absolute effectiveness of marketing campaigns but also their interaction with the size and maturity of the user base. Data infrastructure that captures real-time feedback loops between referrals, usage, and platform reliability becomes a strategic asset in such an environment.

Scalability of the Model to Other Sectors

Though developed in the context of digital banking, the modeling framework introduced in this thesis can be adapted to study network effects and viral scaling in other sectors of the digital economy. In particular, industries where user interaction, platform reliability, and peer influence are key to adoption are natural candidates.

In the ride-sharing sector (e.g., Uber, Bolt, Lyft), the model could capture the interdependence between rider density, driver availability, and platform pricing. A surge in users on one side of the platform (drivers) increases utility for the other side (riders), mirroring a two-sided network dynamic that amplifies growth once a certain density is reached. Here, the interaction term between marketing and installed base could reflect promotional subsidies or driver referral programs, and the critical mass could be geographically bounded (i.e., city-specific).

Similarly, in the edtech sector, platforms like Duolingo or Coursera may experience indirect network effects when the presence of a large number of learners improves content quality,

personalization, or community-based learning. In such cases, the model could be extended by adding a term for content generation or feedback loops, effectively integrating learning-by-doing dynamics into the utility function.

Thus, the core structure of the model — comprising innovation, imitation, virality, and threshold effects — provides a modular template that can be tailored to platform economies beyond fintech. Its scalability is a key advantage, enabling cross-sectoral learning about how digital ecosystems grow, saturate, and generate economic value through user interaction.

Ethical Implications of Viral Growth in Financial Platforms

While network effects and virality can drive exponential growth, they also raise important ethical considerations, particularly in the context of financial services. The very mechanisms that amplify user acquisition — referrals, social incentives, and behavioral nudges — can exploit cognitive biases or encourage over-engagement, especially among vulnerable populations.

For example, referral programs that offer cash bonuses or reduced fees may create perverse incentives to onboard users who are not adequately informed or financially literate. In a banking context, this may lead to inappropriate product use, financial overextension, or privacy risks. Moreover, as platforms grow rapidly through virality, regulatory oversight often lags behind, potentially resulting in systemic risks that are not immediately visible in financial statements.

Additionally, the reliance on behavioral feedback loops — such as personalized notifications or usage-based rewards — can lead to forms of digital addiction or over-reliance on a single platform. These concerns echo debates in the tech industry about the ethics of engagement-driven design, but with heightened stakes due to the financial consequences for users.

Another layer of ethical complexity arises from the opaque nature of algorithmic decision-making. As the model suggests, platforms may use growth and trust data to optimize not only for user acquisition but also for monetization. Without proper transparency, this could create asymmetries of information between the platform and its users, undermining the principle of informed consent.

Finally, the threshold model itself implies that the benefits of the platform accrue disproportionately after a certain scale is achieved, potentially leading to winner-takes-all outcomes. This can entrench market concentration, limit user choice, and stifle competition — outcomes that regulators and economists have long warned against in digital markets.

In sum, while the model provides a powerful lens to understand and leverage growth dynamics, it also underscores the need for ethical reflection, transparency, and proactive regulation in platform-based finance.

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