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Creating a blockchain platform: An empirical analysis in the Italian banking sector

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Digital platforms continue to be a focal point for scholars and practitioners, with growing attention being paid to the dynamics that shape platform leadership. Against this backdrop, blockchain technology emerges for its disruptive potential, offering attractive opportunities for collaboration through shared infrastructure, and arguably remodelling power dynamics in platform ecosystems. The increase in interest has, however, produced only a scattering of empirical insights into the creation of blockchain platforms. The research presented in this paper addresses the gap through an exploratory case study, investigating the early phases of a blockchain platform. The study focuses on a project conducted within the banking sector, outlining the process of blockchain platform development and the unique role of its orchestrator. These findings contribute to our understanding of how blockchain platforms are created, and set out the broader implications for digital platforms, exploring the transformative potential of blockchain technology.

KEYWORDS
blockchain, decentralization, platform

1 | INTRODUCTION

Digital platforms are solutions that streamline and ease commercial transactions and social activity, optimizing communication and interaction and stimulating innovation (Cennamo, 2021; Gawer, 2014). They are at the foundation of some of today's most successful businesses and are advancing rapidly in many industries (Trabucchi et al., 2019). Digital platforms contribute to the development of new products and services, providing substantial value both to companies and to society (Cusumano et al., 2019; Evans & Schmalensee, 2016). Consequently, they are among the most widely-discussed topics in management literature, where the platform concept is deeply rooted in technological innovation and new product development (Alstyne et al., 2016; Gawer & Cusumano, 2014; Trabucchi et al., 2021).

As these platforms gain more ground, the companies that manage them increasingly take on the mantle of "platform leaders". These companies tend to accumulate significant power in step with the platforms' greater supremacy (Kyprianou, 2018). Furthermore, they frequently play a critical part in inducing the primary stakeholders to produce value for those who organize themselves around the platform (Boudreau, 2010; Jacobides et al., 2018). Occasionally, platform leaders may steer platforms towards pursuits that favour them at the expense of other stakeholders (Cohen, 2019; Srnicek, 2017), while these, in turn, are progressively more concerned about the fallout from the imbalance in power between themselves and the platform leaders (Chen et al., 2021; Gastaldi et al., 2024).

Meanwhile, blockchain technology is behind a new breed of "decentralized platforms", which challenge some of the underlying assumptions of digital platforms (Hsieh & Vergne, 2022). Blockchain enables companies to build platforms by pooling their resources in a shared infrastructure, without giving full control over its governance to a platform leader, thus increasing competition, lowering entry barriers

and reducing privacy risks (Catalini & Gans, 2016). In so doing, blockchain enables the creation of a peer-to-peer network that can authenticate transactions, and which is the framework underpinning other applications and services (Trabucchi et al., 2020). Many experts (e.g. Jensen et al., 2019) consider blockchain to be one of the most disruptive technologies in recent history, with the potential of profoundly altering the way collaborations are structured (Lumineau et al., 2021).

Considering these premises, innovation literature scholars (e.g. Pereira et al., 2019; Trabucchi et al., 2020; Vergne, 2020) started to study blockchain platforms, analysing how the technology could tone down the platform leader's dominant position. A platform based on blockchain may eventually not even need a platform leader at all but be, instead, created and managed by an assorted group of platform users (Jensen et al., 2019; Zavolokina et al., 2020).

In response, several authors delved into the governance of blockchain platforms, shedding light on their ability to decentralize power dynamics (Chen et al., 2021; Pereira et al., 2019).

Apart from these contributions, there is still scant empirical evidence on how blockchain platforms are created (Hsieh & Vergne, 2022; Schneider et al., 2020). Developing any form of digital platform involves resolving technological issues and onboarding a critical mass of users, and is particularly complex, especially during the early stages (Alstyne et al., 2016; Schmidt et al., 2021; Yoffie et al., 2019).

The problems are potentially even greater for blockchain platforms, where there is the dual challenge of no platform provider and the need to manage a diverse group of actors so as to pursue objectives acceptable to all, thereby influencing industry-wide adoption and overall success (Chen et al., 2021; Helfat & Raubitschek, 2018; Jovanovic et al., 2022).

Companies have regularly come up against obstacles when developing blockchain platforms, compelling some to discontinue their projects, even those involving big players. For instance, Maersk's blockchain-based global trade platform TradeLens was terminated when it became apparent that there was not the necessary appetite for collaboration to achieve widespread adoption. The Australian Securities Exchange (ASX) was forced to draw a line under its seven-year attempt to implement its blockchain-based clearing and settlement system. We trade, a blockchain-based trade finance platform jointly owned by 12 European banks and IBM, struggled to establish a broad user base and ceased operating. Even the B3i consortium, the insurance industry's blockchain project, faced problems in its platform development and had to shut down. The aim of this study is, therefore, to answer this research question: How to create a blockchain platform able to survive its preliminary phases and achieve industry-wide adoption?

To answer this question, we studied a real case: ABILabChain is a successful blockchain platform set up within the Italian banking sector. The project was promoted by ABI Lab,[1] which had already pioneered the use of blockchain to streamline interbank reconciliation with the distributed ledger technology (DLT) project Spunta Banca. The positive experience of Spunta Banca led to the creation of one of the largest blockchain platform ecosystems in the world, with nearly 100 Italian banks participating as blockchain nodes. The analysis of this case gave us a clearer picture of how to design a blockchain platform. It also revealed the practices followed by ABI Lab during the process leading to the creation of ABILabChain, from the prototypes and pilots to live deployment.

To analyse the data gathered, we employed the theoretical framework proposed by Gawer and Cusumano (2014), outlining effective

TABLE 1 Effective platform leadership practices (Gawer & Cusumano, 2014).

Element	Proposition	Details
First use case	Develop a vision of how a product, technology or service could become an essential part of a larger business ecosystem.	a. Identify or design an element with platform potential (i.e. performing an essential function and easy for others to connect to). b. Identify third-party firms that could become complementors to your platform (think broadly, possibly in different markets and for different uses).
Technical architecture	Build the right technical architecture and "connectors".	a. Adopt a modular technical architecture, and in particular add connectors or interfaces so that other companies can build on the platform. b. Share the intellectual property of these connectors to reduce complementors' costs to connect to the platform. This should incentivize and facilitate complementary innovation.
Ecosystem involvement	Build a coalition around the platform. Share the vision and rally complementors into co-creating a vibrant ecosystem together.	a. Articulate a set of mutually enhancing business models for different actors in the ecosystem. b. Evangelize the merits and potentialities of the technical architecture. c. Share risks with complementors. d. Work (and keep working) on firm's legitimacy within the ecosystem. Gradually build up one's reputation as a neutral industry broker. Work to develop a collective identity for ecosystem members.
Evolution	Evolve the platform while maintaining a central position and improving the ecosystem's vibrancy.	e. Keep innovating on the core, ensuring that it continues to provide an essential (and difficult to replace) function to the overall system, making it worthwhile for others to keep connecting to your platform. f. Make long-term investments in industry coordination activities, whose fruits will create value for the whole ecosystem.

platform leadership practices. To improve our paper's readability and ease of understanding, we have reproduced Table 1 from Gawer and Cusumano (2014), describing the principles outlined in their work and how these principles informed our analysis. This framework acted as the overarching model guiding our study of the process to create a blockchain platform. Taking on board this perspective, we developed a conceptual framework that offers novel insights useful to both academics and practitioners.

Our study contributes to the literature on platforms and on blockchains. With regards to digital platform literature, it addresses the initial creation phases, until now overlooked. It contributes to the literature on platform ecosystems by exploring decentralized power dynamics and to blockchain literature by emphasizing the importance of interconnected key practices as a means to do without the single platform leader.

From a practitioner's perspective, we highlight the role of the platform "orchestrator" and the main decisions are taken when designing and launching a blockchain platform. These results can help companies struggling to cope with the serious effort required to create blockchain platforms and achieve industry-wide adoption, while also explaining how these platforms can create value.

The remainder of the paper is organized as follows: in the section on the theoretical background, we introduce blockchain technology and its implications for platforms. Next, we present the methodology used in our study, followed by the results, which we discuss in the light of previous literature. In the final section, we set out the conclusions and comment on the limitations of our research.

2 | THEORETICAL BACKGROUND

2.1 | Digital platforms

The literature on digital platforms has evolved over the years (Jacobides et al., 2024). Most recently, attention has progressively focused on two critical aspects, these being the challenges associated with the dominance of platform leaders (Gastaldi et al., 2024) and the emergence of decentralized platforms (Chen et al., 2021).

Initially introduced by Rochet and Tirole (2003), platform markets refer to markets where the transactions between two (or more) groups of users carried out on a platform generate indirect network externalities. While traditionally the complexities of pricing mechanisms in these markets have been explored in economic literature (e.g. Parker & Van Alstyne, 2005), management scholars (Gawer, 2014) have latterly explored the multifaceted dynamics of platforms and related opportunities (Jacobides et al., 2024). Platforms are examined from various perspectives in these streams, but the consensus is that they are increasingly associated with digital innovations that have significantly transformed markets, industries and society (Trabucchi et al., 2021).

Gawer and Cusumano (2014) analysed a variety of industry examples, distinguishing between internal (company or product) and external (industry) platforms. For the purposes of this article, in our analysis, we will concentrate on industry platforms, which include technological building blocks that can be used by both platform leaders and complementors to develop new complementary goods and services (Trabucchi & Buganza, 2023).

In external platforms, authority and power do not depend on traditional hierarchical structures (Gulati et al., 2012) but arise from control over the technological architecture at the centre of the platform's ecosystem and relational centrality among a number of players (Kretschmer et al., 2020). A significant stream of literature looks at how actors organize themselves around a platform (Jacobides et al., 2018). The broad literature on ecosystems shows that there is usually a "keystone firm" (Iansiti & Levien, 2004) or a "lead firm" (Williamson & De Meyer, 2012), which sets the system's goals and defines the ecosystem's governance and rules (Jacobides et al., 2024). In platform literature, this firm is usually described as the "platform leader". Platform leaders are organizations that can influence the trajectory of the entire technological and business system in which the platform is a core element (Gawer & Cusumano, 2014). A platform leader can capture a significant part of the value created through a platform and can monitor, control and utilize ecosystem resources without owning them (Cusumano et al., 2019).

Platform leaders establish the rules of interaction for their various users (be they individuals or organizations), decide which behaviour to encourage or discourage on the platform and choose how to enforce these rules. As such, they design the business environment and exercise significant control over the members of their platform ecosystem (Gawer, 2021).

One strand of the literature implies that platform leaders with extensive control over their system will be tempted to "squeeze" the complementors' profits once the latter have delivered on innovation (Gastaldi et al., 2024). As a result, independent complementors may be reluctant to invest in innovation in the first place (Boudreau, 2010; Gawer, 2021). Moreover, platform leaders are also guilty of abusing their role as intermediaries to entrench themselves deeper and expand their dominance, leading to the bulk of economic and social operations being concentrated in the hands of a small number of powerful companies (Gawer, 2021). In answer to these concerns, various authors are investigating how to mitigate the issues arising from imbalances in power between platform leaders and other stakeholders (e.g. Cohen, 2019; van Dijck et al., 2018; Srnicek, 2017; Zuboff, 2017).

2.2 | Blockchain platforms

Platforms have traditionally facilitated the interactions (and transactions) within a business ecosystem (Cusumano et al., 2019). However, they tend to position the platform leader in a strong and dominating position (Chen et al., 2021). When platforms are overly centralized, their leaders can have too much influence over the ecosystem's actors and their activity, potentially leading to unintended system-wide problems (Cheibub et al., 2010). Even so, the recent emergence of blockchain technology promises a more decentralized platform control, reducing power imbalances in its governance.

Blockchain is defined as "a set of distributed ledger technologies secured by cryptography, and governed by a consensus mechanism" (Beck et al., 2017); these technologies can also include programmes

known as "smart contracts" that run without the risk of downtime, censorship or fraud (Buterin, 2014).

Initially introduced by Nakamoto (2008) as the underlying technology of Bitcoin, blockchain has since evolved, with applications extending well beyond cryptocurrencies (Catalini & Gans, 2016; Zamani & Giaglis, 2018). Blockchain can play a significant role in decentralizing decision rights within a platform, as this is governed by rules established and enforced collectively, with the potential end result of a more democratic allocation of power (Chen et al., 2021; Chen & Bellavitis, 2020; Lumineau et al., 2021). More specifically, blockchain shifts the boundary between hierarchical organizations and spontaneously ordered, self-organizing economies where decision-making is distributed among the network's nodes rather than concentrating at its centre (Aste et al., 2017; Diallo et al., 2018). Blockchain platforms can, thus, implement decentralized governance and a distributed data infrastructure with the capacity to disintermediate transactions (Pereira et al., 2019), thereby reducing the problems inherent to centralized platforms, such as lack of transparency, coercion, censorship and excessive market power (Atzori, 2015; Catalini & Gans, 2016).

There has been a recent rise in blockchain platforms, marked by a shift from traditional leadership-driven models to those shaped predominantly by community involvement (Chen et al., 2020). Consortia of companies increasingly use blockchain to create platforms underpinned by technology providing a decentralized, immutable record of information that can also be used to develop decentralized applications. This trend has gained traction among enterprises seeking to harness the full potential of blockchain technology and derive tangible value for their business (Zavolokina et al., 2020).

However, despite the attention garnered by the topic and the significant challenges cropping up during the creation of digital platforms, from the launching phase to designing the value proposition (Trabucchi & Buganza, 2020), there is still no clear analysis of how blockchain platforms are created (Klarin, 2020; Pereira et al., 2019; Schmeiss et al., 2019; Schneider et al., 2020).

In reality, this gap in literature extends even further, as the entire body of literature on platforms tends to overlook both the launch phase and the preliminary phases necessary to attain critical mass on the various sides (Hsieh & Vergne, 2022), although these are the phases that present the most serious threats to the platforms' survival (Alstyne et al., 2016; Yoffie et al., 2019).

Furthermore, the combination of no intermediaries and no single leader in blockchain platforms can also introduce new types of inefficiencies and governance challenges that extend beyond what is observed in other kinds of platforms (Catalini & Gans, 2016; Schmeiss et al., 2019; Thomas et al., 2021). Whilst blockchain is usually hailed for its ability to transform digital services by removing the need for intermediaries, it is more likely to change the essence of intermediation by reducing the intermediaries' market power (Hawlitschek et al., 2018). Distributing governance power too widely can reduce the likelihood of collective action and the speed of decision-making (Boudreau, 2010; Hardin, 1968; Olson, 1974). Given these considerations, some authors argue that a moderate level of decentralization is more likely to achieve incentive compatibility, improve informational efficiency, and help secure the desired governance outcomes (Chen et al., 2020).

The contributions in the literature on potential blockchain decentralization do not remove the uncertainty of how the dominant position of the platform leader can be replaced during the platform creation process. There is a lack of understanding about how participants can reach the level of agreement necessary to implement a blockchain infrastructure (Hsieh & Vergne, 2022) and how the blockchain platform interacts with the applications built on top of it (Chen et al., 2021). The purpose of this work is, thus, to understand the practices that come into play when developing a blockchain platform and the corresponding implications of not having a platform leader.

3 | METHODOLOGY

In line with the novel nature of blockchain platforms and with the research question, we adopted a case study methodology. Because of our still limited understanding of the topic under investigation, it is crucial to i) disentangle the phenomena (i.e. the processes required to create blockchain platforms) "within [their] real-life context" (Yin, 2013) and ii) gather data from the people involved in these processes (Eisenhardt & Graebner, 2007).

Our study followed a three-step approach, employing an abductive reasoning process. We initially selected a suitable case study to investigate the different elements in a blockchain platform and its creation. Then, we gathered empirical evidence, interpreting it in the light of existing theories in the fields of platforms, blockchain and blockchain platforms. Lastly, we analysed the data in order to build our theoretical contribution from the empirical evidence, testing its novelty against current literature. This abductive approach facilitated the dynamic interplay between theory and data, enabling us to develop insightful theoretical work.

3.1 | Case selection

Given the limited number of blockchain platforms that have achieved critical scale, it was necessary to employ an exploratory research approach. Our study explores this emerging topic through a single case study, guided by established methodologies for exploratory research (Eisenhardt & Graebner, 2007).

The case we selected for our analysis was ABILabChain, a blockchain platform that emerged in the Italian banking sector. The platform was created by building on the Spunta Banca project, the first use case of streamlining interbank reconciliation. Interbank reconciliation means checking that the banks at either end of a transaction are in complete agreement; these can be, for instance, transactions between one bank's clients and the clients of another bank. This method enables the management of pending transactions and the reconciliation of flows and transactions that create entries in reciprocal bank accounts in Italy. The infrastructure for Spunta Banca was thus

instrumental to ABILabChain, the outcome being an industry platform built on a private, permissioned blockchain capable of also hosting additional use cases.

ABILabChain was selected for several reasons. First, it is one of a few blockchain platforms where control is genuinely shared among the participants rather than being centralized under one platform leader. Second, a number of secondary sources (market reports, blog posts, professional analysis, etc.) indicate that ABILabChain is among a handful of projects of this kind that have reached operational maturity, generating attention and discussion both nationally (Blockchain & Web3 Observatory, 2021) and internationally (Cucari et al., 2022; Hughes et al., 2019). The case is of particular interest in part due to the involvement of numerous banks and other organizations which established a consortium, and in part because the platform is widely adopted throughout the Italian banking sector. The consortium includes ABI Lab, SIA, which provided the network infrastructure, NTT DATA, which handled the technical elements, and R3, which supplied the permissioned distributed application platform Corda. These four key players took part in the development and testing phases, together with 18 Italian banks/banking groups. The work was coordinated by ABI Lab, with the involvement of more than 150 representatives from the pilot banks and an 80 + person development team (Stasi & Attanasio, 2021). Both projects, Spunta Banca and ABILabChain, are now live, with the relative ecosystem encompassing 91% of Italian banks in terms of employees. The initiative produced one of the largest blockchain platforms worldwide.

TABLE 2 List of respondents.

Stakeholder	Position	Respondent
ABI lab	Italian banking association innovation lab	• Managing director
ABI	Italian banking association	• Head of innovation
NTT data	Technology provider and system integrator	• Head of the Blockchain service line
SIA	Blockchain provider (SIA chain)	• Head of connectivity services • Product manager
Bank 1	Founding member	• Innovation Manager & Head of Blockchain
Bank 2	Founding member	• Senior demand manager – Innovation, payment & global transaction banking
Bank 3	Founding member	• Head of process innovation
Bank 4[2]	Founding member	• Head of Fintech ecosystem management and monitoring • Senior innovation manager
Bank 5[2]	Founding member	• Project manager • Head of the payments Core engine area

[2]The interview in this bank was conducted in an unstructured format and so not included in the results.

3.2 | Data collection

We collected our data from multiple sources of evidence, gathering primary data mainly through seven semi-structured interviews. We also used secondary sources to prepare for the interviews and gather further information. We interviewed representatives from ABI, ABI Lab, NTT Data, SIA and from five Italian banks involved from the beginning of the project (Table 2). As we did not conduct structured interviews with representatives from two of the banks, they were not included in the coding output. Nevertheless, these banks still played a significant part in the study. They confirmed the findings and contributed additional documents, thereby improving our overall understanding of the results. To ensure the reliability and completeness of the collected data, we selected the interviewees according to their direct involvement in and detailed knowledge of the ABILabChain project. The respondents came from various consortium organizations and held a selection of positions, including project managers, technical experts and bank representatives. Our aim was to encompass a range of different perspectives and provide an exhaustive and impartial overview of the project.

The interviews started with a set of predefined questions designed to guide the discussion and a semi-structured protocol that evolved during the interviewing process (Flick, 2009). The questions and protocol originated from our initial review of the literature on platforms, blockchain and blockchain platforms. The paper by Gawer and Cusumano (2014) proved particularly helpful in that it proposed a comprehensive framework for organizing our findings (see Table 1).

Given the exploratory nature of the study, we gave our informants room to go beyond the predefined questions. The questions with a focus on the "narrative" were prepared partially in response to Flick's (2009) suggestion to highlight how the interviewee process developed over time and its support to theory building. A set of open questions was created for each theme. Based on the preliminary research, each question was supplemented by probing questions based on time constraints and elements missing from the interviewee's narration. After asking the open questions, we then tabled a series of previously drafted closed questions.

Each interview lasted at least one hour, was conducted through online tools (Microsoft Teams), and then recorded and transcribed verbatim. The first author cross-checked the data and outlined a set of initial interpretations (Bourgeois & Eisenhardt, 1988). The second author critically reviewed and validated these observations. By following this procedure before the coding, it was possible to retain a high-level perspective (Eisenhardt & Graebner, 2007).

Potential information bias was addressed in several ways. First, we ensured confidentiality for all informants (Eisenhardt, 1989). Second, we considered informants with different perspectives and roles (Ozcan & Eisenhardt, 2009). Lastly, the interviews were complemented by archival and observational data (Bingham & Eisenhardt, 2011).

Secondary data were gathered from three main sources. First, we had access to the project's internal documents describing the

technical architecture and the platform's governance structure. This gave us insights into the positions and business networks making up the platform ecosystem. Second, the various actors provided us with many of the project's outputs, including (i) feasibility tests conducted from May 2018 to November 2019, (ii) technical assessments, (iii) documents used to present and visualize the preliminary results and (iv) minutes of the meetings held by the banks developing the platform. Third, as part of their work in an applied research centre focusing on blockchain and Web3, the authors set up four meetings with managers engaged in the ABILabChain project, attended also by representatives from other companies involved in similar blockchain projects. These meetings served as fora for in-depth discussions on various projects, providing us with the opportunity to observe perspectives from a range of professionals and gain unique insights into the Spunta project and, more generally, ABILabChain.

3.3 | Data analysis

To advance current academic knowledge on the so far under-debated issue of developing a blockchain platform, we recognize the importance of not approaching "the world with a blank slate" (Maragno et al., 2023; van de Ven et al., 2015). Therefore, we employed abductive reasoning as our mode of inquiry (Timmermans & Tavory, 2012). Abductive reasoning is particularly suited to explaining uncertain, dynamic and interconnected situations and events (Sætre & van de Ven, 2021). We leveraged on the "effective platform leadership practices" in the framework proposed by Gawer and Cusumano (2014), as the foundation for our investigation, reviewing the empirical data on the phenomenon under study (Timmermans & Tavory, 2012) to highlight the factors associated with implementing a blockchain platform.

The interviews were recorded, transcribed verbatim and analysed to align them to the exploratory nature of the study. The text was coded using in vivo codes, and a coding tree was constructed by each author independently. During the coding process, we labelled the essential elements and data. Then, we grouped homogeneous codes into categories, to build the different variables that emerged. The authors drew on five one-hour meetings to compare their independent codes and agree about the most promising. As suggested by Gioia et al. (2013), we revised the analysis until we reached a consensus and then defined the aggregate dimensions. While defining the abstract concepts contributed to the theory, the extant literature on platforms played a crucial role in informing both our interviewing protocol and the interpretation of our findings. Figure 1 gives a simplified overview of the coding process for the various propositions generated. A more detailed overview is shown in the Appendix (see Tables A1, A2 and A3).

Throughout the data analysis process, data from various sources were triangulated, increasing the reliability and validity of the research (Chen et al., 2008; Dzwigol, 2020). We applied an iterative process, moving back and forth between our findings, secondary data, direct observation, notes and previous theories on blockchain, platforms and blockchain platforms. Triangulating all the different

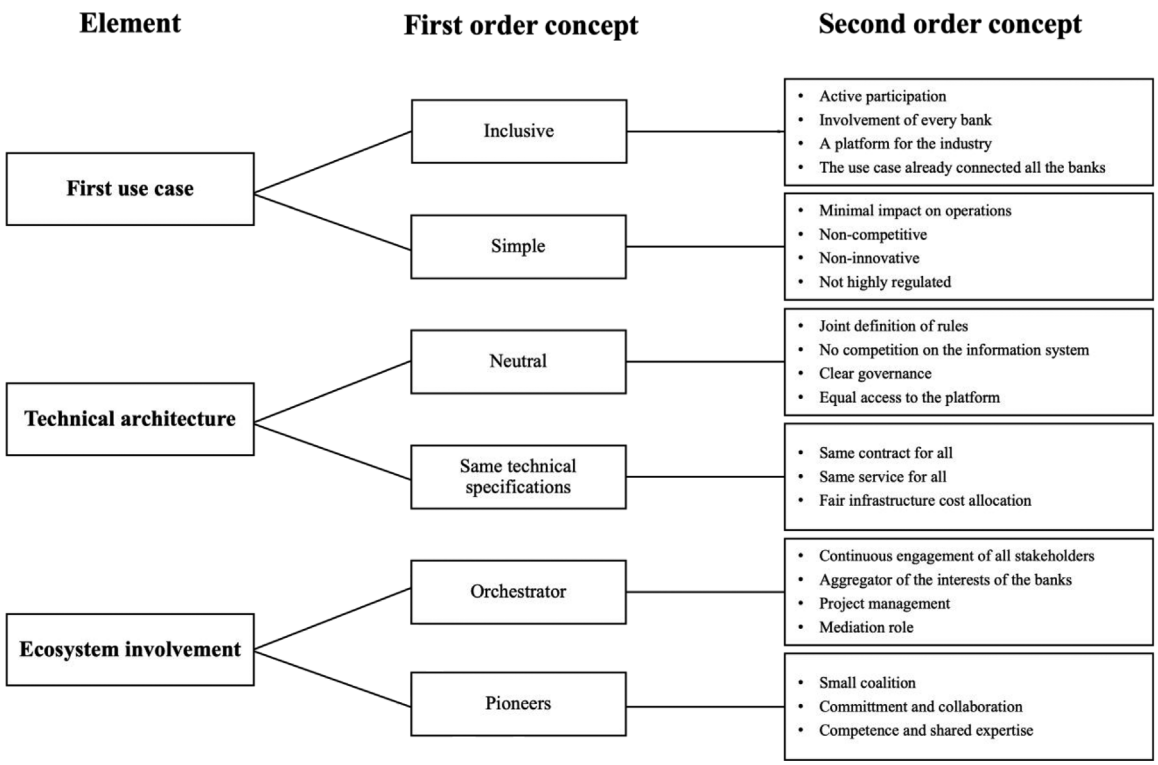

FIGURE 1 Coding process.

pieces of information produced a more complete description of the topic and enabled us to generate a robust yet parsimonious theory in the form of a set of propositions and a comprehensive framework drawing them together (Eisenhardt, 1989; Eisenhardt & Graebner, 2007). The authors further reviewed the consistency of the concepts, propositions and overall model through three sessions of consensus-based decision-making (Sen et al., 2012), consolidating and agreeing on the final results through theoretical saturation (Yin, 2013).

Lastly, we organised two follow-up meetings in January and February 2023 with ABI and other actors involved in the project to discuss and validate our results. Additionally, we sent a draft of our study to ABI and ABI Lab for further validation of the results and approval to publish its content.

4 | RESULTS

Leveraging on previous literature covering industry platforms, our aim was to investigate which practices come into play when creating a blockchain platform without a platform leader. Hence, we structured the results so as to reproduce some of the "effective platform leadership practices" presented by Gawer and Cusumano (2014), while seeking to understand how to apply these practices to the particular case under analysis in this paper.

As this study focuses on the earliest stages of the platform's life and not its subsequent evolution, we have concentrated only on the first three practices set out in Table 1.

4.1 | First use case

ABI Lab started its research on blockchain technology in 2017, analysing the properties, potential applications and use cases that could benefit its members. Subsequently, in view of gaining greater insight into the technology, the research transitioned into a more experimental phase.

The project that finally emerged from ABI Lab's research was to create an industry platform (Gawer & Cusumano, 2014) based on blockchain. This platform was intended to be used by Italian banks as a means to create innovative business solutions and increase dialogue and interconnection among all the participants in the ecosystem (Cucari et al., 2022; Stasi & Attanasio, 2021). Given the pre-competitive nature of ABI and its role in representing the entire banking industry, the platform had to be used potentially by every bank and not be developed exclusively for a select few. Every bank was expected to join the platform as a node, be able to propose use cases and benefit from the blockchain advantages.

To initiate the platform's development, it was necessary to select a first use case (Zavolokina et al., 2020). ABI Lab chose not to follow in the footsteps of other blockchain platforms with a core business process (Jensen et al., 2019) but opted instead for the simple back-office interbank reconciliation process (Spunta).

Interbank reconciliation in Italy is associated with back-office operations to reconcile transaction flows generating accounting entries in reciprocal accounts. Before the project, reconciliation was based on bilateral registers, typically with little standardization and even less sophisticated operating processes. As several bank representatives we interviewed explained, ABI Lab did not choose the Spunta process for its potential economic benefits, as these were deemed of little relevance:

> *"There was a discussion about the processes we could use to test our platform, and ABI Lab's idea, a good one as it turned out, was to use a fairly simple process. […] the process had no effect on aspects of competitiveness as otherwise the banks would have taken a less open stance."*
>
> (representative of Bank 3)

> *"If we had had to evaluate the economics behind the project in the cold light of day or if the bank's business side had been too present, there may have been barriers or reluctance to proceed with the project. This eventuality influenced the choice of process to start from, because choosing an especially new and innovative process could have been an obstacle. In my opinion, had we had taken that path, we wouldn't have achieved our goals."*
>
> (representative of Bank 2)

> *"This idea of Spunta was brilliant because it's not a critical process, it's an old process and so simple, not an awkward muddle."*
>
> (representative of Bank 1)

Furthermore, interbank reconciliation is not a highly regulated process, and the operational rules governing it were defined directly by ABI itself. This prevented the project from being thwarted by rules and regulations, as noted by a representative of NTT Data:

> "If we had started with payments or cheques, we would have been forced to involve the regulators and the Bank of Italy. What would that have meant? Thousands of meetings to align the processes, ensuring compliance, adherence to anti-money laundering rules… The project would have stalled even before starting."

Moreover, Spunta is a process that affects all banks, as they were already obliged to manage interbank reconciliation under Italian law. As noted by a representative of SIA:

> "This initiative was broad in scope because it had to involve the entire banking sector. […] it had to include a hundred or so banking operators, and all of them acting as a dedicated node on the blockchain network."

Considering the simplicity of the process, and its low impact on business, soft regulation and inclusiveness, interbank reconciliation was considered the best process to start from. Improving the Spunta process, therefore, was no longer the primary goal of the project but the means to begin building the platform:

> *"We have always known that Spunta is not going to change business history, but their foresight is one of the reasons banks have always been on board and why 100 banks are now operating live. The banks know that this is only the first tract of a railway and the rest will be progressively built."*
>
> (representative of NTT Data).

> *"Right from the start, I thought it was a sort of Trojan horse… Actually, it's not Spunta we find interesting, but that we've put 99 banks together, and got them talking and aligning themselves, even the tiny niche ones."*
>
> (representative of Bank 1).

The starting point for developing the platform was to select the first use case, which was therefore extremely crucial to its success. In summary, these results led us to formulate the first practice:

> **Proposition 1.** *The creation of a blockchain platform should start by identifying a simple, easy-to-implement element with platform potential already shared by the entire ecosystem in question.*

4.2 | Technical architecture

Defining the technical architecture went hand-in-hand with establishing the project's objective. One possible solution to streamline the interbank reconciliation process could have been to create a central entity in charge of handling the transactions between different banks. However, given the end goal of creating a pre-competitive blockchain platform that could support other use cases, the choice of architecture leaned towards a decentralized structure:

> *"Why didn't we choose a different technological solution? Well, we would have gone back to the centralized model where everyone's data is basically in one place. And that is exactly what we didn't want. Instead, we preferred a shared approach, where the rules of engagement in the competing banks are defined jointly."*
>
> (representative of ABI Lab)

> *"We certainly don't compete on core information systems, where we do compete is on selling banking products to customers. We compete at the front-end. This is where we can make a difference, on products, customer care, etc. For the core part, the more common rules we find and simplify, the better."*
>
> (representative of Bank 1)

Selecting a decentralized architecture (Pereira et al., 2019), such as one underpinned by blockchain technology, has the benefits of lower coordination costs (Lumineau et al., 2021) and platform neutrality (Vergne, 2020). The flip side is that platform participants must adhere to the same rules. As stated by ABI Lab:

> "The decentralized model means we all follow the same rules, we all use the same application in the same way. […] The rules are all the same, the solution is the same for everyone, the configuration – apart from minor variations – is the same for everyone."

From a technological standpoint, these rules are expressed through specifications common to all parties that need to act as a blockchain node and, from a legal standpoint, result in identical agreements to be signed by everyone. As noted by a representative of SIA:

> "The value of what we were proposing was to operate under level playing field rules, so the service was the same for everyone, running on the same type of infrastructure, the same version of the application, the same version of the blockchain protocol. […] the conditions were the same for everyone, everybody could join Spunta and no one be left out."

ABI Lab convinced all 18 founding banks to sign the same onboarding contract. While it asked members to express their preferences in terms of policies and contractual terms, ABI Lab also worked hard to draw up a compromise contract that all the banks could agree about and respect. As spelled out by the representative of NTT Data:

> "They [ABI Lab] got all the banks to sign the same contract. I don't know if you have ever signed an NDA with a bank or company. They always change something, even just a comma because every bank or company come up with something: 'By the way, in my template it says this', and another then says 'and in mine, it says that' and so forth. And it went on and on until we came up with an identical contract that all the banks were happy to sign. It was a massive job… think about it, if each bank had asked for something different, it would have been mayhem."

Because all member banks have the same agreement, it reinforces the idea that they have equal voting and bargaining power (Atzori, 2015). Non-founder banks were subsequently given the same

contract when they came on board. As described by the representative of ABI Lab, neutrality proved to be the clincher for all the banks joining after the initial 18:

> "All the banks signed an identical agreement. We did not take the privacy policies of one bank, the specific requirements of another, etc. It was clear that everyone was buying the same thing, not an installation where there could be some differences, but exactly the same thing. If we share the ledger, it means that the rules governing my and your use of that ledger must also be exactly the same."

With centralized platforms, the platform leaders designing them should make it easy for other actors to connect to them (Gawer & Cusumano, 2014). In the ABILabChain project, not only are banks required to connect to the platform, they must also participate in its leadership and control, all acting under the same conditions.

Hence, given that blockchain platforms are by definition decentralized, the underlying architecture shifts from enabling easy platform connection to ensuring its neutrality. The architecture of the platform should be developed with the primary goal of reflecting and enforcing this neutrality, thus avoiding any potential competition. Sharing intellectual property is a necessary but not sufficient condition. From the outset, the platform must be open to all the actors in the ecosystem, implying that everyone must sign up to the same contractual and technical conditions, even those joining subsequently. Blockchain technology enables these conditions. Thus, we have formulated the second practice as:

> **Proposition 2.** *The creation of a blockchain platform requires the underlying technical architecture to be neutral and decentralized, capable of enforcing the same set of rules for all participating actors.*

4.3 | Ecosystem involvement

Having established that a blockchain platform should be constructed in such a way that all participants abide by the same contractual terms and technical configurations, it is essential to understand how to define these aspects in a way that involves the entire ecosystem.

After assessing the feasibility of the project, the first step was to find a technology provider to help create the platform. ABI Lab appointed a committee for this purpose, with one representative from each of the 18 founding banks. While this step extended the timeframe, it reiterated ABI Lab's "super-partes" role and that Spunta is in essence an ecosystem-based project. Since the start of the ABILabChain project, ABI Lab did not act as a single decision-maker but more like an aggregator of the interests of the banks involved:

> *"I still remember. We were in an underpass in the suburbs of Milan when [name omitted for privacy reasons] said: 'We have to build a proper call for tenders'. I panicked: 'How on earth can we? We'll lose at least two months! You must be joking, we'll have to get our skates on!'. In hindsight, the fact that we took such a critical step in our stride was really a great strength and, in my opinion, the correct decision."*
>
> (representative of ABI Lab).

After selecting the technology provider, the project team moved on to a more explicit operational phase. The team had to define the platform's technical requirements, taking into account the needs of all 18 banks. ABI Lab asked the banks to draw up their desired user experience, and the use case started to be developed (Cucari et al., 2022). In December 2017, ABI Lab and NTT Data interviewed the 18 banks to collect their prerequisites and understand how they would implement the new solution. The following emerged:

> *"The initiative was ABI Lab's. We've had three or four meetings at their offices, and we laid out all our operational processes, as well as vital aspects for us that we felt had to be included in the new application."*
>
> (representative of Bank 3).

> *"We toured Italy. We got to know all the Italian bank offices… So, we first held meetings with them, found out what they wanted, and designed the solution, with a thousand meetings in between …"*
>
> (representative of NTT Data).

This phase of the project was necessary to design the solution and ease the incumbents' integration process as far as possible. ABI Lab's role as a pre-competitive player was key to bringing out and recording the banks' every need:

> *"We worked to Socrates' maieutic method, getting the banks to tell us everything they wanted, and more, they even told us what stuff was a pain in the neck before… We took so many decisions after talking to the banks one by one, saying 'Tell me the truth: what can't you stomach? What doesn't convince you? Let's try to understand and manage it'."*
>
> (representative of ABI Lab)

> *"We made sure all the special aspects we came across were highlighted. ABI Lab was very good at taking our indications on board."*
>
> (representative of Bank 3).

As previously mentioned, the project was much more than about adopting a common technical infrastructure, the blockchain platform had to reflect the needs expressed (or felt) by all banks, it had to be developed from the ground up so that the same rules would apply to everyone. This introduced numerous problems over and above

software and hardware integration. Consequently, although the 18 banks were already clients of NTT Data, ABI continued to play a crucial role in project management and in communicating with the banks. As observed by the representative of Bank 3:

> "At that time, if there hadn't been this guide-after all it played double duty by giving official value to the project and being the body in charge of steering the project itself-at that time, if it hadn't been there, in my opinion we wouldn't have succeeded."

ABI Lab's one-to-one bank meetings were basically to understand the unique requirements of each bank. Subsequently, to set up a successful shared infrastructure, all banks needed to reach a consensus on the identical technical components. Therefore, following these meetings, the conclusive aspects of the infrastructure had to be collectively deliberated and mutually agreed upon. Many elements that currently define the Spunta application and are used with ABILab-Chain were decided and designed collaboratively during this phase:

> *"We met all the banks to find out what they wanted. We collected everything, condensed, interpreted, informed, and then went to the monthly meeting with our proposals. And we said, 'You asked for A, we have two proposals. Is it to be proposal 1 or 2? You also asked for B. Here, is it proposal 1 or 2?'. And then we sat back and let the banks vote …"*
>
> (representative of NTT Data).

> *"When we started to get into the application details, we came to what was then a rather peculiar thing… we voted for individual features using scoring paddles! It was, I have to say, an eye-opener."*
>
> (representative of Bank 2)

In this phase, it was essential that all the banks took part in the proceedings. One representative at least from each bank was expected to attend each meeting to put forward the bank's interests. ABI Lab played a pivotal role in ensuring that all stakeholders remained engaged during the meetings. In the words of the representative of NTT Data:

> "They took a roll call at the beginning of each meeting to check who was there and who wasn't, and they phoned all those absent to ask: 'Why aren't you here?'. They tried so hard that we ended up going to lots and lots of meetings."

Collective meetings once again reaffirmed the centrality of ABI Lab. Moreover, in the discussions, there was the need for an independent third party to mediate the different viewpoints. The collective deliberations brought to the surface issues that could not have been addressed effectively without ABI Lab's expertise and influence:

> *"I must say, ABI and ABI Lab played truly central parts. There was the very clear need for someone to mediate, and who also had the right technical knowledge … especially at the initial stages."*
>
> (representative of Bank 2)

One of the main issues was to define the legal agreements regulating the banks' participation. Of the various discussions, the legal debates presented most problems:

> *"Virtually every bank taking part in the project brought its own lawyers, as well as us, most specializing in innovation matters. […] The greatest difficulty was listening to the legal people talk to each other in a completely different language to ours, while they were also extremely meticulous and even devious in placing emphasis on aspects that, later, proved to be important."*
>
> (representative of Bank 2)

> *"The main problem? Legal offices … A real shocker! I still remember all the friction fizzling in those rooms overflowing with 30 or more lawyers!"*
>
> (representative of Bank 1)

> *"The legal part was literally crazy stuff. All these lawyers arguing about clauses, features and whatnot. I mean … it turned my hair white!"*
>
> (representative of Bank 3)

In the end, the legal table reached a successful conclusion. All the banks agreed on the same rules and the project moved forward towards the implementation phase. Once again, ABI Lab's pivotal role emerged:

> *"There were times when it took exceptional negotiating skills and, ABI Lab played a really key role."*
>
> (representative of Bank 2)

> *"The big problems were relational, institutional [not technical] […] it meant lots of precautions and stepping carefully and threading needles when managing relationships. This is project management… in the end, it's called project management."*
>
> (representative of Bank 1)

The interviews revealed two key elements for effective collective decision-making. First, the need for a third party with an excellent reputation in the eyes of the coalition, recognized by all as a "super-partes" actor. Second, that, for the coalition to engage effectively in making decisions about the blockchain platform, it (the coalition) should be small and not involve all stakeholders from the start. The case meant we realized that initial centralization was necessary, both because of the small number of actors involved in the early stages and

for ABI Lab's essential role as coordinator. However, the initial centralization condition must be geared towards progressive decentralization and to gradually engage the entire ecosystem. Thus, the third practice is:

> **Proposition 3.** *The creation of a blockchain platform requires an independent platform orchestrator which can actively involve an initial group of committed and competent "pioneers" that, in turn, act on behalf of the entire ecosystem of actors.*

5 | DISCUSSION

In this work, we have analysed the practices that are effective for creating a blockchain platform, highlighting the distinctions between this process and that of developing an industry platform with a designated platform leader (Gawer & Cusumano, 2014). The blockchain platform practices are summarized in Table 3.

The results show that the three key practices identified by Gawer and Cusumano (2014) are to a certain extent also relevant to the design and launch of a blockchain platform. Developing the discussion on these practices even further, we argue that, in the case of the creation of a blockchain platform, these practices are closely interconnected, as shown in Figure 2. Each of the three key practices must be present for a blockchain platform to be created satisfactorily. If any of these three practices is missing, it could jeopardize the success of the platform and prevent its industry-wide adoption. In the following sections, we will delve deeper into each of the practices, discussing the reasons why each is necessary.

5.1 | First use case

According to Gawer and Cusumano (2014), a platform leader must first identify a product, technology or service that can become an essential part of a larger business ecosystem and be easy to access by others. Shi et al. (2021) expanded on this, defining the "core component" of the product, technology or service as an innovation asset to be shared among complementors in order to develop useful complements for customers, while also defining the interface through which these complements connect to the core component.

The ABILabChain case confirmed that the features of the first use case are important, even for a blockchain platform. Therefore, the first effective practice centres on the key features of the first use case, albeit with some differences compared to Gawer and Cusumano (2014). In a blockchain platform, the first use case must meet two requirements, simplicity and inclusivity.

While Gawer and Cusumano (2014) explored the notion of "essential function", for blockchain platforms, we recommend starting with a simple function rather than one which is essential.

While Spunta is a process shared by all banks, it does not necessarily qualify as an essential function or a core component on which

TABLE 3 Effective practices to create a blockchain platform.

Element	Proposition	Details
First use case	The creation of a blockchain platform should start by identifying a simple, easy-to-implement element with platform potential that is already shared by the entire ecosystem in question.	a. Considering the inclusive purpose of the platform, the use case should refer to an activity that all the companies are already familiar with and can connect to. b. Choose a simple use case that can be implemented without impacting on everyday business operations and which by-passes regulatory obstacles that could slow down the platform's development.
Technical architecture	The creation of a blockchain platform requires the underlying technical architecture to be neutral and decentralized, capable of enforcing the same set of rules for all participating actors.	a. The technical infrastructure of the platform should be neutral and avoid any form of competition. b. All the participants must agree on the same set of rules and technical specifications.
Ecosystem involvement	The creation of a blockchain platform requires an independent platform orchestrator which can actively involve an initial group of committed and competent "pioneers" that, in turn, act on behalf of the entire ecosystem of actors.	a. An independent orchestrator is needed to manage the interaction between the participants. b. The ecosystem should develop from a small number of actors actively involved from the beginning in order to be scalable.

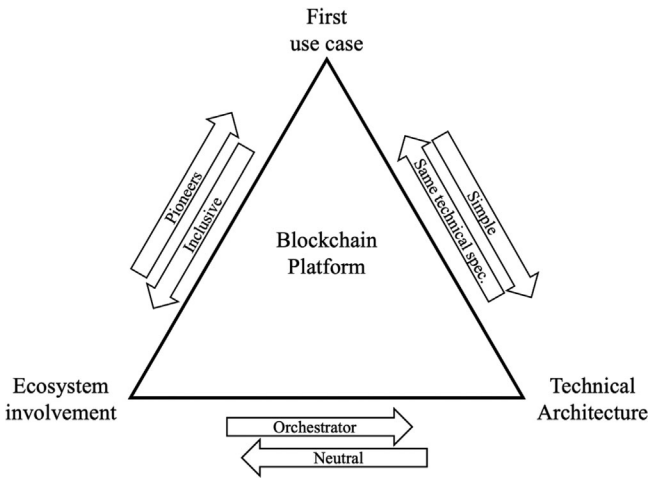

FIGURE 2 Triangle of elements and effective practices for creating a blockchain platform.

to build innovation. Other blockchain platform projects started with a use case that, unlike Spunta, is fundamental to the functioning of the business. A notable example is TradeLens, which intended to revolutionize global supply chains but met with slow adoption in the ecosystem (Jensen et al., 2019; Jovanovic et al., 2022). The platform's lack of simplicity made it more susceptible to regulatory and business delays during implementation. A project that impacts on everyday business could slow down the system migration (Zavolokina et al., 2020). Problems can also occur when there are no shared standards and they have to be created from scratch (Schmeiss et al., 2019).

The second requirement is inclusivity, which, if missing, could compromise the effective involvement of a wide range of actors. According to Gawer and Cusumano (2014), a platform leader must "identify or design an element with platform potential" and "identify third-party firms that could become complementors to your platform". In our case, we found instead that, when a platform is created through the joint effort of multiple actors (who are, at the same time, both customers and platform leaders), the "element with platform potential" must be something that already connects them. So it cannot be a new product or service developed by a third party or by the platform leader, but something already in being that concerns the whole ecosystem. Therefore, instead of beginning by identifying third-party firms that can complement the element with platform potential (Kretschmer et al., 2020), it is necessary to focus on engaging as widely as possible with companies in the ecosystem that already share a common business process.

There is the possibility that the use case selected only applies to part of the ecosystem. For example, the use case could cover the type of financial instruments only managed by larger entities. Implementing a use case associated with only a restricted group of banks may initially yield successful results. However, this approach may later prove detrimental to the platform's expansion and ability to be truly decentralized. Other actors not part of the initial group of "pioneers" may find it difficult to adopt the process and join the platform due to the necessary restructuring that would be required at their end. As a result, the platform could potentially be utilized by only a select few, ultimately reducing its value and the potential industry-wide benefits.

In ABILabChain, the stakeholders involved from the beginning (the orchestrator and the pioneers) already used the first use case (interbank reconciliation) and were familiar with its workings. More to the point, the banks that joined later were also using interbank reconciliation even before the blockchain platform was created.

The first use case selected must have features that qualify it for decentralized architecture, including ease of standardization, pre-competitiveness and minimal impact on business operations. The Spunta process demonstrated its compatibility when translated into a distributed and decentralized technical blockchain architecture, thereby serving as a useful tool to establish consensus among stakeholders.

5.2 | Technical architecture

In terms of technical architecture, Gawer and Cusumano (2014) underscored the importance of constructing an adequately open and modular architecture to promote third-party innovation. Our findings back up their ideas, complementing and expanding on them. Looking at the technical architecture of a blockchain platform, we uncovered the most significant features that make it possible to do away with the role of the platform leader and its power of control. From these findings, we formulated the second effective practice, which is to develop a technical architecture that incorporates the principles of neutrality and uniformity.

Gawer and Cusumano (2014) emphasized the importance of neutrality in an ecosystem, concentrating primarily on the platform leader's need to establish legitimacy within the complementors' ecosystem. However, in a blockchain platform, the concept of neutrality shifts from the leader to the platform itself. To ensure industry-wide participation in a pre-competitive manner, the architecture must inherently encapsulate neutrality from the outset. This intrinsic neutrality is a key quality when a platform is built on blockchain technology.

Another potential strategy for creating blockchain platforms entails designing a platform that accommodates the diverse power relations at play in the Italian banking sector among the participating banks, rather than implementing a uniform approach across all banks. A structure of this kind means that banks are potentially treated unequally based on their size, given that the two largest alone manage 30% of the assets in the Italian banking system. Banks could have customized technical specifications or special clauses in their contracts, thereby affecting the distribution of power within the platform.

The risks associated with drawing up different agreements and operating a non-neutral platform could be significant (Lumineau et al., 2021; Vergne, 2020). The inequalities between competing actors would not be acceptable and could compromise the subsequent expanding of participation to the entire ecosystem (Petersen, 2022; Schneider et al., 2020). These considerations emphasize the importance of a neutral platform that ensures equitable treatment of all participating banks. Spunta, and consequently ABILabChain, was conceived to create coopetition and synergy at the platform's core level (Cucari et al., 2022), leaving differentiation and competition to the front-end or distribution level.

One of the mechanisms that help to create a neutral platform is to establish uniformity. In the ABILabChain project, given the end goal of creating a pre-competitive industry platform that could support other use cases in addition to Spunta, the choice settled on decentralized architecture. Introducing such a collaborative framework from the earliest stages of platform development is essential when moving towards a wider ecosystem through the involvement of other players (Trabucchi et al., 2023).

Participants in a blockchain platform make agreements based on the codes and algorithms that define the system's rules and protocols. All the parties who join the blockchain platform acknowledge and accept the predefined rules in this system. Collaborating participants can see how the protocol establishes task responsibilities and ensures that they are completed in a predetermined order (Lumineau et al., 2021). Building on these bases, it is possible to achieve and maintain a platform's decentralization, moving part of the problem of

ensuring neutrality from the organizational to the technical level (Jensen et al., 2019). The technical architecture decreases the cost of verifying information and, as a result, the risk associated with transaction planning (Schmeiss et al., 2019).

5.3 | Ecosystem involvement

A topic commonly discussed in the literature on digital platforms is how to acquire participants, sometimes referred to as a chicken-and-egg problem (Drewel et al., 2021). For a centralized platform, a leader first builds the platform and then opens up the boundaries, enabling external players to tap into common ground for their innovation (Gawer & Cusumano, 2014; Trabucchi et al., 2021). In contrast, in a blockchain platform, we argue that there must be a coalition of actors before the platform is built, as they themselves are responsible for maintaining the platform itself. Furthermore, this coalition must be involved in every decision relating to the platform's evolution.

However, considering these assumptions, it is important to acknowledge that involving the entire ecosystem from the outset may not always be feasible. Although decentralization is often touted as the guiding principle of blockchain platforms (Walch, 2019), we assert that going too far with decentralization during the creation of the platform can be counterproductive and that progressive decentralization may instead be a better strategy. Creating a blockchain platform cannot be a totally decentralized process, at least at the very beginning. Hence, the third effective practice states that two types of actors must be present at the start, these being, as mentioned, a group of "pioneers" and an independent platform orchestrator.

Taking up this point, the success of a blockchain platform depends on a committed and competent group of "pioneers". Formally, the pioneers are the primary actors who take part in the platform's creation and development, are actively engaged in the platform's governance, decision-making processes and contribute to its growth. Their expertise and commitment are critical for laying the foundations of a scalable and sustainable ecosystem. The pioneers form a core group of actors expected to expand subsequently, as the platform grows and attracts more users and contributors.

As already highlighted, Italian banks are familiar with collaborative projects, which are typical of the banking and finance industry (Cucari et al., 2022). In initiatives like Spunta and ABILabChain, banks willingly cooperate to generate a shared platform, recognizing that it covers a common baseline where it is nonsensical to compete. These projects are an opportunity to build consortia and cooperative networks that can establish standards and build synergies for the benefit of the whole industry. Nevertheless, even with the banks' common interest and their regular use of collaborative projects, their collective will to collaborate was not a sufficient condition.

As suggested by Chen (2020), the presence of an "experienced leader" can help to structure the governance of a blockchain platform. ABI Lab's place as an experienced leader was crucial in ensuring that all the actors could together define the shared rules for building the platform. As the actor in charge of organizing the connections between different stakeholders, ABI Lab always claimed that it was willing to create a pre-competitive solution and would put in the necessary work for this principle to be embraced by all stakeholders. ABI Lab's place, in other words, was not to lead the process of building the platform, but to orchestrate collaboration between all the stakeholders and resolve the often strong disagreements that cropped up along the way. From the beginning, it left the decisional power to the platform participants. Hence, ABI Lab acted more like an "orchestrator" than a "leader", coordinating rather than centralizing the collective decision-making process.

6 | CONCLUSIONS

In this study, we analysed the successful creation of a blockchain platform. The process enabled us to define three effective practices that have to be factored in, namely, selecting the first use case carefully, building a neutral and uniform technical architecture and involving an orchestrator and committed pioneers. The scientific and management contributions are also covered below to highlight the limitations of our work and propose future research on the topic that may be interesting to explore.

6.1 | Scientific contributions

From a theoretical angle, this research offers three primary contributions. First, it adds to the literature on digital platforms and innovation with its inquiry into the initial phases of platform creation (Drewel et al., 2021; Schmidt et al., 2021; Trabucchi et al., 2023). Our study highlights the significance of understanding the early lifecycle stages, aligning our work with findings by Alstyne et al. (2016) and Yoffie et al. (2019). We show that these initial phases pose challenges to the successful development of blockchain platforms, and also identify key elements in these platforms that should be considered from the outset.

Second, our work contributes to the literature on platform ecosystems in that we examine the dynamics of interaction within a platform where power does not concentrate in a single entity (Kretschmer et al., 2020; Lumineau et al., 2021; Vergne, 2020). This study offers an innovative perspective on the role of the platform orchestrator, and how this role differs from that of the platform leader (Cusumano et al., 2019; Gawer, 2021). Our research recognizes the potential inefficiencies and challenges arising from the absence of a dominant platform leader and identifies the key practices that can mitigate these challenges, while still producing the benefits provided by blockchain technology (Catalini & Gans, 2016; Chen et al., 2021; Hawlitschek et al., 2018; Schmeiss et al., 2019).

Concluding with our third contribution, i.e., interconnection and coexistence between the three key practices are essential for leadership replacement, our work adds to the scholarly landscape, specifically to the literature on decentralization through the adoption of blockchain technology (Angelis & da Silva, 2019; Balasubramanian

et al., 2021; Hsieh & Vergne, 2022; Jovanovic et al., 2022). The three key practices identified are interdependent and essential to achieve platform decentralization and scalability.

The significance of our case study extends beyond this explicit instance and can potentially be generalized across various industries and contexts. While our investigation centred on one particular case, the principles and key practices identified are grounded in the fundamental aspects of platform dynamics and blockchain technology. A detailed understanding of early lifecycle stages, decentralized interactions and leadership replacement strategies can be applied to a range of situations and circumstances, providing a comprehensive framework for researchers and practitioners seeking insights into the broader landscape of digital platforms.

6.2 | Management contributions

From a practitioner's perspective, this study offers several contributions to managers and organizations intending to establish blockchain platforms. The study of these platforms is still in its infancy, and many organizations and managers find it hard to navigate the complexities of blockchain technologies. After describing the three effective practices identified, this study provides clear guidelines that managers and organizations can follow if they aspire to succeed in creating a blockchain platform.

The first management contribution underscores the importance of selecting the right use case for the initial application on which to build the blockchain platform. Organizations and managers should meticulously analyse the potential impact of the use case on everyday business and its relevance to the entire ecosystem. Instead of opting for innovative and high-value use cases, managers should select a use case that is simple and inclusive. A platform built on such a use case can be developed and implemented easily, avoiding regulatory and business delays, while a wide range of actors can be involved effectively.

The second management contribution relates to the technical architecture and its requirements. Managers and organizations should strive to achieve architecture neutrality, avoiding any pressure to favour one group of participants over another. The technical architecture must enforce the same set of rules for all participating actors. This second contribution additionally provides insights into how to involve key stakeholders and coordinate their activity.

The third management contribution provides guidelines on the stakeholders that are necessary to the project and how to involve them correctly. The first essential stakeholder is a platform orchestrator, while other stakeholders must necessarily be involved in the pre-implementation phase. Managers and organizations should build mechanisms for ongoing collaboration, conflict resolution and to accommodate feedback from the various participants. The orchestrator, as highlighted in our study, plays a pivotal part in facilitating this governance model, acting as a coordinator rather than a central authority.

Lastly, this study provides a practical and overarching contribution by showing that managers must focus on these three aspects simultaneously, and all three must be taken into account. The success of creating the platform lies in the developers' ability to manage these three practices concurrently.

6.3 | Limitations and directions for future research

This study has several limitations, which open avenues for further research. The main limitation relates to the generalisability of the achieved results, although it is consistent with the exploratory nature of our work. The study's focus on a single case of platform development in a specific context (here the Italian banking industry) could be hard to extend to other contexts. Further research could be conducted to fill this gap, and it would be useful to explore different blockchain platforms in other contexts. Additionally, it would be interesting to investigate how the technological configurations of blockchain platforms impact on these characteristics, especially when having to decide between permissioned or permissionless protocols.

CONFLICT OF INTEREST STATEMENT

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ENDNOTE

[1] ABI Lab is the research and development centre for Italian banks, sponsored by ABI (the Italian Banking Association).

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APPENDIX A.

TABLE A1 Coding process for the element "First use case".

First order concept	Second order concept	Code (in the interviewees' words)
Inclusive	Active participation	We've built everything through shared decisions. In ABI the rules of engagement for competing banks are defined collectively.
		Banks know that if you don't get involved immediately, someone else will have made the decisions for you.
		Everyone joined up because if they didn't voice their opinions and requirements, they would have no say later in matters imposed on them.
	Involvement of every bank	This initiative was broad in scope because it had to involve the entire banking sector.
		It is not Spunta we find interesting us, but that we've put 99 banks together, even the tiny niche ones.
		Every bank had to be in the same position in terms of being able to join the project, and no one should be left out.
	A platform for the industry	All the banks joined, and they all felt they were doing something for the industry, creating something for the future, not just for this project.
		Banks know that this is only the first tract of a railway and the rest will be progressively built.
		There may be other projects not governed by ABI that use ABILabChain. This would produce additional use cases.
		We are at the point where the entire Italian banking system is connected and operating on a blockchain. After this investment, Spunta certainly won't be the only use case.
	The use case already connected all the banks	A bank cannot excuse itself from conducting interbank reconciliation. For this specific use case, it's more important to urge participation by all than to exclude anyone.
		With the interbank agreement and the topology of relationships that already exist in interbank reconciliation, everyone should be on board.
		It's clear that the advantage of this use case is that we know from the start that almost every bank is involved.
Simple	Minimal impact on operations	If the bank's business side had been too present, there may have been barriers or reluctance to proceed with the project.
		The bank had to make very few changes to its systems, operations, and to its way of conducting interbank reconciliation.
		We needed a process with an extremely low impact, one that would allow us to go into production.
		We consulted the business side of the bank at the onset of the project and reassured them that they would not be involved directly.
	Non-competitive	Information systems are the best area for us to show we can work together, not the front end where we compete.
		The idea was to implement a fairly simple process that wouldn't impact on competitiveness, as otherwise the banks would have taken a less open stance.
		We don't compete in back-office systems, so there has always been collaboration.
	Non-innovative	The risk of venturing into something extremely new with a different type of business process could have actually been a hindrance.
		This idea of Spunta was brilliant because it's not a critical process, it's an old process and so simple, not an awkward muddle.
		Starting from an innovative solution could have been a hindrance.
	Not highly regulated	If we had started with payments or cheques, we would have been forced to involve the regulators and the Bank of Italy. The project would have stalled even before starting.
		The regulation governing it was from the late'70s with some adjustments in the early'90s… Quite outdated.
		Interbank reconciliation isn't heavily regulated, ABI is essentially setting the rules.

TABLE A2 Coding process for the element "technical architecture".

First order concept	Second order concept	Code (in the interviewees' words)
Neutral	Joint definition of rules	As mentioned, the approach involved gathering requirements, noting requests, proposing solutions, and conducting monthly meetings. Choices and proposals were discussed inside-out, and participants could vote on the decisions.
		The approach remains collaborative, and decisions, especially in the development phase, are made collectively by all participants involved in the development process.
		Then, it went to a vote, the banks could vote on every proposal we presented.
		We preferred an approach in which the rules of engagement are defined jointly.
	No competition on the information system	Banks, or at least some, increasingly recognize the need to compete commercially while also encouraging collaboration. Working together yields a more robust outcome economically, procedurally, and in matters of compliance. The joint effort leverages on a variety of contributions giving stronger results.
		Our cooperative focus lies in defining application services collaboratively, while competition arises in front-end development. The core area is where we excel in working together.
		There's a baseline of common elements; there's no differentiation or competition there.
	Clear governance	Governance management was a focal point, it evolved over time and brought about continuous improvement.
		The open configuration we adopted to structure the platform's governance means we can maximize our return on investment.
		While not a strictly defined process, there's interest in leveraging on the decentralized governance structure discussed earlier. Roles and responsibilities, tested in the field, are now formally documented in contracts.
	Equal access to the platform	Any business network eager to deploy an application can leverage on our nodes and infrastructure. It can independently govern the new application, benefiting from the synergies we've built.
		Ensuring equal access to the Spunta process was crucial; no participant should be excluded.
		The added value lies in orchestrating this model; envisioning a landscape where 100 clients have equal operational capabilities. Everyone should join Spunta, meaning that no one is left behind.
		The model is open and, contractually, it's set up so that numerous applications can coexist. If a group of banks wishes to access the platform and host a new application on ABILabChain, they can do so.
Same technical specification	Same contract for all	All the banks have signed identical agreements, excluding individual a policies or specific requirements. This uniformity has produced identical objects-shared ledgers-where the rules governing their use are precisely the same for all parties.
		ABI lab is rightfully proud that all banks signed the same contract.
		The agreement is identical for all banks, avoiding complications. It's a colossal task to achieve uniformity, preventing the potential bedlam of each bank requesting different terms.
		ABI lab convinced all the banks to sign the same contract. It's a huge, huge job… Think about it, if each bank had asked for something different, it would have been mayhem.
	Same service for all	Having said that, the rules, solution, and configuration – With minimal variations – Are all the same for everyone.
		NTT data needed to design a model that, along with the DLT's own technological infrastructure, could implement standardized application components for all users.
		The decentralized model means we all follow the same rules, we all use the same application in the same way. The rules are all the same, the solution is the same for everyone, the configuration – Apart from minor variations – Is the same for everyone.
		The value of what we were proposing was to operate under level playing field rules, so the service was the same for everyone, running on the same type of infrastructure, the same version of the application, the same version of the blockchain protocol.
	Fair cost allocation	The entire setup cost has been allocated among the banks following predefined criteria.
		The final aspect of governance was to establish an inclusive pricing model suitable for all stakeholders.
		We needed to define a pricing model satisfactory for all, addressing both the big banks and the regional banks.

TABLE A3 Coding process for the element "ecosystem involvement".

First order concept	Second order concept	Code (in the interviewees' words)
Orchestrator	Continuous engagement of all stakeholders	I still remember when [name omitted for privacy reasons] said: 'We have to build a proper call for tenders'. I panicked but in hindsight, the fact that we took such a critical step in our stride was really a great strength and, in my opinion, the correct decision.
		The initiative was ABI Lab's. We've had three or four meetings at their offices, and we laid out all our operational processes, as well as vital aspects for us that we felt had to be included in the new application.
		We toured Italy. We got to know all the Italian bank offices… So, we first held meetings with them, found out what they wanted, and designed the solution, with a thousand meetings in between …
		They took a roll call at the beginning of each meeting to check who was there and who wasn't, and they phoned all those absent to ask: 'Why aren't you here?'
	Aggregator of the interests of the banks	We worked to Socrates' maieutic method, getting the banks to tell us everything they wanted, and more, they even told us what stuff was a pain in the neck before… We took so many decisions after talking to the banks one by one, saying 'tell me the truth: what can't you stomach?
		We made sure all the special aspects we came across were highlighted. ABI lab was very good at taking our indications on board.
		We met all the banks to find out what they wanted. We collected everything, condensed, interpreted, informed, and then went to the monthly meeting with our proposals. And then we sat back and let the banks vote…
		When we started to get into application details, we came to what was then a rather peculiar thing… we voted for individual features using scoring paddles! It was, I have to say, an eye-opener.
	Project management	At the time, if there hadn't been this guide-after all it played double duty by giving official value to the project and being the body in charge of steering the project itself-in my opinion we wouldn't have succeeded
		The big problems were relational, institutional [not technical] … it meant lots of precautions and stepping carefully and threading needles when managing relationships. This is project management… in the end, it's called project management.
		Project management played a daunting role. It involved handling the technical elements and also establishing the governance layers, the contractual structures, and prioritizing consensus at the working table.
		In the end, it's called project management, and we were fortunate to have ABI lab, who demonstrated remarkable project management qualities, a combination of factors initially underestimated by all of us.
	Mediation role	I must say, ABI and ABI lab played truly central roles. There was the very clear need for someone to mediate, and who also had the right technical knowledge … especially at the initial stages.
		Every bank taking part in the project brought its own lawyers, as well as us. The greatest difficulty was listening to the legal people talk to each other in a completely different language to ours.
		The main problem? Legal offices … A real shocker! I still remember all the frictions fizzling in those rooms overflowing with 30 or more lawyers!"
		The legal part was literally crazy stuff. All these lawyers arguing about clauses, features and whatnot. I mean … it turned my hair white!
Pioneers	Small coalition	We handled project difficulties in a small team of close-knit individuals, defending each other to the hilt. This brought us to the current successful juncture.
		Starting the project with a small number of stakeholders meant a more controlled and focused development process.
		Expanding the network only after a first phase of testing and validation with a smaller group ensures that the technology is robust and ready for broader adoption.
	Commitment and collaboration	Everyone truly got on board, feeling they were contributing to the industry, creating something for the future, beyond just this project. They all recognized that this was the right governance model.
		The atmosphere of collaboration was exceptionally strong.
		A bit of magic happened, and we around the table connected well and supported each other-the alchemy may be hard to replicate but was immensely helpful in the project's intense phases.
		We handled project difficulties in a small team of close-knit individuals, defending each other to the hilt. This brought us to the current successful juncture.

TABLE A3 (Continued)

First order concept	Second order concept	Code (in the interviewees' words)
	Competence and shared expertise	Significant expertise in the subject matter, especially among the pilot banks, was a great help in defining the application requirements collaboratively.
		We also formed a committee of experts, with a representative from each bank.
		From the standpoint of involving the initial pilot banks, there was immediate affinity. The project participants from different banks were people who had known each other for years from working on these processes.
		Long-standing relationships, specifically in the management of bank reconciliation, played a crucial role in creating a sense of harmony.