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Bachelor ' s Degree in Business Administration

Course of Competitive Strategy

# The impact of blockchain on firms ' internationalization


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# CHAPTER ONE

## 1. Introduction

Blockchain technology has emerged as one of the biggest inventions of the 21st century, holding the potential to revolutionize the global economy. When Satoshi Nakamoto introduced Bitcoin in 2008, no one could predict how influential this technology would become. Started as a peer-to-peer network enabling electronic transactions without relying on trust, blockchain evolved into a foundational technology being implemented worldwide, including finance, healthcare, and supply chain management. Named “the latest disruptive innovation”, blockchain has captured the attention of scholars, entrepreneurs, policymakers, and developers. Its decentralized structure based on cryptographic security mechanisms provides blockchain with a potential to reconfigure contemporary business practices by promoting transparency, efficiency, and security.

Despite fast adoption of blockchain, its implications for business internationalization remain unexplored. The process of expansion in foreign countries is significantly influenced by a range of factors like regulatory barriers, transaction costs, and trust issues. Entering new markets is of particular difficulty for small and medium-sized enterprises that face structural challenges related to limited financial resources, high operational costs, and credibility concerns. Blockchain technology can substantially mitigate such problems.

This study analyzes how blockchain technology influences the internationalization process of enterprises, making a specific emphasis on SMEs. Specifically, it examines the effect of blockchain on the reduction of transaction costs, mitigation of liability of foreignness, emergence of new blockchain-driven business models and includes empirical insights from industry

practitioners. The research is based on a comprehensive literature review and interviews with firms that either develop blockchain solutions or have integrated blockchain into their operations. By combining the theoretical insights and practical applications, this study aims to provide a valuable contribution to the fields of international business strategy and emerging technologies.

### 1.2 A disruptive technology for business

The World Economic Forum expects 10% of global GDP to be tokenized and stored on the blockchain by 2027, suggesting its growing importance and integration into finance and economics. The 2024 Global Crypto Adoption Index, developed by Chainalysis, highlights that accelerating blockchain adoption is particularly evident in emerging economies such as India, Vietnam, and Nigeria, placing them among the top adopters globally. The main reasons for this trend include:

- Financial Inclusion. Financial services based on the blockchain provide unbanked populations with access to basic instruments like payments, investments, and lending.
- Remittances. Emerging markets have high remittance flows where lower transaction costs and shorter processing times attributed to blockchain have a strong impact.
- Inflation hedge. In high-inflation regions, stablecoins and cryptocurrencies are a special type of remedy against unstable fiat currencies.

India's leading position in crypto adoption, despite strict regulations and taxation policies, represents the increasing demand for decentralized financial solutions. While in emerging markets blockchain adoption is mainly driven by the need to find a more efficient alternative financial system, in developed markets blockchain is demanded by institutional investors, regulatory and corporate initiatives, while the integration is usually made into existing infrastructures with some eventual modifications further enhancing their security and efficiency. In terms of transaction

volumes, the United States is the absolute leader, utilizing blockchain solutions in banking, asset management, and supply chain. Strong institutional engagement is also observed in Europe, where tokenization of assets, automation via smart contracts, and digital identity verification are actively explored.

Within the European blockchain landscape, Italy represents a unique case, characterized by slow adoption but high potential. Due to the dominance of SMEs in the country's economy, there is limited internal expertise to identify blockchain integration opportunities and implement them effectively. As a result, the focus has shifted from the development of blockchain native applications, like Decentralized Finance (DeFi) and a cluster containing NFT, Gaming and Metaverse, to blockchain consulting and enterprise solutions, which are essential in the Italian business environment.

The second consequence of SMEs' dominance is the low level of digitalization of business processes, combined with a shortage of blockchain professionals. Firms heavily rely on traditional, often inefficient, business practices, and due to cultural traditions focused on preserving existing business practices, the incentives to innovate remain very low. To address these challenges and bridge the gap in blockchain adoption, Italy has several promising startups mainly operating in blockchain consulting or developing customized B2B solutions. These startups play a crucial role not only in providing the technical solutions, but also as educators, raising awareness and promoting blockchain adoption for long-term industry transformation.

As blockchain evolves, it is evident that this technology is not merely an incremental improvement but rather a fundamental transformation in how businesses operate, interact, and expand, causing a paradigm shift across multiple industries.

## 1.2 Blockchain Technology

Before delving into detailed analysis, it is crucial to have a clear understanding of blockchain technology and its foundational mechanisms. Blockchain is a distributed database that has a record of transactions using cryptography as a protection. Blockchain consists of blocks that contain a finalized bundle of transactions. Blocks are added sequentially using the hash of the previous added one to calculate the hash of the next block, ensuring the permanence of the recorded information and forming a continuous chain of immutable records. Since no third centralizing party is involved in this process, each computer of the network maintains a copy of the distributed ledger.

The new blocks are added amid the consensus mechanism, which is a critical aspect of blockchain technology. For a new block to be added, the majority of network participants should agree on the correctness of the new block's hash. This mechanism helps to create transparency, security, and traceability of blockchain along with lower transaction costs. Those definitions lie in the center of further analysis of this paper.

Another crucial aspect to be introduced in advance is the existence of different types of blockchain. The general distinction is made between public and private blockchains. The first one, public or so-called permissionless, refers to the open network, to which everyone can have access to control the activities of other members or be involved in certain transactions themselves. This type of blockchain is considered by many to be the true blockchain as it is characterized by full decentralization, meaning that the responsibility of maintaining the network is only on the nodes, while the database is completely distributed, and everyone participates in the transaction validation.

The second type of blockchain, the private one or permissioned, lacks some features of full decentralization since there is a network administrator, while the participant needs to be admitted, having access to it. Transactions are kept private as only the participating members can get the information about them. Centralization issues are though outweighed by enhanced privacy, better scalability, and higher efficiency as the nodes are not more distributed over numerous ledgers but locally. The following chapters will include a better explanation of the reasons why some businesses opt for the private blockchain, and which impact it has on their operations.

### 1.3 Evolution of the blockchain

Blockchain has undergone 4 major evolutions passing from Blockchain 1.0 to Blockchain 4.0.

*Blockchain 1.0* originated from the concept of distributed ledger technology and is tightly linked to the Bitcoin era. Here marks the start "Internet of Money" – the transition from centralized financial system to the decentralized one excluding any reliance on third parties. The first generation of blockchain relies on Proof-of-Work consensus mechanism, which requires high energy consumption and time for computation of the right hash. Incredible amounts of energy are needed to maintain such a blockchain, making it environmentally unfriendly, while limited scalability undermines its principal concept of efficiency and low transaction costs. For example, Bitcoin can process only a maximum of 7 transactions per second, which, in comparison to Visa with around 24,000 transactions per second, shows explicitly the limitation.

Creation of *Blockchain 2.0* was primarily driven by poor scalability and excessive consumption of energy for mining. Introduction of the Ethereum network signed a new generation of blockchain filled with the new crucial concepts – smart contracts and Proof-of-Stake mechanism. The term "Smart Contract" refers to self-executing programs that automatically enforce and execute contractual agreements between parties once the predefined conditions are met. Smart contracts

promote transparency, reduce the verification cost, and prevent fraud. While the transition of Ethereum to Proof-of-Stake mechanism in 2022, based on proof of tokens ownership instead of solution of cryptographic puzzles, improved energy efficiency and scalability.

Scalability issues were further addressed by *Blockchain 3.0* which introduced Decentralized Apps (dApps) that operate on a distributed network in place of a single server. Transaction speed has increased, and "single point of failure" does not exist anymore. This generation also introduced layer-2 scaling solutions, which are built on top of the main networks to process the transaction off-chain and thus reduce the load on the base layer to increase transaction throughput.

Full integration of blockchain into the business world was initiated with the new and current generation – *Blockchain 4.0.* Different solutions and platforms are developed to fulfill the most complicated business needs, including enhanced automation, interoperability, and security, making blockchain viable for corporate and institutional adoption.

# CHAPTER TWO

## 2. Literature review

### 2.1 Internationalization

#### 2.1.1 Internationalization process, classical approach

Internationalization process refers to the process of increasing involvement in international operations or the process of adaptation of the firm's operations to an international environment.

The Uppsala Internationalization model is one of the most widely referenced frameworks by scholars in the international business field. According to this model, which is widely accepted in international business literature, internationalization process follows a stage-based model. The company first explores the opportunities of the domestic market and establishes a solid position within the national borders, and later starts to explore external opportunities of growth. Important emphasis of this model is made on knowledge acquisition. As a firm starts to enter foreign markets, general and market specific knowledge become critical. In this context, experimental learning

through direct experience is named to be the greatest source of new information. The stages highlighted by the model include:

- Stage 1: No regular export activities (sporadic export).
- Stage 2: Export via independent representatives (export modes).
- Stage 3: Establishment of a foreign sales subsidiary.
- Stage 4: Foreign production manufacturing units.

Starting the export activities, firms tend to rely first on the foreign agents who already have certain knowledge about the target market and can help the firm to “kick-off the international chapter”. The acquisition of one's own knowledge initiates at this stage and amplifies as the entity passes to the third stage of establishing a foreign subsidiary. Step-by-step, a business develops its own competences and becomes less reliant on foreign agents to finally achieve the final stage of foreign production units. Overall, the Uppsala model promoted the idea of gradual development of the firm’s competences as it follows a linear internationalization process.

Another widely recognized framework in international business is the Eclectic paradigm. Compared to the Uppsala model, the eclectic paradigm stresses the importance of OLI (ownership, location, internationalization advantages) factors. Internationalization is viewed as a merely strategic decision to leverage these resources, while the rapid expansion is recognized in contrast to incremental internationalization of the Uppsala model. The next important point is the focus on transaction costs. The eclectic paradigm suggests that internationalization decisions are derived from the will to overcome market failures when firms prefer to internationalize their production rather than establish contractual agreements with foreign entities.

### 2.1.2 Recent changes in internationalization processes

As the business environment becomes increasingly fast-paced and high-tech companies come to the center of it, last century's internationalization models that assume slow, linear development processes are becoming irrelevant in today's reality. This is further amplified by disruption of long-established international business processes after Donald Trump's inauguration. Scholars highlight the shortcomings of the existing international business frameworks regarding time, context, and their interconnection with the internationalization process (e.g., Caputo et al. 2016a, 2016b; Welch et al. 2011, 2022), such models lack dynamism to be truly useful these days. Modern businesses evolve according to non-linear models, which may include several decisions of entering, re-entering, and exiting the foreign markets. To comprehensively capture the internationalization process, a framework must incorporate the dimension of time, stressing its relation to unforeseen temporal changes (Buckley, et al. 2017).

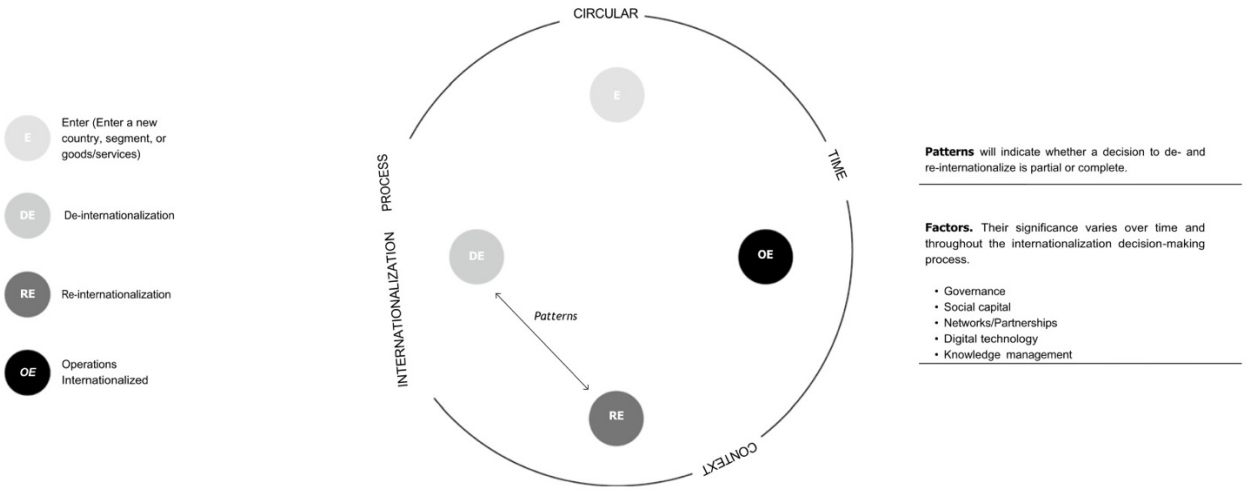
New framework comprising the underlined drawbacks was introduced in 2023 in the study "Rethinking internationalization processes: toward a circular framework" (Review of Managerial Science, S. Durst, E. D. Romero, A. N. Garcia, 2024). Combining the terms "dynamic" and "status", authors established "DYSTA" framework which is based on 4 statuses:

- Enter: initial entrance to a new country, region segment or the introduction of new or improved goods/services to a new or already existing market.
- De-Internalization: decrease or complete interruption of international activities.
- Re-Internalization: re-engagement in international activities following the exit of foreign markets.
- Operation Internationalized: establishment of presence in foreign markets together with internationalized operations.

The most distinctive features of the DYSTA framework include circularity and time-oriented approach. Time is viewed as a factor that influences not only the initial internationalization path but also the transition between different statuses. The circularity of the framework entails a simultaneous process where possible fluctuations occur without undoing previous decisions, emphasizing the significance of the decision-making within this paradigm.

**Figure 1**

DYSTA framework




Source: “Rethinking internationalization processes: toward a circular framework” (Review of Managerial Science, S. Durst, E. D. Romero, A. N. Garcia, 2024).

Traditionally, factors like risk, control, and resource commitment were considered to be the main drivers of internationalization success as they played a vital role in gaining experience before entering foreign markets (Kalinic, et al. 2014). These factors had a static nature which contradicts the previously described circular framework. Nowadays, the companies make decisions that do

not depend anymore on the named factors. New variables become crucial to consider for making internationalization decisions:

- Governance: shapes the decision-making process across different statuses as some planned or unplanned extra factors appear.
- Social Capital: highlighted as a key factor in the internationalization process of high-tech firms, that facilitates foreign market knowledge acquisition and trust-building in partnerships enabling rapid development.
- Networks and Partnerships: facilitate innovation-creating dynamic capabilities, mutually profitable partnerships, and sharing of technology resources.
- Digital Technology: digitalization minimizes or eliminates the costs of entering and exiting foreign markets.
- Knowledge Management: strong reliance of high-tech firms on creation, configuration, recognition, and transfer of knowledge as a way to achieve a competitive advantage.

### 2.1.3 Born Global

At the beginning of the 21st century, the rapid evolution of technology, specialization of labor, and increasing globalization of society, particularly business, led to the emergence of a new trend in business development. The concept of "Born Global" firms or International New Ventures (INVs) gained much attention around 2008-2010, pushing scholars to explore this phenomenon closer. Defined as "business organizations that, from inception, seek to derive significant competitive advantage from the use of resources and the sale of outputs in multiple countries" (Oviatt & McDougall, 2010) or in more quantitative terms as "companies who have reached a share of foreign sales of at least 25 per cent within frame of two to three years after their establishment (Business strategy Review 19(4):38-44), December 2008). Born global firms undergo a rapid

internationalization process with their initial foreign market entry typically occurring within three years from the domestic establishment.

Business Strategy Review identifies three primary factors driving the emergence of born global firms: new market conditions, technological advancements, and managerial change. New market conditions refer to the lack or non-existence of domestic markets, which obligate the firms to explore the foreign ones. Internationalization in this case becomes a matter of survival, not the voluntary choice. Technological advancements factor refers to the domestic environment providing companies with a competitive advantage, which is often linked to technology, that allows them to establish a strong market position for international competition. Changes in managerial approaches make companies target international markets as a part of global strategic vision and incentivize internationalization processes to increase the quality of services provided for their already existing international clients.

### 2.1.4 Early Internationalizing firms

With the restructuring of internationalization frameworks and the emergence of new business models like Born Globals, the general trend of earlier internationalization attracts increased academic attention. It challenges the traditional linear approaches, like the Uppsala model, making scholars define this rapid foreign market entry strategy as the “early internationalization phenomenon”. The Resource-Based View of the firm may help to explain how it is feasible for businesses to skip the different phases of traditional internationalization frameworks and still achieve success abroad. It argues that gradual accumulation of knowledge about foreign locations is no longer the determinant of sequence and speed of the internationalization process (Johansson and Vahlne 1977, 2009). Modern firms possess resources, such as assets, capabilities, organizational processes, that enable them to conceive and implement strategies that improve the

efficiency and effectiveness needed for earlier internationalization. The framework identifies three "levels" of strategic resources that influence early internationalizing firms the most:

- Individual level, relative to entrepreneurs: previous experience, networks, cognitive characteristics (self-efficacy, global mind-set), personal characteristics.
- Organizational level, relative to main firm resources: human capital, financial capital, relationship capital, physical capital, organizational capital.
- Environmental level: worldwide technological evolutions, home market's characteristics, industry factors.

Special emphasis is made on the evolution of strategic resources over four proposed phases of international development:

1. Pre-founding Phase & Start-up Period: entrepreneurs' previous experience and networks facilitate the identification of foreign market opportunities, business contacts, access to financial resources and social capital. On the environmental level, the size of domestic markets can provide a strong stimulus for early internationalization due to the lack of demand.
2. Entry stage & Early Internationalization Phase: entrepreneurs' previous experience and networks remain very relevant also at this stage. "Unique" knowledge gained from the previous experience facilitates the firm's entry into multiple countries. The beginning of accumulation of organizational resources and particularly human capital including diverse, highly skilled professionals.
3. Transition from Entry to Post-Entry Phases: the period frequently characterized by crises due to the lack of solid organizational structure, the shift to professional management from an entrepreneurial one. Development of previously acquired resources causing another

shift: strategic resources move from individual to organizational level. Technological, marketing, and management skills are critical as the consolidation of growth in foreign markets happens. Implementation of organizational learning is crucial to manage the diversity of human capital.

4. Post-Entry Phase: at this point, an early and rapid internationalization process transforms into stabilization of the firm's presence in various foreign markets. Organizational factors, like human, organizational, and relationship capital, are strategic at this stage. Reconfiguration of organizational capital resources is central during this transition. A breakout point, when early internationalizing firms become "normal" multinationals or SMEs, may be reached if strong entrepreneurial orientation exists.

### 2.1.5 Liability of foreignness

Expansion to external markets often entails challenges and difficulties related to non-domestic origin of the firm. These challenges are collectively described by the term "liability of foreignness" or in a simpler definition "cost of doing business abroad" (Academy of Management Journal, Overcoming the liability of foreignness, April 1995). It is considered as the "fundamental assumption driving theories of the multinational enterprise" (Zaheer, 1995: 341). When analyzed in the traditional context of product markets, liability of foreignness (LOF) arises from four different interconnected sources:

1. Costs associated with geographical distance or spatial costs. They relate to coordination and transportation.
2. Costs related to unfamiliarity with the local environment.
3. Costs arising out of the host-country environment. Economic nationalism and lack of legitimacy of foreign firms may be the main drivers in this case. It is further amplified by the

bias of local customers to prefer already familiar local brands to foreign ones despite quality and price disadvantages.

4. Cost resulting from the home-country environment. They may involve embargos on trade and investment, restrictions on high-technology exports.

Overall, investors tend to show a strong preference to invest in local firms rather than in foreign ones in both developed and developing markets. Besides that, on average, foreign-owned firms tend to have lower profitability and lower survival rate (Zaheer & Mosakowski, 1997).

Recent research has extended the analysis of LOF beyond product markets to include capital markets, where the challenges mainly refer to capital raising. Similar to difficulties related to legitimacy and consumer trust in product markets, capital markets have their own set of problems. Scholars such as Bell, Filatotchev, and Rasheed (2012) list four main sources of capital markets liability of foreignness:

1. *Institutional Distance.* Creates legitimacy challenges due to the difference of regulatory environment, such as competition policies and investor protections.
2. *Information Asymmetry and Costs.* Difficulties in accessing reliable financial data and in assessing the behavior and intentions of company insiders, leading to higher information processing and due diligence costs.
3. *Unfamiliarity Costs.* Investors usually avoid companies they are not familiar with, despite the abundance of information.
4. *Cultural Differences.* Foreign investments are discouraged by language barriers and cultural remoteness. Uncertainty-avoidant societies invest less in foreign equities than individualistic ones.

To successfully compete against local firms and mitigate the liability of foreignness, overseas subsidiaries of MNEs must have firm-specific advantages, typically in the form of organizational expertise or managerial capabilities (Buckley and Casson, 1976; Dunning, 1977; Caves, 1982; Hennart, 1982). Such differentiation helps businesses to overcome LOF in product markets by achieving higher operational efficiency, superior branding and technology resulting in higher quality or lower price, depending on the overall corporate strategy. At the same time, it helps to mitigate LOF in capital markets by improving investor relations, enhancing transparency, and aligning with host-country governance norms and regulations.

### 2.1.6 Transaction costs

Transaction costs play a crucial role in the management field. Defined as the costs of running the economic system of firms (Williamson, 1979) or more broadly as expenses incurred during the exchange of goods and services, including costs of monitoring transactions, planning, and adapting, they pose a huge advantage or disadvantage for companies. First introduced by Ronald Coase in 1937 in his seminal work “The Nature of the Firm”, Transaction Cost Theory states that the optimal organizational structure is the one that minimizes the costs of exchange to achieve economic efficiency. The final transaction cost depends on four components:

1. Frequency of exchange - how often parties conduct transactions between them.
2. Asset specificity – with further division into human, site, and physical.
3. Threat of opportunism - mainly attributed to human nature.
4. Uncertainty - costs associated with monitoring and controlling for environmental diversity.

Limiting the analysis solely to the first two variables, Williamson suggested that the market is always a preferred option when dealing with nonspecific assets. In-house production may be favored only in cases of high transactions. Generally, the preference for markets is explained by

economies of scale, which can be more easily achieved by external agents specializing in the production of specific goods. The most influential factor that makes businesses choose to avoid outsourcing and choose to internalize processes is uncertainty or threat of opportunism, leading to negotiation difficulties and contract breaches. Another scenario in which firms prefer vertical integration is high transaction costs, which is quite typical for finance and high-tech industries, for instance.

Transactions costs can be divided into three main categories:

- Search and Information costs – identification of potential trading partners, product availability, and prices.
- Bargaining and Decision costs – terms negotiation and agreements reaching.
- Policing and Enforcement costs – compliance with contract terms, breaches, addressing.

Analysis of these underlying categories helps businesses continually evaluate their operational environment and internal structure to ensure that the optimal choice between market and internalization is made. As global trade rapidly evolves and a growing number of market players pursue internationalization, reduction of transaction costs becomes a vital factor to maintain competitiveness and growth beyond national borders.

Blockchain's ability to reduce monitoring costs, mitigate information asymmetry and enhance contractual enforcement positions it as a transformative tool for addressing traditional transaction costs challenges. The next section provides an in-depth analysis of blockchain's potential applications, its tangible impact, and how the modern business world is already impacted by this technological revolution.

## 2.2 Blockchain's Role in Internationalization Process

### 2.2.1 Trust, Transparency, and Security: The Blockchain Perspective

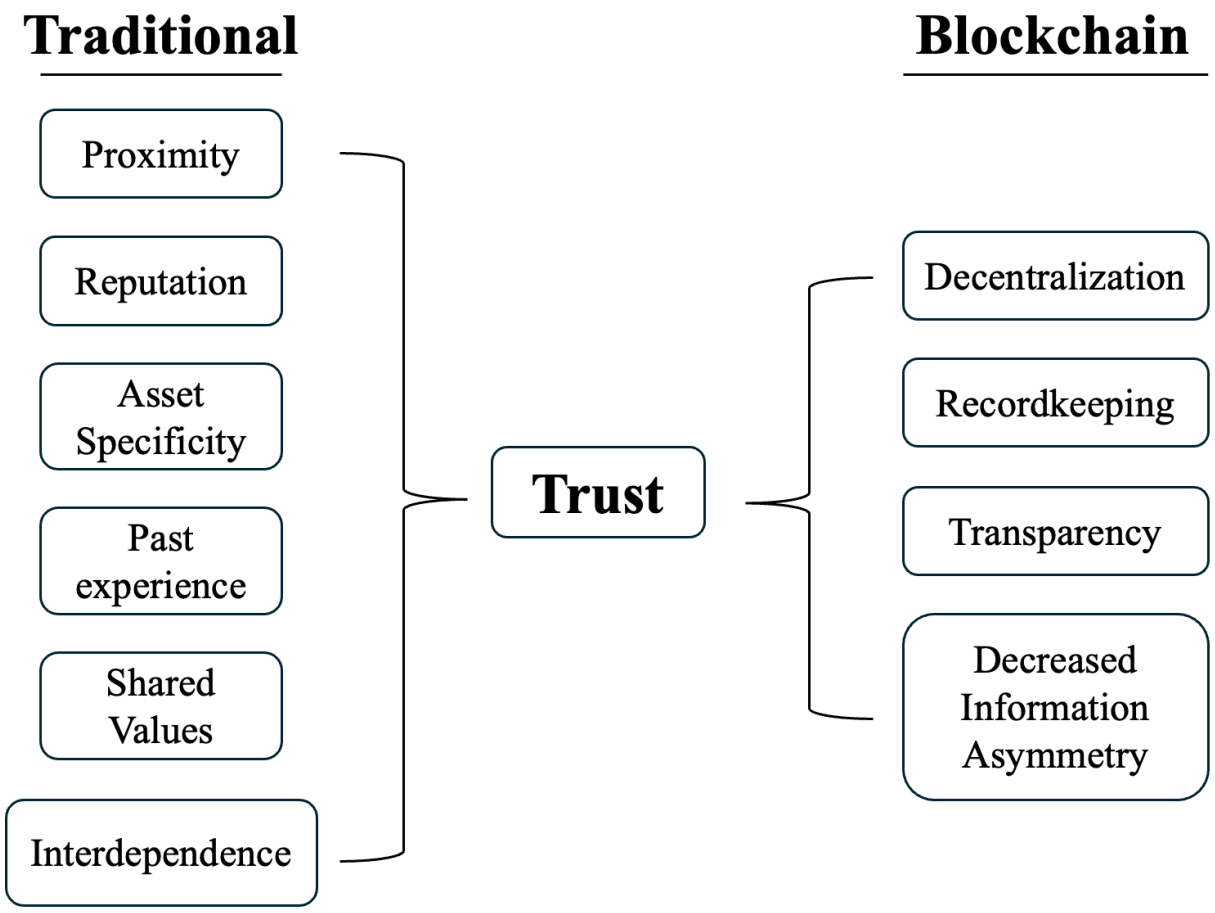
Blockchain adoption is primarily driven by considerations of data integrity, efficiency improvements, the enablement of new revenue models, and the digitization of document flows. Analysts anticipate a compound growth rate of 56% for DLT technology adoption between 2022 and 2029 (Fortune Business Insights, 2022). Despite its anticipated growth, blockchain remains relatively under-researched, limiting a comprehensive understanding of its potential to enhance efficiency metrics, strengthen security, and build trust - which, notably, are one of its most defining characteristics.

Trust is a fundamental component in international business that influences collaboration, conflict resolution, and strategic alliances (Zaheer, 2006). A lack of trust in business partnerships often leads to uncertainty about the future, risk of financial or asset losses, and difficulties in ensuring reliable partner cooperation (Parkhe, 1998). According to Krishnan (et al. 2006), uncertainty in business relations can be categorized into two types: behavioral uncertainty, which is related to the difficulty of predicting the actions of the other party, and environmental uncertainty, relative to the external changes that impact the business relationship. Organizations have traditionally relied upon either contractual safeguards or trust-building mechanisms to address these uncertainties. From a structural perspective, firms use complex contracts to prevent opportunistic behavior in nonrecurring transactions. While in recurring transactions, the relational perspective emphasizes trust as a mechanism for reducing transaction costs. Analyzing different research related to trust issues, scholars identify several key antecedents of trust in interorganizational relationships, including mutual communication (Bstieler, 2006), social, cultural, and cognitive proximity (Bruneel et al. 2007), and partner's reputation (Daellenbach & Davenport, 2004). Other named

factors are interdependence, duration of relationships, shared values, and experience (Ybarra & Turk, 2009).

**Figure 2**

Antecedents of trust: traditional & blockchain




Source: Murimi, R., Bell, G., Rasheed, A. A., & Beldon, S. (2023). Blockchains: A review and research agenda for international business. *Research in International Business and Finance, 66*, 102018.

Unlike traditional trust-establishing mechanisms as legal safeguards, regulatory enforcement, and long-term relationships, blockchain technology provides a cryptographic, verifiable alternative to

institutional trust, eliminating any need of trust in intermediaries. In this system, trust is mathematically encoded, removing reliance on contractual enforcement or reputation. Smart contracts automate execution, ensuring full compliance with predefined terms. Immutable record-keeping, secured through cryptographic hash functions, guarantees transparency, and makes fraudulent alterations computationally impractical - a term frequently used in blockchain contexts to describe actions that are theoretically possible but require an infeasible number of resources and time to execute in practice.

### 2.2.2 Information Asymmetry and Opportunism

In traditional international transactions, businesses encounter challenges related to information asymmetry and opportunism, which stem from unequal access to market data, hidden information, and difficulties of contract enforcement in different jurisdictions, which results in increased transaction costs and inefficiencies. Real-time access to authenticated, tamper-proof records, verifiable by all involved parties, significantly mitigates potential risks. The immutable nature of blockchain ensures that transaction records remain unchanged and accessible for verification, thus reducing the likelihood of fraud. Additional protection is provided by a decentralized validation mechanism that eliminates any possibility for a single party to control or manipulate the information for its own benefit. This characteristic is of particular importance for supply chain and financial services where regulatory compliance is crucial. Real-time tracking and verification of authenticity of goods based on the blockchain technology substantially reduces counterfeit risks and improves operational efficiency. For financial services, a secure and tamper-proof ledger for transaction records facilitates compliance with international regulations such as know-your-customer (KYC) and anti-money laundering (AML).

Implementation of blockchain into organizational processes allows to maintain the benefits of internationalization such as greater control over processes and reduced operational risks and at the same time without requiring the ownership of assets or production stages. Such a difference is of particular importance for international businesses, where traditional internalization strategies require a high number of investments in joint ventures or foreign subsidiaries. Trust mechanisms based on the blockchain enable global supply chain coordination and financial transactions without the need for direct ownership. As an example, cross-border trade and supplier relationships are facilitated by usage of smart contracts with automated quality control, enforced payment terms, and regulated delivery schedules. Any transaction is executed only when the predefined terms are met, which in place eliminates delays and disputes coming from contractual breaches and ambiguities. By leveraging blockchain-enabled automation, firms can accelerate international expansion, while reducing transaction costs, legal complexities, and operational risks.

### 2.2.3 Blockchain and transaction costs

Decentralized and transparent nature of blockchain is particularly important in reference to transaction costs. As previously stated, transaction costs are highly dependent on the underlying components, namely frequency of exchange, asset specificity, threat of opportunism, and uncertainty. Blockchain should be perceived not as a merely general remedy, but rather as the solution addressing specifically each of these determining components.

Its innate potential to handle high transaction frequency without making a single mistake, enhances automation and efficiency in recurring transactions. Manual verification or elaboration of a large amount of data can be reduced to the minimum levels by exploiting smart contracts. Supply chain payments and cross-border remittances to be named across the first areas which benefit the most from blockchain in this perspective. Automation also has a direct influence on the next criteria –

uncertainty. Contractual relationships become more predictable, while real-time visibility and decentralized verification help to build trust in international transactions involving actors from different legal jurisdictions.

Asset specificity is addressed by deploying secure and immutable records of provenance, ownership, and contractual terms. Enforcement of agreed-upon terms amid smart contracts to avoid ex-post opportunism is particularly important for industries with specialized investments. Additionally, fractional ownership and peer-to-peer transactions are enabled by asset tokenization which reduces contractual rigidity and enhances liquidity. Another common issue in the business world is asymmetric information leading to opportunistic behavior. Blockchain-enabled instant verification of contractual terms reduces the risk of fraud and hidden clauses. Moreover, traditional intermediaries often exploit transaction inefficiencies as rent-seeking opportunities - the decentralized consensus mechanisms eliminate any need for third parties' involvement in the process. The impact of named components becomes even more evident when analyzing the categories of transaction costs.

*Search and Information Costs*

Firms tend to allocate many resources to verification of their business partners, market analysis, and identification and satisfaction of the regulatory requirements. Immutable ledgers provide businesses with access to historical transaction data of counterparties, reducing information asymmetry and consequently the need for extensive due diligence. Smart contracts facilitate the compliance procedures by automatically gathering the requested data and ensuring its consistency with the legal standards.

*Bargaining and Decision Costs*

This type of transaction costs is almost entirely addressed by the deployment of smart contracts. Negotiations require less time and become less complex when standardized contractual agreements serve as the foundation. Automated contract compliance monitoring eliminates any disputes over terms and accelerates the decision-making process. Easy verification of transaction history and digital identity allow risk assessment to be conducted internally without any reliance on third parties, thus enhancing trust and lowering the associated expenditures.

*Policing and Enforcement Costs*

One of the key features of blockchain is its ability to eliminate reliance on enforcement mechanisms by enabling trustless transactions. Smart contracts that execute agreements automatically minimize the need for legal enforcement, especially in international transactions where dispute resolution is slow and expensive due to jurisdictional differences. While not eliminating the need for legal systems entirely, blockchain can significantly reduce the volume and complexity of enforcement-related interventions. Fraud and compliance-related costs are mitigated by providing transparency of transactions and real-time tracking. Significant reduction of enforcement-related expenses can be expected as a consequence of traditional intermediaries taking care of this process, including lawyers and banks.

Once analyzed in detail, the impact of blockchain on transactions costs through their main components and types, a certain trend should be highlighted. Smart contracts are mentioned almost in every single sentence. As expected, given that reduction of transaction costs is mainly attributed to self-executing agreements, which are applicable in a wide range of situations and provide immediate and very impactful results. Impossibility of modifying pre-agreed contractual terms, the need for their full fulfillment to activate the contract execution, and very rapid and unmistakable functioning make this tool a true revolution for the business world and not only.

### 2.2.4 Blockchain and Liability of Foreignness

To explore how blockchain can mitigate the liability of foreignness, it is essential first to understand how each of its sources is affected by the implementation of the technology. The first reason for liability of foreignness to exist is geographical distance and spatial costs related to coordination of cross-border operations. Decentralized nature of blockchain allows to align all participants and provide them with the real-time visibility of undergoing processes, creating a trustless environment, ensuring seamless coordination, and reducing administrative delays. Another factor closely related to the geographical distance issue is foreign exchange costs and financial settlements delays that can be addressed by the utilization of unified digital currencies emitted on the blockchain or simply by transferring the work to aligned technological platforms that execute the transaction at any time, not only in traditional working hours. The second source of LOF is unfamiliarity with the local environment, specifically regulations, business traditions, and consumer behavior. Regulations side is addressed by immutable audit trails of compliance with host-country norms. This is of particular importance for highly regulated industries like finance and healthcare, where businesses must provide proof of compliance.

Host-country bias and economic nationalism, the third source of LOF, are one of the most difficult to change, however, blockchain has its solution also for this by helping business entities to build trust and credibility in foreign markets. Starting from such a major factor as verifiable supply chain transparency, which is lately very demanded by luxurious brands. For instance, LVMH's Aura Blockchain Consortium provides the consumers with the opportunity to verify the authenticity and origin of purchased items, thus ensuring the originality of goods, and enhancing the brand's trust. Tokenization of assets is another impactful tool that plays a huge role in trust and reputation building as more individuals with lower capital may get involved, while the transparency of such

transactions eliminates any doubts regarding whether one is the true owner of the displayed assets, reducing the investors' risks.

The last source is home-country barriers and political restrictions. Blockchain tools reduce the dependence on home-country regulatory and financial institutions, making it easier for businesses to operate across different jurisdictions. DeFi solutions provide the access to capital through Initial Coin Offerings or Security Token Offerings, eliminating the need for traditional financial institutions. In such a scenario, costs related to inclusion of intermediaries and related restrictions are reduced to the minimum levels. Considering the current unstable global political situation, many firms face problems of trade sanctions or embargoes. Stablecoins may be a remedy for cross-border payments for those regions. For example, the BRICS initiative of stablecoins use is mainly aimed to overcome the recently imposed restrictions on trade with Russia.

The last and, arguably one of the most important, advantages of blockchain when treating the problems related to operations in different jurisdictions is the patent system. Every country has its own regulations for intellectual property rights, which makes international patent recognition very complex. When a set of companies across the world work jointly or distinctively on discoveries, the issues of patent ownership are central. The traditional patent process involves the long procedure of verification of compliance with rules and patentability criteria, which may take years, further amplified by slow bureaucratic procedures in many countries. Blockchain-based IP registries provide globally valid proof of invention through timestamping, helping to establish originality and prior art. Once the invention is secured on the blockchain to establish prior existence, companies may later file a traditional patent application to obtain enforceable rights on their patents and use blockchain records as additional records of originality.

*Capital Markets*

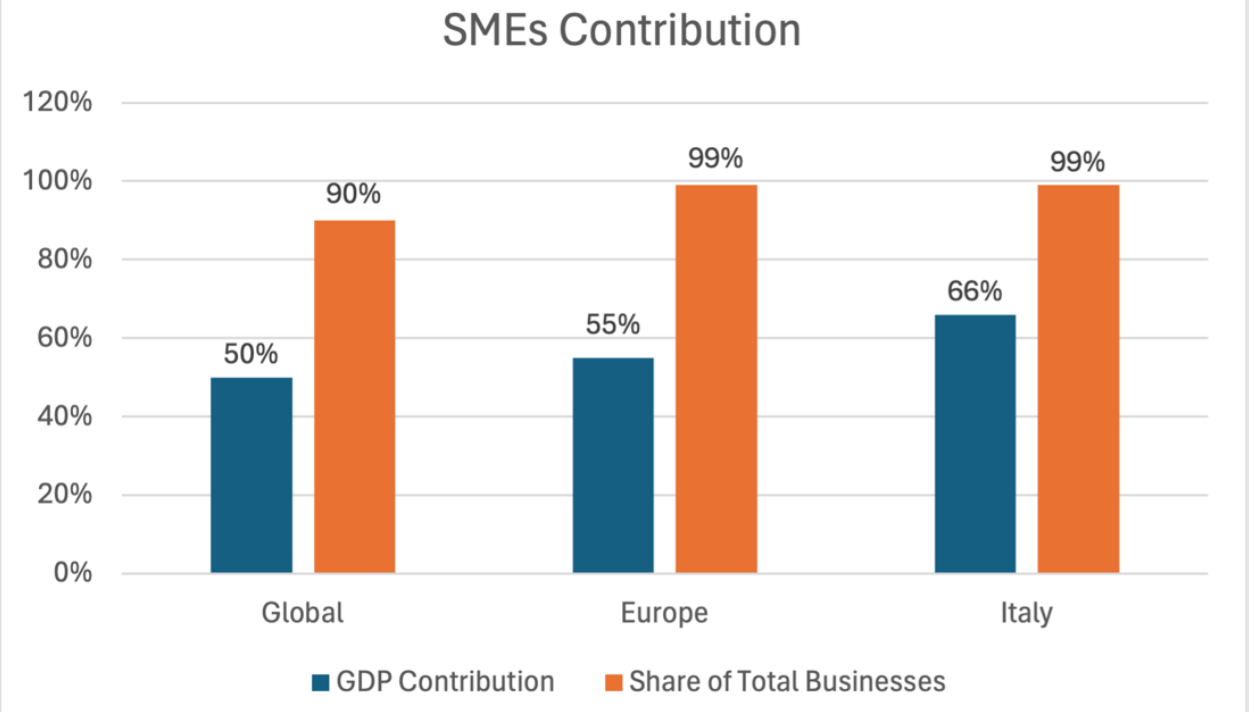
The effect on liability of foreignness in capital markets can be estimated in even greater metrics, since finance is one of the primary fields of blockchain application. As access to funding is among the most major problems in perspective of capital markets, Initial Coin Offerings (ICOs), Security Token Offerings (STOs), and tokenized equity offerings are to be analyzed as a priority. Startups and innovative businesses may view such tools as a useful alternative funding source to raise capital when it is too difficult or costly to do it through traditional funding channels (ESMA, 2019). Additionally, this method of capital raising not only reduces the intermediaries' costs but also allows enterprises to attract a diverse investor base, which can participate without facing excessive compliance costs, what is particularly valid in the context of LOF. Generally, ICOs are not subject to such rigid regulation requirements as IPOs, which leads to several benefits: reduced settlement and transaction costs, lower complexity in entering foreign markets, and a simpler launch process. On top of this, a decent level of transparency about future outlook is maintained as ICOs require to present white papers providing clarity regarding the project roadmap and the token utility. In cases where greater legal protection is required, STOs and tokenized equity solutions may be a preferable option, combining the aforementioned advantages of ICOs with a higher level of regulatory security. Immense value of blockchain is also embedded in the opportunity for businesses to exploit regulatory sandboxes – specially designated areas that allow innovative companies to enter new markets without being subject to full regulatory compliance.

## 2.3 Small and Medium Enterprises

SMEs play a crucial role in the global economy, accounting for 90% of businesses and 50% of GDP worldwide[1]. For Europe this percentage becomes even higher reaching an incredible 99% of businesses[2] and generating around 53,5% of European value added[3]. Taking a closer look at Italy, which represents a major focus of the practical part analysis, SMEs account for record-breaking 70% of value added, while 95% of this sample constitute micro-enterprises[4].

**Figure 3**

SMEs Contribution to Economy




Source: made by an author.

[1] https://www.un.org/en/observances/micro-small-medium-businesses-day#:~:text=MSMEs%20account%20for%2090%25%20of,and%20groups%20in%20vulnerable%20situations.
[2] https://single-market-economy.ec.europa.eu/smes_en
[3] https://www.eif.org/news_centre/publications/eif-working-paper-2024-101.pdf
[4] https://www.eib.org/attachments/thematic/digitalisation_of_smes_in_italy_summary_en.pdf

The influence of blockchain on the internationalization process of Small and Medium Enterprises should be analyzed with particular attention since such businesses possess very specific structural characteristics that affect their international expansion capabilities compared to multinational corporations. First of all, access to financial resources to support the internationalization process is much more limited in respect to bigger firms with an established network and strong cash flows. The same is valid for the supply chain aspect, where the lack of business connections and partnerships leads to inefficiencies in procurement and logistics as SMEs face higher costs due to reduced bargaining power and lower priority over their orders from service providers in crises. The relatively high compliance costs imposed by the need to satisfy the regulations and laws of foreign countries derive from the absence of an internal dedicated department or trusted foreign parties as in the case of international companies. The problem of low credibility and trust in the company in foreign markets is further enhanced due to the limited brand recognition even within the national boundaries.

One of the most impactful features of blockchain for SMEs is the reduction of transaction costs and simpler access to funding. DeFi instruments provide the opportunity to avoid high costs related to fund transfers in traditional banking systems. Fees on such transfers can add up very quickly, especially for cross-border payments involving several intermediaries, making it too expensive for small businesses to handle. As internationalization is directly linked to currency conversion for payments with foreign parties, the efficiency of existing blockchain-powered payments like XRP allows to reduce the fees from the SWIFT average of 3-5% to under 1%. Along with lower costs, blockchain significantly reduces the settlement time of cross-border transactions. In case of SWIFT, it can take several days if multiple parties play a part in it, while blockchain completes such procedure in a matter of minutes. Particular benefits from these improvements are

experienced by firms and individuals living in the developing countries since the difference between a very low developed traditional banking system there and blockchain alternatives is even larger.

Additional value from blockchain is derived from utilization of smart contracts for automation of transactions, transparent supply chain with the possibility of real-time tracking, and previously discussed alternative fundraising mechanisms like ICOs. In the resolution 'Further development of the capital markets union – improving access to capital market finance, in particular by small- and medium-sized enterprises (SMEs), and further enabling retail investor participation', adopted in October 2020, Parliament stated that "crypto-assets are becoming a non-traditional financing channel for SMEs, notably ICOs that have the potential to fund innovative start-ups and scale-ups".

## 2.4 Blockchain adoption

### 2.4.1 Sectors most affected by blockchain adoption

As with any other technology, blockchain's disruptive nature is fully unveiled when applied in certain circumstances and industries. The most frequently named sectors in literature relative to blockchain include finance, logistics, healthcare, real estate, and identity verification.

*Finance*

The financial sector is considered to be most influenced by blockchain, where its security, transparency, and efficiency are essential. Scholars highlight five key areas of finance where the impact of blockchain is the most vivid:

1. Payments and Cross-Border Transactions. The significant reduction of transaction fees and processing times due to the elimination of intermediaries makes many financial institutions

think about getting involved in this digital revolution. Cryptocurrencies such as XRP by Ripple Labs Inc. and various stablecoins facilitate near-instant cross-border payments, reducing exchange risks and maintaining the efficiency levels which are not available by traditional tools utilized at the moment.

2. Financial contracts. Automatization of financial agreements reduces reliance on intermediaries like legal entities and clearing houses. Smart contracts ensure the accuracy and almost instant execution in trading, insurance claims, and loan agreements.
3. Market liquidity. Enabling fractional ownership blockchain increases the liquidity of traditionally illiquid assets like real estate, equities, and commodities. Through security tokens, digital assets enlarge market access and provide alternatives to traditional stock exchanges.
4. Decentralized Financial Ecosystems. Built on the base of the smart contracts, DeFi platforms provide access to lending, borrowing, and trading without the inclusion of traditional intermediaries. Underlying technology fosters the financial inclusion of emerging markets, which tend to lack the developed traditional institutions offering such services. At the same time, it reduces counterparty risks by ensuring automated trust mechanisms through smart contracts and verifiable transactions histories.
5. Regulatory compliance. Shared KYC databases allow multiple institutions to access verified identities, reducing duplication, improving data security, and streamlining regulatory compliance.

*Logistics*

One of the key advantages of blockchain, its ability to create a single version of truth, is one of the outstanding values for supply chain and logistics. By reducing data inconsistencies and making all parties of a supply chain, including manufacturers, transport providers, and regulators, work on a shared, verifies record of transactions, blockchain creates trustless environment, where fraud risks are mitigated, and operational integrity is strengthened as every transaction is validated before being included in the next blockchain block.

Logistics processes are further automated by the integration of smart contracts. Third-party logistics providers (3PLs) and suppliers are paid automatically as soon as the predefined conditions, such as the successful delivery of goods to a certain destination, are met. Delays and disputes are minimized along with improved cash flow management of all stakeholders. Supply chain monitoring is enhanced by the possibility of pairing blockchain with the Internet of Things and different tracking tools. Transport of food and medical components is subject to compliance with rigid standards of temperature, pressure, and humidity. Known as blockchain 'cold chain' solutions, these technologies help ensure that none of the transport conditions were violated.

Besides improved operational efficiency, blockchain can be a very beneficial tool for enhancing environmental sustainability and corporate social responsibility. Traceability solutions, such as the possibility to certify the origins of raw materials, enable transparent sourcing and ethical business practices in the complex global supply chains. Additionally, blockchain-powered insurance processing enables accurate and fast claim settlements in case of the incident, such as cargo loss or damage, supported by verifiable evidence based on tracking data.

Another valuable innovation for supply chain management is Radio Frequency Identification technology (RFID). It enables automated identification and tracking of goods at each point of the supply chain, improving asset traceability and inventory management. In this scheme, RFID tags,

which attached to the products, store and transmit real-time data including handling conditions and location. Registration on the blockchain makes this data immutable and tamper-proof. A transparent transaction history is achieved through automagical recording of any product modification. Thus, RFID tags, with their main feature of providing products with a unique transaction ID, help to prevent data tampering and fraud along with any time accessibility to verified information to ensure the supply chain integrity.

*Digital Identity*

Another sector which was lately greatly revolutionized by the blockchain technology is digital identity. While traditional identity systems rely on centralized authorities leading to inefficiencies, privacy concerns, and security vulnerabilities, blockchain-based digital identity solutions allow users to have the full control over their data. Self-Sovereign Identity, a decentralized identity model, is built on three pillars:

1. Decentralized Identifiers (DIDs). Enable full control over identity while being valid across different platforms, facilitating cross-border identity verification.
2. Verifiable Credentials (VCs). A digital equivalent of paper-based identity documents, which have an enhanced privacy feature of sharing only the necessary data while keeping the rest private.
3. Blockchain. Blockchain-based digital identity solutions are also widely used for prevention of identity fraud and streamlining of regulatory compliance like KYC and AML, enhancing the security of business transactions.

Blockchain notarization is another tool which is recently widely used by many businesses, allowing to significantly improve the document notarization process in terms of time and costs.

Secured by tamper-proof validation of records, such a mechanism provides timestamp and permanent security of documents, preventing any modifications of content and at the same time makes them easily verifiable. The authenticity of documentation is achieved through a transparent and efficient mechanism of notarized records on blockchain.

### 2.4.2 Blockchain Business Models

The revolutionary nature of blockchain enables the creation of new economic models due to the elimination of intermediaries, increased transparency, and reduced costs. Different ways of blockchain implementation within the companies lead to the establishment of five blockchain business models:

1. Blockchain for Business Integration. Innovative DLT solutions are integrated in already existing value chains improving data traceability, compliance, efficiency, and interoperability.
2. Blockchain as a Multi-Sided Platform. The main objective is the elimination of intermediaries and transfer to decentralized peer-to-peer transactions. In this model, great reduction of transaction costs facilitates international expansion of enterprises.
3. Blockchain for Security. By using blockchain, companies ensure the authenticity of the documents and enable easy ownership verification, preventing possible fraud. Notarization on blockchain is a widely used nowadays tool to create stronger security standards and overcome the liability of foreignness.
4. Blockchain as a Technology Offering. Blockchain is used as an infrastructure to build their own solutions upon it. This model removes country-specific technological constraints and facilitates the international expansion.
5. Blockchain for Monetary Value Transfer. Utilized for cross-border payments, it lowers transaction costs and eliminates exchange rate risks, eliminating certain financial barriers to

internationalization. Enables the development of decentralized financial ecosystems, which are a blockchain substitution of the traditional banking system.

The proposed models differ significantly from one another, consequently proving that blockchain is not a technology that is tailored for a particular single need such as avoidance of intermediaries due to its decentralized structure but rather a very widely applicable solution that is capable of revolutionizing a major part of currently established practices. Adaptability across industries and use cases constitutes the real value of the blockchain.

Current framework model is expanded by giving additional dimensions of blockchain business models application. The first one is the value proposition that claims that blockchain-based businesses offer value by optimizing costs, enhancing security, authentication, and data traceability. One part of the firms offers decentralized exchange of value without intermediaries that is viewed as a marketplace offering, while others align different platforms and databases, providing enhanced interoperability. The second dimension is intermediation form: intermediaries may be eliminated or be substituted with a different form of intermediation. From most decentralized to less decentralized, five key modes are present: no intermediation, intergroup (intermediation between different industry verticals), intragroup (between similar entities in an industry), inside-group (within a single organizational network), hybrid (combining inter- and intra-group). The third dimension is network sourcing, blockchain businesses can rely on an external public blockchain; build their private chain on top of a public one – Ethereum; or operate their own network, which usually entails high costs and is consequently used much less often. The fourth dimension is attributed to the cost structure, which depends on a primary cost component that can be either provision costs (in case blockchain is offered as a service) or network sourcing costs (building or using an external blockchain) and a revenue model used. The last dimension is

recognized as DAO-Affiliation and highlights different levels of DAOs' involvement: DAO-based business model (entire governance is decentralized), DAO Enabler (contributes to transition of other businesses into decentralized governance), DAO supporter (partial decentralization), no DAO alignment (blockchain is used within traditional business model).

Taking into consideration the additional dimensions of blockchain business models, the perception of the blockchain as a one-size-fits-all solution changes to a flexible technological tool that can be customized to several business needs. Depending on firms' objectives and regulatory consideration, blockchain's decentralization may be used in various degrees. The importance of strategic decision-making when deciding on adopting blockchain is reinforced by different available cost structures and revenue models, influencing the later potential for international expansion and overall scalability. To highlight one of the dimensions – value proposition, which can be significantly enhanced through tokenization. Beyond financial transactions, tokens may serve multiple purposes such as stakeholder rewards, ownership verification, and asset transfer facilitation (Subramanian, 2018). Blockchain platforms using native or third-party tokens create new monetization strategies, amplify network effects, and create user incentives. Additional layer of security and transparency is provided by tokens used as digitally verifiable certificates which maintain trust and data integrity while reducing the reliance on centralized authorities.

One of the most crucial components of the proposed dimensions is the role of DAO affiliation which suggests that decentralization is a strategic choice based on operational and regulatory considerations, not an absolute necessity attributed to blockchain technology. More generally, blockchain adoption should not be considered as a binary choice between total centralization or decentralization. Blockchain enables a range of opportunities for improving the efficiency, security and transparency of businesses operating in diverse fields.

### 2.4.3 Public versus Private blockchains

When firms decide to adopt blockchain technology, there is one very important aspect to take into consideration – whether to use private or public blockchain. These two types of blockchain serve distinct purposes and differ significantly in their operational characteristics, governance structure, and use cases. Businesses undergoing internationalization process must carefully evaluate which blockchain model aligns with their expansion strategies, regulatory requirements, and operational needs. The choice between private and public blockchain has a significant impact on supply chain management, financial transactions, compliance requirements, and other important aspects.

Public or so called permissionless blockchains, such as Bitcoin, Ethereum, and Solana, are characterized by full decentralization and transparency. They have the advantage of being globally accessible, meaning that every willing party can always access and verify the transactions along with proposing changes to the source code, which is also usually open. The security level of public blockchains is high due to the functioning based on consensus mechanisms and the absence of a single authority. Public version of blockchain is easier to implement within the company's structure as the solutions would be based on already existing networks. The costs of operating are almost equal to zero, or more precisely, equal to the common level of transaction fees depending on a chain, and additionally there is no need to provide access permissions as this blockchain is accessible to everyone. However, public blockchains have several disadvantages. The first one is a low scalability due to the utilization of a consensus mechanism, which entails long waiting times for a transaction to be approved by the community. The second is high fees, which one should pay to validators to have the transaction be registered on the chain. This issue is further amplified when the traffic is high and premium rewards are added by the users to obtain the priority of registration for their transactions. The last and the most important in certain use cases is the problem of

anonymity since public blockchains are completely anonymous and there is no opportunity to verify who is the real entity that executed a particular transaction or is the owner of the wallet. Many KYC and AML requirements cannot be satisfied if using public blockchain. Such a wide range of problems related to the utilization of public version of blockchain by businesses raised the need of an alternative technology that would be based on the same mechanism of distributed ledgers but would have different characteristics – private blockchains.

Private or permissioned blockchains and distributed ledger technologies, such as Quorum or R3 Corda, are managed by a single entity and/or operate in a closed network inside an organization. Such centralization resolves the issue of scalability as it is no longer needed to use a consensus mechanism. In contrast to the public version, only verified entities can access private blockchains, making it more confidential and satisfactory by regulatory compliance. Alignment with jurisdictional laws and tax policies, which do not support the full anonymity of public blockchains, makes the private ones a very useful solution for entities operating in different countries as it becomes easier to comply with the imposed regulations. Increased confidentiality level allows running and registering even sensitive and private data typical to finance, IPRs, and healthcare. The disadvantages of private blockchains related to centralization and limited transparency led to the appearance of statements that private blockchains undermine the core philosophy of blockchain – decentralization and full transparency (Raj, R. & Ghosh, M, et 2024). Particularly relevant to the SME issue of private chains is the high operational costs which derive from the fact that the cost of running such blockchains is entirely placed on the organization. This not only creates a financial barrier to the usage of private blockchain solutions but also entails the high responsibility of its overall functioning which depends entirely on the central entity. Despite this, high speed and

security tend to outweigh the disadvantages above, providing businesses with a highly customized tool that allows them to exploit the benefits of distributed ledger technology.

### 2.4.4 Barriers to Blockchain Adoption

Blockchain technology is widely recognized for its potential to revolutionize finance, supply chain management, and international trade. However, despite many benefits, it entails several critical limitations that hinder its large-scale adoption, also as a useful tool for internationalization. Businesses must carefully evaluate technological, financial, operational, and regulatory challenges before deciding to integrate it. Hooper and Holtbrügge (Digitalization and Internalization) highlight that 80% of blockchain adoption barriers are regulatory or business-related rather than technological. Blockchain adoption requires business process re-engineering, not just technological deployment. Regulatory hurdles, including KYC compliance, challenge public blockchain adoption in financial applications.

As previously analyzed, the high efficiency of blockchain solutions is often achieved due to the elimination of intermediaries, resulting in faster processing times and lower operational costs. Imagining such change on a world scale would mean the complete disintermediation of various processes and consequently, the existence of traditional intermediaries would no longer be needed. The logical conclusion is that such intermediaries, whose professions are under the threat of being destroyed by blockchain, will resist such change and not make it occur. This creates another limitation to the adoption of blockchain as businesses should not only overcome all possible internal difficulties but also face much pressure from the side of the intermediaries when deciding to use innovative tools. The same argument relates to government regulation, which tends to depend hugely on already existing for decades structures full of agents-intermediaries. Propositions to legalize and regulate blockchain usage face opposition from members who favor

the traditional models despite their low efficiency. This is further amplified by the fear of many financial regulators to destabilize the financial system and lose control over it (Ali, G., Mawji, M.M., Buruga, B.A., & Aboutaleb, M. (2024). A Comprehensive Review on Cybersecurity Issues and Their Mitigation Measures in FinTech. IASJ Journal). Innovation and regulatory security are preferred over innovation and efficiency. Not to leave aside the common argument against blockchain-based finance – high crypto market volatility. (Enajero, J. (2024). The Impact of AI-Driven Predictive Models on Traditional Financial Market Volatility: A Comparative Study with Crypto Markets. IJAEM Journal.)

Indeed, certain doubts of financial regulators regarding the legitimacy and reliability of some blockchain-based tools are supported by case evidence. ICOs, which, on the one hand, serve as an enabling tool for fundraising for many companies, frequently end up being fraudulent activities with crypto assets that do not exist or developers disappearing after the ICO. Even if the ICO was not fraudulent, investors have very high risks of losing the entire invested capital due to the failure of a business, which tends to be merely an idea rather than a developing and operating structure at the stage of ICO.

# CHAPTER THREE

## 3. Methodology

### 3.1 Research Question

The research question set for the empirical part is: “How do organizations across different sectors see the role of blockchain in the internationalization process? How does this technology help mitigate the main barriers such as transaction costs, lack of trust, and liability of foreignness, and how do operational models, governance, and expansion strategies change after the adoption of blockchain?”

### 3.2 Methodology

To investigate the process of how blockchain influences the internationalization and development processes of enterprises, the present study adopted a qualitative exploratory approach, namely unstructured personal interviews with companies’ representatives involved in blockchain adoption. Interviews were conducted with five top-tier managers and company owners from the following industries: blockchain notarization, digital banking, development of integrated solutions based on blockchain technology, ICT, and tokenized venture finance. The choice of participants was mainly based on the objective of targeting different sectors to ensure both sector-specific

insights and broader comparative analysis. Since the interviews were very detailed and covered not only the core questions, like the opinion on the influence of blockchain on transaction costs, but also future industry trends and case studies from company clients, the number of participants was limited to five to maintain depth and analytical focus.

To maintain the anonymity and privacy, the names of the people interviewed are not disclosed. Instead, each participant will be named in the following way, showing the affiliation to the certain company:

- *Interviewee A – Notarify.* Blockchain-based digital notarization and identity verification.
- *Interviewee B - Mangrovia Solutions.* Enterprise blockchain solutions and supply chain traceability.
- *Interviewee C - Banca Mediolanum.* Digital banking and financial services.
- *Interviewee D – Accenture.* Global consulting and technology integration
- *Interviewee E – Seed Set.* Web3 venture funding and tokenized equity

Unstructured interviews which were used in this study represent open-ended questions with follow-ups. Such a procedure aims to explore the main part of the analysis and obtain additional details that are not directly related to the key research question. The medium duration was between 45 to 60 minutes, with the first part dedicated to the predefined structured questions, while the second focused on exploring the topics named during the discussion by interviewees. Interviews were conducted either in person or via one-on-one online meetings.

The set of standardized questions included the opinion on the connection between blockchain and liability of foreignness, transaction costs, and new business models, allowing maintaining consistency across interviews. Examples of questions used include: “In your opinion, what are the main obstacles to blockchain adoption?”; “Have any of your clients decided to implement

blockchain specifically to facilitate international expansion?"; "Is there any change in the governance of enterprises after the adoption of blockchain tools?"; "From your point of view, what are the main sectors that benefit most from blockchain?", etc. Further content of questions varied upon each interview to explore in detail particular areas of the enterprise and make every interview more personalized and valuable for the research.

Data analysis followed a comparative approach, analyzing theoretical assumptions against practical discoveries. This either provided additional support or undermined theoretical assumptions. Based on the conducted interview, additional areas for theoretical analysis were identified and integrated, for example, the importance of the distinction between private and public blockchains which was frequently mentioned during the interview and was not initially included in the research. Overall, the main objective of this data analysis part is to expand the previous theoretical findings by adding practical implications and reviewing the influence of blockchain on enterprise development and internationalization obtained during the experience of interviewees and case studies appertaining to their companies.

# CHAPTER FOUR

## 4. Results

The conducted interviews revealed both a shared approach and remarkable deviation in opinion among the participants. The insight obtained from the interviews provides a valuable bridge between theoretical beliefs and practical realities, showing how the blockchain is deployed in different areas. To clarify this, the analysis begins by discovering the alleged benefits of blockchain as the interviewers emphasize - not only for private enterprises, but also for extensive institutional actors such as governments and banks.

Interviewee C was asked whether the common perception of blockchain as an alternative to the traditional banking system was true. The response was: “Actually, the claim “Blockchain was invented to destroy the banks” is very old. In reality, the banks have a strong will to use the

blockchain. The main problem is that it would function only if implemented everywhere, not only by a single entity. For banks, being the best managers of registers, since every account is a register, every transaction is a register, when a new technology like blockchain that is fully dedicated to the management of registers arrives – adoption means only benefits". This suggests that the benefits of blockchain are very relevant not only for certain enterprises but also for banks, which oppositely to public opinion will be revolutionized rather than eliminated by blockchain.

The same interview involved the question about the future blockchain trends for financial institutions, particularly for banks. Tokenization of assets was named as the first and the most influential aspect. "It would be the final step of the long way where people play with cryptocurrencies, speculate, but slowly together with new generation begin to promote blockchain as a tool for acquisition and management of assets", – said Interviewee C. He later explained how tokenization of assets in case of acquisition of fund's shares could reduce the time between the confirmation of purchase until the actual display of it on a buyer's account from 5 working days to a maximum of 24 hours. "Such change is due to utilization of the same platform by all participants: no elaborations, no delays, no exceptions". This would be particularly evident in an international context involving paying agents, asset management companies, distributors, transfer agents, and depositories, according to that was said during the discussion. It supports the previous theoretical findings regarding the main areas of implementation of blockchain, where finance along with tokenization is a crucial component, and how blockchain technology reduces waiting times making the processes more efficient and consequently less costly with a particular impact on the cross-border operations.

Another interview with the representative of Mangrovia Solutions, the company involved in the design and development of enhanced services and fully integrated solutions based on DLT and

blockchain, involved the discussion about supply chain benefits from blockchain and use cases. Starting from advantages obtained by enterprises of a fully transparent and traceable supply chain, which is especially crucial in the case of luxury brands and ESG compliance practices, where blockchain offers unique opportunities by providing immutable and instantly verifiable recording. Understanding of potential to revolutionize supply chain management is further supported by the fact that the Italian government actively promotes the implementation of blockchain across businesses. Collaborating with the Italian Track Agency, Mangrovia Solutions helps diverse firms that receive governmental support to realize blockchain-based projects. TrackIt project is directly linked with the internationalization argument as the prerequisite for participation in it is that at least sixty percent of the company's products are for export. "It is made to expand the Italian industry abroad", - says Interviewee B.

Several interviewees referred to the timestamping characteristic of blockchain as the crucial factor for certain use cases. The health sector has a huge demand for blockchain-based solutions to improve the certainty of whom the discovery belongs to when working collectively on the development of new medicines. In this case usage of blockchain as a base register for all network participants resolves immediately any doubts as every transaction has a precise time indication. Utilization of Blockchain timestamping is exploited also by financial institutions which can promote trust in their official publications. Mediolanum, for instance, utilizes blockchain to prove the originality and immutability of non-financial declarations with a perspective of expanding the use of this procedure also for other areas. "We published the hash of the document on our website, saying that this hash will never be changed, so this is the document, there will not be any changes, this is the final registration", - says Interviewee C, who was responsible for this innovation. Such immutability of the documents prevents actors from any possible manipulations of old data,

reinforcing the trust in the content communicated. Interviewee A stated: “The blockchain is useful whenever there is something digital. When you need to guarantee that no one can modify the content. It is also used to protect yourself against risks and reduce the bureaucratic part to facilitate certain processes”. This point reinforces the argument that blockchain may help to overcome the liability of foreignness in the international expansion context by giving the certainty about actions of the firms and their financial performance, which is claimed to be one of its main drivers.

Interviewee B emphasized how blockchain may facilitate compliance procedures: “Blockchain helps to simplify the audit process. We should just identify to the system where and what data it should take, and all the process is executed automatically without any need to pass a week before asking your colleagues the information needed.” This fully supports the view on how compliance is simplified and secured at the same time by the technology.

*Transaction costs*

One of the main topics explored in all interviews was about transaction costs. Asking the interviewees what they think are the main benefits of blockchain utilization, every answer involved “reduction of transaction costs”. As supported by theory, transaction costs are the main financial goal in blockchain implementation by enterprises besides other positive consequences such as “additional revenues due to the contrast of black market” named by Interviewee D. He also said that such a reduction in transaction costs is observed due to the quality change of smart contracts implementation, which avoids any errors in advance.

Significant reductions in transaction costs can be observed in the real estate sector. The company that provided online auction services and referred to Notarify to explore the opportunities of cost reduction amid blockchain. The estimated results were 86% faster transactions and 73% reduction

of costs arising from: blockchain notarization of documents, release of Certificate of Authenticity, file storage in virtual custom space, secure archivation in the cloud, and usage of electronic signature. “We provided all needed guarantees to do it online, reducing processing time and cost as presenting all those documents in presence required making a trip, print them, come in person, …, that is why doing all this online provided an enormous benefit”, - says Interviewee A. The previous theoretical findings are fully supported by this case study, proving how blockchain may help companies reduce costs and thus increase profitability and efficiency, which play a crucial role in the development process and international expansion where significant resources are usually demanded.

*Liability of foreignness*

The deep discussion with the representative of Seed Set was aimed to explore how blockchain application, especially fundraising through tokenized equity, helps to address the liability of foreignness. Interviewee E explained why this method is preferred by many investors in respect to traditional stock market: “Because unlike obtaining shares in a startup, a token can be freely traded on secondary markets. Shares, on the other hand, are not tradable until the startup is listed on a regulated market. But if you have a token, you can easily exchange it on a decentralized market”. Information asymmetry, which is one of the greatest obstacles in obtaining trust in foreign markets, can also be significantly reduced due to blockchain transparency feature. “The informational aspect is also very interesting. Because we all know that the more transparent you are, the more trust you actually gain. Being transparent in investment builds trust that becomes universal - and it’s not just an empty word, it’s something you can verify on-chain. … This is a relevant issue, because many businesses are not truly transparent - their business models aren’t transparent. While

this lack of transparency may offer certain advantages in terms of privacy, it becomes a limitation for stakeholders who finance these businesses. Such a situation might remain acceptable only until a Web3 environment - built on transparency and on-chain verifiability - is fully established."

"This global technology makes cross-border transactions much easier. When a universal ledger is available, it expands market access: as a business, you're no longer limited to your geographic location", - concluded Interviewee E.

*Transformation*

One of the topics closely analyzed was how blockchain implementation changes the management of firms and how it impacts the economy in general. "In Web3, a business is no longer just your own - it becomes a community-driven venture. As a result, the governance of that business must also evolve. Undoubtedly, the moment you choose to innovate governance - not only by digitizing it, but by adopting entirely new decision-making logics - you gain a competitive advantage", – says interviewee E.

Universal approval was achieved on the point that the lack of knowledge is observed among the management about the potential benefits of this technology and the ways of its implementation in their companies. Some interviewees even claimed that often the decisions on blockchain implementation are made more for 'hype' and the desire to be among 'innovative firms' rather than aiming at real-term advantages. Another common problem that was mentioned is that people still tend to trust more in personal connections or paper documents rather than their digital representations, creating a great challenge to make blockchain commonly used.

Two out of five of the interviewed companies were actively involved in the education process. This is explained by two main reasons: the lack of expertise among managers of potential client

enterprises and a way of promotion among the target audience. Perfect alignment between theory and practice is observed in this aspect too. Stating the importance of not only developing the solutions but also communicating them to businesses and showing the potential benefits.

As Interviewee E further remarked: “Social relationships are changing, as are the dynamics by which actors interact. Reputation will no longer be built through in-person meetings, but rather in a different, digital way. Therefore, companies that recognize this shift early will have the opportunity to experiment ahead of others and gain a competitive advantage by being first.” This drives the conclusion that companies that start utilizing blockchain technology ahead of the majority of their competitors are more likely to gain a first-mover advantage and get a higher chance to succeed in entering foreign markets possessing an increased level of transparency, facing lower costs, and providing their services faster.

*Challenges*

Interviews involved discussion on that are the main blockchain implementation challenges encountered in different industries. Assuming the perfect knowledge of its potential benefits, the question of lack of wide implementation remains one of the greatest problems. “Blockchain has sense only when everyone uses it”, - says Interviewee C. This significantly limits the extent to which current users can fully leverage the technology’s potential. Such a problem is closely linked with one of the biggest debates arising about the future of blockchain-based tools – disintermediation.

The disintermediation aspect was discussed multiple times during the interviews, showing how the elimination of intermediaries rendered the processes more efficient. However, the massive change would inevitably lead to the entire elimination of certain professions, which undoubtedly

creates a huge pressure from society's side. This may result in slower adoption of related regulations driven by unachievable consensus at the government level and the resistance to change existing practices.

Another important point that was closely explored with Mangrovia Solutions regards the high cost of certain blockchain-based solutions, namely private blockchain. Flexibility, control, and efficiency provided by private blockchains, which are mostly the case for clients of Mangrovia Solutions, may result in high costs that are unsustainable for SMEs. Such barrier is partially addressed by government subsidies but still make private blockchains more easily accessible to bigger enterprises or enterprises working with higher margins. However, in the context of this research, the named issue does not constitute a very powerful impact on the potential of companies to choose blockchain as an operational tool or begin with less costly options like public blockchains. Instead, it represents a common economic issue related to economies of scale and broader access of bigger enterprises to customized technical solutions.

Regulatory difficulties are the other crucial limitation, as perfectly formulated by Interviewee E: "Obviously, we are still at the beginning. Authorities are establishing regulations, but they often also hinder development. The real challenge will be to find a balance between protecting individuals who use technologies created by others, and, on the other hand, not building barriers that obstruct innovation. After all, this technology was born to bring transparency and digitalization. In a fully regulated market, overly rigid frameworks risk becoming a wall against emerging business models."

To conclude, this section aims to provide a comparative analysis of theoretical and practical findings. Most of the explored theoretical arguments found support in real-world applications, reinforcing the relevance of the conducted analysis. However, certain aspects, like changes in

governance structure and business models, did not find practical support. This can be attributed to time limitations and lack of evidence from very recently implemented changes in companies' processes.

The main research arguments of the paper including the main areas of blockchain application, transaction cost reduction, mitigation of liability of foreignness, and overall facilitation of international expansion had profound practical support based on the experience of industry practitioners and real case studies related to the companies involved in the interviews.

# CHAPTER FIVE

## 5. Conclusion

The present paper explores how blockchain technology influences the internationalization process of enterprises, with a specific focus on SMEs. Based on the combination of theoretical analysis and qualitative empirical research, it complements the existing academic research at the intersection of international business studies and emerging digital technologies.

Theoretical foundation included well-established international theories, like the Uppsala model, the transaction cost theory, and the eclectic paradigm, which helped to identify the main impediments to international growth including lack of trust, unfamiliarity costs, transactional and coordination costs. However, some of the reviewed models developed several decades ago are not suitable anymore to address the rapid transformation process driven by blockchain and new

internationalization ways. For this reason, the analysis was expanded to take into consideration more modern frameworks like DYSTA, which are mainly focused on the development stages of young firms operating in a different environment, based on a new layer of infrastructure enabled by blockchain-trust-based, secured, and decentralized – redefining the conditions under which enterprises enter and operate in foreign markets.

Trust, which is a cornerstone of international business and the main issue faced by firms expanding abroad, has traditionally been paid much attention in international relationships and mainly achieved through reputation or use of trusted intermediaries. Blockchain completely revolutionizes it, replacing the traditional trust mechanisms, relying on legal enforcement and intermediary supervision, with a cryptographically secured, verifiable system, where trust is mathematically encoded. This describes how blockchain addresses one of the most crucial problems in the internationalization process related to trust deficit. The second barrier is closely related and includes information asymmetry, which blockchain resolves through transparency provided by tamper-proof records, verifiable by all participants involved. High transaction and enforcement costs are mitigated by the inclusion of smart contracts, which ensure automated compliance and reduce operational costs. Decentralized governance and algorithmic trust help to mitigate the liability of foreignness by building a digital reputation via transparent financial and supply chain systems. The next barriers faced by companies include regulatory fragmentation and compliance complexity. Automated compliance protocols embedded in smart contracts and verifiable digital identities ensure that regulatory standards such as KYC and AML are met, reducing administrative costs and legal uncertainties.

For SMEs, the main barrier is limited access to international capital markets. It is resolved amid ICOs and DeFi instruments, that assist in raising capital directly from international investors to

support initial market entry and sustain long-term international operations. Further disintermediation helps such enterprises to freely participate in cross-border transactions and trade ecosystems without relying on central authorities which impose unsustainably high transactional costs. RFID technologies help to increase the transparency and traceability of supply chains, allowing SMEs to compete with foreign or bigger enterprises without significant infrastructural investments.

Interviews conducted with representatives of different sectors highlighted the growing importance of blockchain in internationalization strategies and reinforced the earlier outlined theoretical propositions. The common agreement was found on blockchain's potential to lower transaction costs, accelerate cross-border interactions, and reduce administrative complexity. Moreover, SMEs and young firms without established global reputations were consistently identified as the primary beneficiaries of blockchain implementation, making them more competitive than other less innovative players. Real examples outlined by interviewees provided a preliminary estimation of possible results in numerical terms. It also helped to identify additional points of analysis and the main limitations of theoretical assumptions, one of the most vivid ones being related to mass adoption, which by now is hardly achievable and therefore diminishes the full potential of blockchain applications.

A part of this analysis and especially the interview's part was dedicated to the argument of public and private blockchains. Here no common and correct view was found as every side has its arguments for choosing one of the two options. While public blockchains remain more accessible and more decentralized, private blockchains are essential in certain situations where scalability and greater control are needed. The conclusion can be drawn that this choice should be viewed more as a strategic choice rather than a conflict of technology. It provides firms with a great

opportunity to choose the most suitable option to align it with their internationalization goals and strategy. The same logic applies more broadly to the general use of blockchain solutions, where the choice depends on the specific needs, capacities, and strategic orientation of the firm.

In conclusion, blockchain is not merely a technological advancement, but a transformative infrastructure that redefines how firms organize, govern, and expand across borders. Its capacity to encode trust, automate compliance, and decentralize coordination addresses foundational barriers in the internationalization process - especially for SMEs navigating complexity with limited resources. Yet its full impact remains conditional on strategic implementation, ecosystem readiness, and regulatory evolution. As such, blockchain should not be viewed as a universal remedy, but as a dynamic tool - one that, when thoughtfully aligned with firm strategy and global context, holds the potential to fundamentally reshape the future of international business.

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