Abstract
This article discusses how platform administrators operating within the ecosystem of real estate crowdfunding could implement technology innovations, such as blockchains or the use of digital tokens, and list the benefits that could be obtained by the real estate sector. We introduce an exploratory analysis of multiple case studies, consisting of 12 businesses that manage real estate crowdfunding platforms. The information gathered through interviews provides an idea of how the shared opinions of professionals in the trade is identified with factors and variables that affect the opening of this alternative finance segment. In terms of implications, this is one of the first studies exploring the adoption of innovative technologies by real estate crowdfunding platforms and, as far as we know, it is the first to analyze the impact of tokenization.

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1. Introduction
This paper analyses the real estate crowdfunding ecosystem, a specific segment of crowdfunding that has been on the rise over the past few years, to understand the possible impact and potential benefits of distributed ledger technologies. The real estate industry plays an essential role in the global economy. Since the financial crash of 2008, which began in the United States and then spread throughout Europe, the operating methods and practices of the industry have undergone scrutiny (Squires, et al., 2016). The question is, therefore, if, in specific terms, real estate properties are still given the value they had previously or if, due to innovative business models and technological changes, they have changed (Veuger, 2018). Overall, research tells us that one of the emerging business models for the real estate sector is crowdfunding (Montgomery, et al., 2018; Shahrokhi and Parhizgari, 2019), which first developed in the United States with the Jumpstart Our Business Startups Act, or JOBS Act in 2012 and then spread throughout Europe (Giudici, et al., 2013; Martin, 2012). In terms of technological change, however, few studies tell us that the characteristics of blockchain technology are a good fit for the real estate industry, especially for transactions (Wouda and Opdenakker, 2019; Garcia-Teruel, 2020; Morena, et al., 2020), given the specific nature of unchangeability, irreversibility, and transparency of data stored through a distributed ledger. Some countries are starting to provide regulatory definitions on the subject, albeit general ones. For example, Italy has provided a regulation terminology definition of blockchain and smart contracts, with Article 8 of L.D no. 135/2018, converted into Law no. 12/2019:

The definition “technologies based on distributed registers” is used for technologies and electronic protocols that use a shared, distributed, replicable, and simultaneously accessible register that is architecturally decentralized on cryptographic bases that allow recording, validation, updating, and storage of non-encrypted or encrypted data, which can be checked by each participant and are non-editable.

A “smart contract” is a computer program operating on technologies based on distributed registers, the execution of which automatically binds two or more parties based on the effects defined by the same. [1]

However, there is still little research that looks at the possibility of using blockchain technology, such as smart contracts implemented through digital tokens, i.e., any digital representation of an interest, which may be a value or a right to receive a benefit or to carry out specific functions and which may or may not have a specific use or purpose (European Securities and Markets Authority, 2019), applied to real estate (Konashevych, 2018; Manzanares, 2019).
In this scenario, our research aims to fill the gap created by a lack of studies on the application of blockchain technology and the use of tokens within alternative forms of financing, such as crowdfunding, when applied to the real estate sector. We propose an exploratory analysis of multiple case studies (Eisenhardt, 1989; Hevner, et al., 2004) consisting of 12 companies managing real estate crowdfunding platforms in Italy. The information gathered through interviews with company representatives (founders, CEOs, top management) gives an idea of how the shared opinions of professionals in the trade is identified with factors and variables that affect the opening of this alternative finance towards technological innovations, which may bring radical changes to the real estate industry. The cases are discussed in light of existing literature, to provide theoretical and practical implications. The main theoretical implication concerns the joint study of two aspects, crowdfunding and blockchain, not yet discussed in the literature. The few studies on the subject deal with potential use and changes that the application of new technology, such as blockchain, can bring to the real estate sector as a whole, not illustrating it from the point of view of alternative financial instruments, such as crowdfunding (Veuger, 2018; Wouda and Opdenakker, 2019).

In particular, this study aims to examine two aspects: on the one hand, it seeks to understand benefits stemming from the use of digital tokens, by collecting opinions from professionals in the sector. On the other, it highlights gaps in existing regulatory frameworks, which limit the use of this new technology in a typically traditional sector such as real estate, where innovation does not play a significant role (Battisti, 2018). In this sense, this study could provide useful details for decision-making.

The remainder of the paper is structured as follows. Firstly, we discuss the literature concerning the real estate sector, crowdfunding, and blockchain technology to identify the knowledge gap and, as a result, pose our research questions. Secondly, we discuss the methodology, highlighting the characteristics of cases identified. Finally, we discuss the conclusions of our exploratory analysis, highlighting practical and theoretical implications and pointing out limits of our research as well as possible directions to take in future investigations.

2. Literature review

2.1. The main characteristics of the real estate business

The real estate market can be cataloged as a group of activities ranging from building to renting and property investments, including various areas, such as residential, industrial, offices, and retail (Battisti, 2018). The value of the real estate market depends on tangible income generated by land or buildings, referred to as ownership or to a series of rights over property itself (Geltner and Miller, 2000; Ling and Archer, 2005).

In Italy, the real estate sector is financing on an increasingly central role in terms of being an investment choice (Morri and Benedetto, 2017), given the volume of investments in the property sector, which was more than 12 billion euro by the end of 2019. This was due above all to the 4.9 billion euro invested in the last quarter of the year, taking growth to 37 percent compared to 2018, a year that saw the real estate market slow down slightly, and six percent compared to 2017, the year that witnessed the record of capital invested, somewhere around 11.2 billion euro (CBRE, 2020). One possible explanation for this growth is the accommodating monetary policy of the Central European Bank (CEB) regarding interest rates.

In this context, we can consider the real estate sector to be the greatest asset class at the world level, as well as something unique and rather complex. Historically, it has always shown that its role has been strategic in the world economy, since it is known for its resistance to change but also for the lack of openness towards tech innovation (Spiliopoulou, 2016).

Real estate, by definition, has always been classified as a sector that is traditional, cyclical, and strongly influenced by economic trends, with a slow evolution (Politecnico di Milano, 2018), and a strongly illiquid market, with lengthy processes and high costs (Manzanares, 2019).

The main differences that make a real estate investment unique and non-replicable are the following:

- **Heterogeneity**: Real estate has always been extremely heterogeneous, unlike other asset classes; a building is unique for a variety of reasons, such as its structure, age, and location. Specifically, this latter aspect is a key factor when it comes to deciding to invest in one property rather than another (Jackson and Orr, 2011). Distortion is created because the seller certainly, due to information compared to a probable purchaser, generating what is known as information asymmetry (Ling and Archer, 2005). Heterogeneity in the assessment of real estate, making it non-standardized, often with prices that are inefficient (Kurlat and Stroebel, 2015) and influences information, increasing agency costs compared to other types of asset class (Ibbotson and Siegel, 1984).

- **Timing**: In the long run, the lengthy-time period required for transactions, characterized by a wide variety of stakeholders, through an average of more than one hundred days (Scofield and Devaney, 2015), together with the strong illiquidity in the market for this sector, ensures that real estate investments are considered with a view to the long term (Cheng, et al., 2010).

- **Lack of accessibility and high transaction costs**: The real estate sector is known for not being open to everyone, due to the high amounts required to invest; this causes a high degree of recourse to financial leverage (Manzanares, 2019). To the significant costs of investment, we can also add high transaction costs that characterize property investments, reducing de facto residential mobility (Banca d’Italia, 2019).

- **Immobility**: The localization of a property and its surroundings are factors that emerge as a result of its main defining characteristic: its static nature. This means that a hypothetical real estate investment is influenced by external factors that have nothing to do with the property itself (Ling and Archer, 2005).

To summarize, due to these specific characteristics, a property transaction is extremely slow and complex; it also involves several stakeholders. Often the information available to assess a possible real estate investment is incomplete, creating information asymmetry and leading investors to make further checks through due diligence, which is always necessary and costly. During this time, information is checked and then declared reliable (Just and Stapenhorst, 2018; Wouda and Opdenakker, 2019). After pointing out these limits we can say that it is a sector that is well...
suited to innovation through blockchain technology and everything linked to it since it would improve transaction procedures, making them much more fluid and reliable.

2.2. Crowdfunding and its application in real estate (RECF)

Over the last few years, crowdfunding has slowly and gradually become established as an alternative means of finance, above all used by small and medium enterprises (Battisti, et al., 2020). Crowdfunding shares the same principles as those underlying crowd sourcing (Howe, 2008; Kleemann, et al., 2008; Poetz and Schreier, 2012; Kuppuswany and Bayus, 2018) and micro-financing (Morduch, 1999). The term crowdfunding has been given many definitions in literature over time; the most notable are those allocated by Belleflamme, et al.:

Crowdfunding involves an open call, mostly through the Internet, for the provision of financial resources either in the form of donation or in exchange for the future product or some form of reward to support initiatives for specific purposes. [2]

Regarding a community and network context, at the European level, the definition provided by De Buysere, et al. stands out:

Crowdfunding can be defined as a collective effort of many individuals who network and pool their resources to support efforts initiated by other people or organizations. This is usually done via or with the help of the Internet. Individual projects and businesses are financed with small contributions from a large number of individuals, allowing innovators, entrepreneurs, and business owners to utilize their social networks to raise capital. [3]

However, the definition of crowdfunding involves different aspects and multiple facets (Mollick, 2014; Lin and Viswanathan, 2015) and can be divided into different segments: reward, donation, royalty, lending, and equity. Originally, the first successful models developed were reward and donation (Agrawal, et al., 2013; Cumming, et al., 2016; Shahrokhi and Parhizgari, 2019). Today, however, lending and equity crowdfunding models are characterized by having the fastest growth (Ziegler, et al., 2019).

Real estate crowdfunding, a subset of crowd investing, a later development linked particularly to the equity and lending models, is part of this context. The main aim of real estate crowdfunding is to allow investors to take part in the financing of a real estate project that may range from the purchase of a property to generate income, via renovation, or capital gains, through to participation in infrastructure projects, both in terms of environment, residential aspects and business, with remuneration of capital in exchange (Ferrari, 2017; Battisti, et al., 2020).

Real estate crowdfunding began to develop in the United States in 2012, following the approval of the J Jumpstart Our Business Startups Act, or JOBS Act. Real estate crowdfunding then spread to Europe, arriving in Italy in 2017 via the creation of vertical platforms specializing in this segment, which immediately revealed itself to be a driver of crowdfunding growth, both in Italy and all over the world. For example, in Italy in 2017 the total volume of investments collected through alternative finance instruments was €241m. Among these, equity crowdfunding generated €4.8m, while business and consumer lending numbered respectively €24m and €59.1m (Ziegler, et al., 2019).

Substantially, there are three business models applied to real estate crowdfunding, based on:

- **Equity platforms**: Investors become equity owners of a special purpose vehicle, which owns properties and manages real estate investments.
- **Lending platforms**: The platforms serve as financial brokers, where funds are lent to those proposing a property project and who will reimburse this with remuneration based on the risk.
- **Hybrid platforms**: Created to cover both types of investing, these are leaving the scenes to platforms that look to a specific model only (Politecnico di Milano, 2019; Battisti, et al., 2020).

The most relevant determinants of the success of RECF platforms are: (i) the low minimum amount required to invest, which in turn creates the possibility for multiple and diversified investments; (ii) greater liquidity in a sector that is traditionally illiquid; and, (iii) direct control over the investment as it is possible to interact directly with those promoting the project.

2.3. Blockchain 2.0: Tokenization

In Satoshi (2008), there is no mention of blockchain technology. The decentralized, distributed technology underpinning Bitcoin only began to establish itself a few years later. Today, 10 years later, even though Nakamoto’s initial goal was to promote a digital payment system that would avoid the intermediation of third parties (De Filippi and Wright, 2018), blockchain is becoming established as an application in many areas (Chichester, 2017; Garavaglia, 2018).

The development of Ethereum by Buterin in 2015 saw the de facto passage to what is known as Blockchain 2.0. Ethereum allows the creation of “smart contracts”, which play a key role in terms of potential applications by introducing the concept of “tokens”. The first definition of a smart contract was given by Szabo (1997, 1996):

A smart contract is a computerized transaction protocol that executes the terms of a contract. I call these new contracts “smart” because they are far more functional than their inanimate paper-based ancestors. No use of artificial intelligence is implied. A smart contract is a set of promises, specified in digital form, including protocols within which the parties perform on these promises. The basic idea behind smart contracts is that many kinds of contractual clauses (such as collateral, bonding, delineation of property rights, etc.) can be embedded in the hardware and software
Using smart contracts, it is possible to create digital tokens which can then be used to create a relationship between a typical native blockchain asset and a physical asset. This is done by giving a face value to the crypto asset underlying the blockchain or incorporating a right connected to the physical asset that the token represents (García-Teruel, 2020). The creation of digital tokens through smart contracts allows you to create what is called a “second layer” over the basic blockchain. Tokens can mainly be one of two types, according to the use being made and to the type of right incorporated within:

- **Utility tokens**: All tokens linked to projects that raise funds through the Initial Token Offering or Initial Exchange Offering. These tokens have no real intrinsic value, i.e., they do not represent real assets, corporate capital, or economic rights against the issuing company. The functionality of these tokens is primarily to provide owners with access to the services of a particular company or to recognize a particular status within a digital ecosystem.

- **Security tokens**: The offer of financial instruments representing traditional asset classes such as shares, bonds, rights, obligations, and their derivatives, or alternative asset classes (crypto assets) whose various underlying, real, financial, and virtual assets are capable of producing wealth by revaluing or distributing income. The emission of a security token is assimilable to the securitization of assets with the difference that the security tokens are based on the use of DLT (distributed ledger technologies). This typology, being equated to traditional investment, involves, in the same way, a financial risk. They are placed through an STO (Security Token Offering) and normally represent the equity of a company or legal person, i.e., holdings in capital stock (Garavaglia, 2018).

Among the many fields of application for blockchain and specifically tokens, real estate is one of the most interesting fields to analyze. With its entry barriers, specific regulations, and high transaction costs, it is above all an asset requiring a long-term commitment (Dijkstra, 2017) and is an asset class unlike traditional assets, such as shares and bonds, for example. In literature, the use of blockchain and smart contracts in the real estate sector is known as “PropTech” (Baum, 2017; Nasarre-Aznar, 2018). Some initial studies have shown the applicability in real estate as far as concerns the transaction process and administration of property transactions in general (Dijkstra, 2017; Veuger, 2018), which demonstrate the added values that blockchain can bring to the real estate sector, such as transparency, loyalty and above all, improved efficiency (Wouda and Opdenakker, 2019).

Nonetheless, although some academics have analyzed the application of blockchain technology in the property sector, to our knowledge, no study has been made on the possible interaction between the application of this new technology, including digital tokens, and real estate, using alternative financing methods such as crowdfunding. To date and the best of our knowledge, there are no exploratory studies that look at how companies managing platforms operating in real estate crowdfunding could implement and use this new technology.

As a result, in this context, we introduce two general research questions:

\[ RQ1: \text{What are the effects of alternative finance in the real estate sector?} \]

\[ RQ2: \text{Can using digital tokens within the real estate crowdfunding ecosystem contribute to improving the efficiency of investments?} \]

3. Methodology

In this paper, we decided to use a qualitative approach, based on the information system theory. In particular, we applied one of its characteristic archetypes, i.e., design science, which is based on knowledge and comprehension, leading to the solution of a practical, tangible problem, obtained via the creation of an innovative artifact derived from human capacity (Hevner, et al., 2004).

Additionally, in response to research questions, we decided to use more detailed surveys based on real cases. In this case, we examined companies that manage platforms operating in real estate crowdfunding, through which, as a result, we intended to add to current theory (Eisenhardt, 1989).

In our opinion, little empirical research has been carried out on the possible interaction between crowdfunding and blockchain in the real estate sector. An initial exploratory and qualitative research approach, therefore, seems to be the most recommended means to study this new phenomenon, based on innovations in technology.

Following Eisenhardt (1989) and Yin (2009), a multiple case study approach was used, establishing a sample in line with the theoretical background and with research undertaken in our study. The data were analyzed from three sources of evidence: semi-structured interviews, secondary sources, and observations of practices. We selected 10 active platforms operating in real estate crowdfunding, to which we added two that did not originally operate in the real estate sector, but which have recently decided to launch their first projects. There are therefore 12 real estate crowdfunding platforms that met our criteria, which were contacted to undergo semi-structured interviews.

The use of this method provides an overall understanding of experiences and possible future expedients for the platforms examined, which might not have been collected otherwise (Kulik, et al., 2012). Therefore the analysis was limited to a single market, Italy, for (1) homogeneity; and, (2) because it is a fast-growing market.

Table 1 lists the platforms involved in our study, divided according to segment and the role within the company of the person being interviewed. We defined two types of platforms: lending platforms and equity platforms. Lending platforms allow the investor to make his funds available to support various entrepreneurial projects, obtaining in exchange higher interest rates than those commonly proposed. Equity
platforms consist of a financing method through which the crowd can provide capital to private companies by obtaining company shares in exchange.

For confidentiality, the names of the 12 interviewee platforms have been omitted or anonymized. It was decided to carry out the analyses in question as anonymous case studies to avoid any misunderstandings or incorrect interpretations due to the open nature of the answers provided (Ben Oumlil, 2013). The anonymity of the people interviewed, who come from different platforms, allows us to extrapolate more truthful, real, and detailed information.

Data were collected through semi-structured interviews with people who, currently and at the time of the study, filled key operating roles within the different platforms. This meant that the interviewees had managerial roles and also included different creators and founders of the platforms themselves.

The interviews aimed to achieve a vision of the current state of the art concerning a possible interaction and connection between crowdfunding and blockchain within crowdfunding platforms specializing in real estate. We sought opinions on the future direction of undertakings within the sector and on the possible use of blockchain technology as well as the advantages that would come from its use, discussing the subjects in question and taking into account the literature.

The survey was built with SurveyMonkey and administered through LinkedIn, to reach respondents quickly and more easily. Answers were received over a total period of one month. No transcription was needed because the answers were already provided in writing, speeding up the process and allowing us to complete analysis with further secondary data. In the second phase, we used Web sites, articles in the specialist press, reports, and posts on social networks. In the third phase, we conducted observations of practices for increased robustness and to ensure truthfulness of answers (Jick, 1979).

A single interview protocol was used with structured open questions based on specific current factors and potential future variables, above all from an application-oriented viewpoint. Although the questions were semi-structured, respondents were invited to answer each question as appropriately and freely as possible. Where necessary, they were able to add to their answers personal experiences and additional information on the possible directions of the current state, but in particular, the future development and use of blockchain technology to support real estate crowdfunding platforms.

The number of interviews was set at 12, following a criterion of theoretical saturation, i.e., until the data collected through interviews were considered sufficient, given that further interviews would not have provided additional information to the study (Strauss and Corbin, 1990).

Specifically, the interview consisted of seven open questions covering three main aspects: (1) the possible use of blockchain technology within real estate crowdfunding platforms; (2) the possible use of digital tokens within real estate crowdfunding platforms; and, (3) the possible advantages and disadvantages, based on current regulations, which could derive from the application of blockchain technology. Starting from ideas provided by the literature, we touched on various areas, while leaving interviewees a wide degree of freedom for their answers.

4. Analysis of results

To understand the potential application of blockchain and crowdfunding within the real estate sector, we identified various variables that allowed us to understand the feeling of professionals in the sector about the approaches they have put in practice to date and possible future scenarios, taking the Italian and the global context into account concerning the use of blockchain technology in different spheres.

Analyzing the information provided by respondents, based on their experiences and expectations, from an empirical viewpoint, it emerged that many of the answers moved in the same direction. These variables, once identified, were divided into different categories concerning the
current state of regulations in Italy, use of blockchain-based crowdfunding, and lastly, use of tokens by crowdfunding platforms. Overall, almost all of the platforms involved in our analysis are active in the real estate industry, since 10 of them specialize in this field, preparing crowdfunding campaigns. The remaining two have not long entered this sector and are starting crowdfunding campaigns in real estate. The platforms can be divided into two clusters: six platforms were interviewed from the equity crowdfunding sector and six from lending crowdfunding.

4.1. The role of regulations

The regulatory framework can have a key positive or negative impact on the adoption of blockchain technology within real estate crowdfunding. As things stand in Italy, only equity crowdfunding has a dedicated regulatory framework through a law issued at the end of 2012. There are no specific laws to cover lending crowdfunding: there is only a secondary regulation put in place by Banca d’Italia, where crowdfunding lending is known as “social lending”, i.e., a means through which a group of subjects can request a group of potential financiers — via an online platform — to provide them with repayable funds for personal use or to finance a project. The activity of the portal operator is authorized, if it can be classified as the provision of payment services, while from the point of view of the borrower, the collection of funds is authorized when borrowers and lenders can influence contractual clauses by exercising their bargaining power in a personalized negotiation. However, an upper limit is recommended for private investment in portals to avoid abusive banking (Banca d’Italia, 2016).

Beginning in 2019, equity-based platforms were allowed to use their Web sites to set up online noticeboards for buying and selling shares of investee companies that successfully concluded a crowdfunding campaign (Commissione Nazionale per le Società e la Borsa, 2019). This opens up possible interesting scenarios, and it has been suggested that “the new amendments to the regulation can be useful given a possible secondary market”. Another of those interviewed said: “Yes, a transaction such as a Security Token Offering could generate a secondary market”. A third added: “Blockchain is a technology that can help the real estate sector through crowdfunding, increasing the degree of transparency and reliability.”

4.2. The role of blockchain-based crowdfunding

Blockchain technology may represent the next step in increasing the attraction and innovation of the real estate industry. One of those interviewed said: “We were the first platform in Europe to have used blockchain using a register managed by a third-party company headquartered in Switzerland.” Another confirmed that “we implement blockchain technology in part by generating a token for each project.” As far as concerns the advantages that come from applying this technology, many of the answers from those interviewed had common factors; for example, it was suggested that “to bring firm benefits, blockchain needs to be applied to the real estate industry in general. This is surely very complex but it would certainly be advantageous in terms of optimizing processes and costs”, and that “through crowdfunding platforms, it is possible to contribute to the transformation of property investments, which are projected towards a more fluid model. It will be possible to buy and trade tokens all over the world for any building, sharing even especially important degrees of ownership. What could deter this is the fact that institutions are currently not up to speed with such ground-breaking technology.” Another respondent answered along the same lines, confirming what other interviewees said, which is that “the greatest advantage is being able to break down the property and therefore, divide it into different tokens to offer investors.”

Others saw the benefits of creating a secondary market for crowdfunding and we were told that “by using this ground-breaking technology, it is possible to generate a secondary, liquid market”, which is no small thing if we consider that real estate investments are by their very nature illiquid. This notion was confirmed by another interviewee, who said that “the generation of tokens and the use of blockchain can be a good way to implement a secondary market.” Lastly, some of our interviewees talked about the role of blockchain applied to crowdfunding concerning its more specific characteristics; it was suggested that “blockchain may bring the necessary, still-to-be-guaranteed transparency towards investors, and also guarantee greater ease of investment.”

4.3. The role of tokenization in real estate crowdfunding

Although at the moment there is no regulation in Italy, the creation of tokens or tokenization is potential, in a future perspective, the most interesting variable to observe when talking about real estate. The idea of using a digital token, which manages to reproduce the concept of scarcity in the digital world by offering absolute certainty of the transaction of a physical — or even immaterial — asset, giving a value to the underlying crypto asset (Garavaglia, 2018), will probably be the genuine turning point for the future. On this subject, many of those we interviewed pointed out the many aspects that commonly converge. For example, it was suggested that:

For tokens in general, the sector is at the very early stages; in general, the construction of property-based equity tokens is interesting in this sense and several platforms have already got underway in Europe. I believe that the real problem is the construction of a global secondary market that doesn’t currently exist. We are working to be able to offer the possibility to invest in the platform but with cryptocurrency.

Another respondent told us:

I think that the use of tokens could be the best way to improve the current ecosystem, but there has to be an approach by the central authorities to regulate the dynamics in an integrated manner at the transnational level, given that at the moment there are still many grey areas.

4.3.1. Application to real estate crowdfunding

Concerning application to real estate crowdfunding, two interviewees respectively stated that: “the use of tokens would make the real estate
market and as a result, investments very liquid”, and “the tokenization of the property market through crowdfunding could provide a significant support to stock circulation, but to date, without specific regulations, there is no truly achievable implementation.”

4.3.2. Token implementation and model

Lastly, it was discussed whether or not, at the current time, platforms being analyzed were implementing tokens and of which type. An interviewee told us that: “we have already arranged to implement a security token within our platform for each project”, while several of our respondents stated that “we are working with companies in other countries to develop a security token model, since the regulatory context in Italy does not convince us”, and “at the moment, we have not yet implemented a solution of this type, but shortly, security tokens are going to be assessed.”

5. Discussions, implications, and conclusions

This research has been motivated by a lack of studies on the possible interaction between blockchain and crowdfunding, applied to real estate. As a result of this, a theoretical constructive approach has been applied using an initial explorative analysis of case studies, involving 12 Italian crowdfunding platforms, of which 10 specialized in real estate crowdfunding since their origin and two have only recently commenced their approach in this specific area. A qualitative method was used to explore, analyze, and understand the application of new emerging technologies, in their early stages, such as blockchain, and alternative financing methods, such as crowdfunding, intending to provide the viewpoint of those who have been actively working in the sector for some time.

Information collected from interviews gives us some idea of how, shortly, different factors can influence a real estate crowdfunding system, as shown in Figure 1.
The main consideration emerging from the answers provided by interviewees is the shared thought that the use of blockchain technology can only be beneficial within a sector — real estate — that is static, not very innovative, and which has strong barriers to entry. Concerning RQ1 (What are the effects of alternative finance in the real estate sector?) the use of the blockchain in the real estate sector enables enhanced transparency, the immutability of transactions, reduction of time and costs, and improves efficiency of the information process. In terms of
RQ2 (Can the use of digital tokens within the real estate crowdfunding ecosystem contribute to improving the efficiency of investments?) the
creation and use of tokens, especially security tokens offered through STO, would bring benefits to a sector in terms of liquidity, i.e., the efficiency of investments, contributing to the implementation of a so-called secondary market for trading securities in a property.

The main variable in this process is the regulatory framework. Although some countries, including Italy, have begun to implement laws on this subject to define blockchain and smart contracts, in Italy specifically, we are still a long way from token-focused regulations, for both ICOs and STOs. Until there is an explicit legal framework to regulate the sector, operators will not want to apply new innovative technology solutions or they will collaborate with companies in countries where the regulations have been defined clearly and in a manner that is not misleading, such as Switzerland (Autorità federale di vigilanza sui mercati finanziari [FINMA], 2018). In fact, from the interviews it emerged that some of the professionals are already working in this direction; due to lengthy bureaucratic times, agreements have been reached where regulations are already in force and allow them to operate more efficiently.

The information collected through the interviews shows that it would be a huge advantage to the whole sector of real estate crowdfunding to have a more liquid secondary market and the use of tokens, making the asset divisible, could contribute in this sense.

This research brings three areas together: new blockchain technology, new alternative, increasingly popular forms of financing such as crowdfunding, and a fundamental portfolio asset such as real estate. This explorative study contributes, in terms of theoretical implications, to enriching the literature on the subject, bringing together blockchain technology, crowdfunding, and the real estate industry. Therefore, our study moves the knowledge of the two ecosystems forward a step: on the one side, blockchain technology, which is continuously developing, and on the other, crowdfunding, a consolidated alternative financial tool.

We intend to provide both a theoretical and practical contribution, which must consider the limits of this study. The theoretical contribution consists in the possibility of implementing crowdfunding in the real estate sector, through the use of tokens. Concerning empirical evidence, this research is explorative based on a relatively small sample with information supplied by only 12 cases. Although the sample covers a national market, this does not allow us to generalize results on a universal level. The sample does show that in a specific sector, real estate, the propensity for cutting-edge innovative technological solutions is well considered in present-day terms, but above all, in terms of the future. Going forward, this research may be extended by looking at the state of the art in other countries. In addition, quantitative studies could be used for further research.

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Notes


References


Tokenomics: A new opportunity in the real estate business? A qualitative approach to crowdfunding and blockchain interaction


Appendix: Interview questions

1. When did the platform start its activity?
2. In which Real Estate crowdfunding segment is the platform positioned? Equity, lending, or hybrid?
3. In light of the changes in Commissione Nazionale per le Società e la Borsa (CONSOB) regulation on online capital raising in October 2019, do you think that crowdfunding and blockchain combined can be a valid alternative to make the Real Estate sector more attractive and innovative? If so, in what ways?
4. Do you already use blockchain technology within your platform? If yes, in what ways?
5. In light of CONSOB’s final report on initial offerings and crypto-asset exchanges in January 2020, do you think the use of digital tokens within the Real Estate crowdfunding ecosystem can help improve investment forms? If so, in what ways?
6. Considering the current Italian regulatory context, do you intend to implement, or have you already implemented, digital tokens on real estate projects within your platform? If yes, what kind, utility (ICOs) or security (STOs)?
7. What do you think could be the advantages and/or disadvantages of using digital tokens and blockchain technology within Real Estate crowdfunding?

Editorial history

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