

A REAL ESTATE COIN HAS TWO SIDES



A study on the effects of tokenisation
of real estate on the business model of
the investment manager

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MANAGEMENT SUMMARY

The goal of this thesis is to assess the implications of tokenisation on the attractiveness of investing in the institutional real estate investment products. The thesis starts with a description of what tokens are, followed by the advantages and disadvantages of this investment product. The difficulty of transferring legal ownership is further investigated after which a first conclusion on the attractiveness of tokens as an investment opportunity is drawn. The business model of the traditional real estate investment manager is reviewed as well as characteristics that give this traditional real estate investment manager its competitive advantage and especially what is being valued by the institutional investors. The similarities and differences between the business model of the traditional real estate investment manager as well as the business model of the investment manager that issues tokens are reviewed. Lastly, the choices that the investment manager has for offering the possibility to invest in real estate tokens are described i.e. fully committed to participations (or shares), fully committed to tokens and everything ranging in between these two extremes. If this is somewhere in between these two extremes, the considerations for having a separate organisations are considered.

Interviews with the respondents indicate that tokens are an interesting investment opportunity for institutional investors. It is thus assumed to investment managers will want to issue tokens to service their clients. The interviews show that the characteristics that give the traditional real estate investment manager its competitive advantage are roughly the same as those that separate the investment manager that is to issue real estate tokens. This implies that these investment managers will have the capabilities to successfully issue these tokens. There is no need for the two investment products to have separate organisations. It is assumed that the portfolio will be managed in the most efficient way and consequently the business models of the investment manager is based on the most optimal way to manage the portfolio. It is thus the portfolio that determines the business model, not the investment manager that bundles the portfolio.

STRUCTURE OF THE THESIS

The thesis start with an introduction; what were the reasons and what was the goal of the thesis. A brief description of relevant (economic) theories is given and the research question is introduced. Next the concept of tokenisation is explained and the legal status and its drawbacks are described. Subsequently, the business model of the investment manager is defined and the possibilities of how to manage a potential extra business model are assessed. Methodology of the research is followed by the results of the investigation. The thesis ends with a conclusion as well as recommendations and reflections.

PREFACE

This thesis is the end of my study Master of Real Estate at the Amsterdam School of Real Estate. The subject of this thesis is the effect of tokenisation of real estate to the business model of the investment manager. Tokenisation of assets in general and real estate in specific is such a new phenomenon that very little research on this topic exists. Let alone research on the attractiveness of this investment class to institutional investors. This is the justification of my thesis.

This thesis would not have been the same without the help of and pleasant cooperation with my coach, dr. Rodria Laline. Blockchain and its applications caught my interest and Rodria was the designated coach for that subject. She challenged me and brought me the personal development I was looking for. Hereby I want to thank her for that. I want to thank Fred Huibers for his valuable feedback. I also want to thank my respondents for the time they took and the patience they showed in helping me finding my answers. It was very interesting to hear their points of view and I hope to hear more from them.

I also want to thank my parents, family, friends, colleagues and of course my study buddy for their support during the time I studied and especially during the time I wrote this thesis. Last but not least I want to thank Vesteda for giving me this opportunity and the (financial) support.

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1. INTRODUCTION

1.1 REASON FOR THE INVESTIGATION

The quest for return is as old as mankind. It started with returns from hunting to expeditions. Then there was the Golden Age and the bubble of the black tulips. And now there are shares (listed or unlisted), options, and bonds but also direct real estate and more exotic investment categories like Bitcoins. The financial crisis of 2007-2008 taught us that in this quest for return investors are willing to invest in highly complicated investment opportunities and therewith take on excessive risk levels, knowingly or unknowingly. Now that the financial crisis is over everyone agrees that the companies that offered those complicated investment opportunities were irresponsible and that investors should be protected against such malpractice. On the other hand money is cheap and attractive traditional investment opportunities scarce. As a result more and more investments are executed in the 'not so core' investment opportunities such as offices outside central business districts. It is to be expected that the more exotic investment opportunities will gain popularity. But didn't we say that we would not fall for the trap of complicated and obscure investment products anymore? Or does that throw the baby out with the bathwater? The answer to those questions lies in the answer to the question what makes an investment opportunity legitimate and attractive and what investment opportunities should not be available to the public.

Ever since the start of the quest for return, investors have had different preferences for risk and return and therefore different attraction towards certain investment products. Most investors own a portfolio containing different investment products. Real estate is usually part of these portfolios as it offers high returns, a hedge against unexpected inflation and its ability to reduce the overall risk of the portfolio as a result of the different responses to expected and unexpected events. Investing in real estate can be split in debt and equity and public and private. Through time the preferences of investors have shifted somewhat but private debt has always been the most popular category of real estate investments. (Susan Hudson- Wilson e.a., 2005) In addition to these preferences, investors face some typical concerns or constraints, particularly in the real estate asset market:

- Risk: the probability that future performance of the investment may vary over time in a way that is not entirely predictable at the time of investment
- Liquidity: the ability to buy and sell the asset quickly without affecting the price of the asset
- Time horizon: the time horizon over which the investor's concerns, constraints and objectives are relevant
- Size: the size of the investor in terms of the amount of capital in need of investment
- Investor expertise and management burden: how much desire and ability the investor has to manage the investment assets and process
- Capital constraint: the ability to obtain additional capital relatively easy if good investment opportunities are available

General rule is that investors will prefer less risky investments, other things being equal. Some investment opportunities are more risky than others and the reasoning behind the decision to choose the one investment opportunity over the other may vary between investors.

When comparing investing in direct real estate to indirect real estate, the most important differences of investing in the two categories include: indirect investments can be small as compared to direct real estate. Second, indirect real estate is usually publicly traded and resultantly provide the investor with more liquidity than direct investment in the underlying real estate assets. Third, unless the investor purchases a large proportion of the real estate shares, the investor will have little management burden, as the management will be executed by the management of the investment vehicle. Fourth, indirect real estate usually includes active management that may engage in active buying and selling of real estate assets as well as project development, not just passive holding and operating a static portfolio of properties. The risk and return characteristics of this investment category reflect the risk and return characteristics of the active management, including the perception of its abilities and future performance, as well as the nature of the existing portfolio of properties. Finally, indirect public real estate is usually traded in the stock market thereby reflecting stock market sentiment on top of the assessment of management capabilities and real estate qualities. (Geltner & Miller, 2001) Due to the differences in characteristics of the different types of investments, potential for diversification of the risk on the portfolio exists.

A new form of real estate emerged that has characteristics of both direct and indirect real estate; tokenisation of an asset. As this tokenisation is different from the existing investment classes, it brings a new possibility for the diversification of the investment portfolio. Tokenisation is the process of converting rights to an asset into a digital token on a blockchain. A blockchain is a public file for recording and totalling economic transactions (ledger) of all transactions ever executed. New blocks are added to it in a linear chronological order. It enables the transfer of value in a digital form, without requiring a central authority or institution to verify and validate the transaction. The blockchain technology enables the maintenance of a database comprising a growing list of data records and preserves the integrity, uniqueness and validity of the stored information, without requiring any trusted third party for verification purposes. (Probst, Frideres, Cambier, Martinez- Diaz, & PWC Luxembourg, 2016). This is shown in figure 1

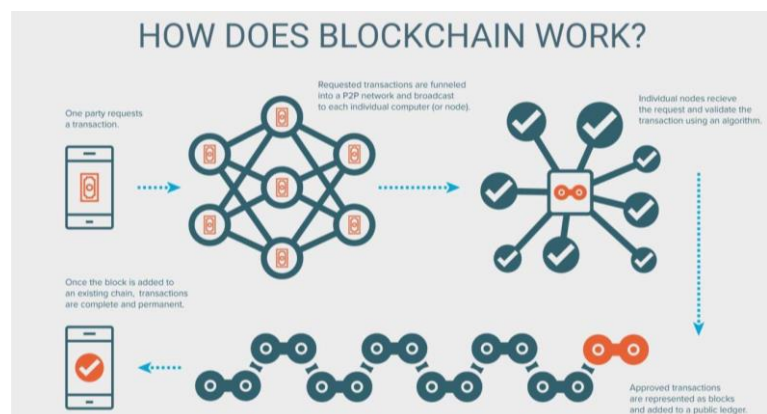


Figure 1: How does blockchain work?¹

Blockchain technology will allow real estate assets to be tokenised and traded similarly to Bitcoin, with similar advantages. Property titles and ownership histories will be recorded on the blockchain. The value of that property will be represented by a token on the blockchain. This will allow real estate assets to have a digital address that

¹ Source: <https://www.cnet.com/news/blockchain-explained-builds-trust-when-you-need-it-most/>

contains information on physical characteristics, legal status, occupancy, historical performance and financial position. The purpose of the blockchain is to retain a permanent, yet retrievable history of all real estate transactions and registrations and thereby eliminates the need of the traditionally in an acquisition or disposition included records of parties such as banks, lawyers, insurers, regulators and tax agencies. (Malviya, 2018) The blockchain thus solves multiple problems but there are significant risks to its adoption. First, there is resistance to change. Customers need to accept the fact that electronic transactions are safe, secure and complete. Scaling is the second risk factor; the size of the current nascent services based on blockchain poses a challenge as the entire set of existing blockchains needs to be downloaded and validated before the first transaction can be executed. Third, a significant set of migration tasks need to be executed to move existing contracts or business documents to the blockchain based methodology. This involves time and costs. Fourth, the adoption may be slowed down by the introduction of new laws to monitor and regulate the industry for compliance. This however also has a positive effect on the acceptance of the technology. Fifth, blockchain technology may be used for fraudulent activities like money trafficking. Sixth, the underlying prerequisite of the blockchain technology is the fact that it is mathematically impossible for a single party to game the system due to lack of needed compute power. Future development of Quantum Computers may crack the cryptographic keys through sheer brute force approach within reasonable time. (Crosby, Nachiappan, Pattanayak, Verma, & Kalyanaraman, 2015) These are the most important disadvantages. Let us for now assume that these disadvantages will disappear over time and the technology will be accepted and used by the general public.

The tokenisation of real estate thus seems to offer a good opportunity to invest in real estate by avoiding some of the disadvantages of the traditional ways of investing in real estate. Or is this the new overrated investment category that just is too difficult to understand and therewith the prelude of a new financial crisis? Assuming this really were to be an interesting alternative to investing in the traditional institutional investors (or indirect unlisted real estate), would this then imply that the (attractiveness of) investments in these traditional institutional investors would decrease?

Most innovations, disruptive or not, begin life as small-scale experiments. Disruptors tend to focus on getting the business model, rather than merely the product, just right. When they succeed, their movement from the low end of the market or from the new market to the mainstream erodes first the incumbents' market share and then its profitability. This process can take time and incumbents can get creative in the defence of their established business. Managers should be wary of mix and match behaviour from different successful companies that are inconsistent with one another and adopt an appropriate business model. (Christensen, Raynor, & McDonald, 2015)

The company's business model is a blueprint of how it does business. It translates strategic issues, such as strategic positioning and goals, into a conceptual model. This conceptual model explicitly states how the business functions. The business model serves as a building plan that allows design and realisation of the business structure and systems that constitute the company's operational and physical form. The business model is often referred to as everything that is believed to give a competitive advantage. It is focused on a description of the elements and relationships that outline how a company creates and markets value. (Osterwalder, Pigneur, &

Tucci, 2005) A business model consists of two essential elements: the value proposition and the operating model. 'What are we offering to whom?' is answered by the value proposition. It reflects choices along the following three dimensions:

- Target segments: which customers do we choose to serve? Which of their needs do we seek to address?
- Product or service offering: what are we offering the customers to satisfy their needs?
- Revenue model: how are we compensated for our offering?

'How do we profitably deliver the offering?' is answered by the operating model. It captures the business's choices in the following three critical areas:

- Value chain: how are we configured to deliver on customer demand? What do we do in-house? What do we outsource?
- Cost model: how do we configure our assets and costs to deliver on our value proposition profitably?
- Organisation: how do we deploy and develop our people to sustain and enhance our competitive advantage?

Innovation is more than a technological or product/ service innovation. Innovation becomes business model innovation when two or more elements of a business model are reinvented to deliver value in a new way. (Lindgardt, Reeves, Stalk, & Deimler, 2009) The current business model of the traditional institutional real estate investors is therefore explored as well as the possible business model of tokenised real estate. What are the similarities and can the two be combined?

1.2 GOAL OF THESIS

The goal of this thesis is to assess the implications of tokenisation on the attractiveness of investing in the institutional real estate investment products. This is relevant as tokenisation could potentially change the attractiveness of the traditional institutional real estate investment managers. Given the global nature of tokens, a global scope is chosen. Its possibilities and impossibilities are considered in the light of Dutch legislation.

1.3 CENTRAL QUESTION

The central question of this thesis is "How should traditional real estate investment managers react to the possibilities of tokenisation of real estate as an asset class?"

1.4 NECESSARY SUBQUESTIONS

In order to evaluate the possibilities of tokenisation of real estate, the following subquestions need to be answered first:

1. What is tokenisation and what are its strengths as an investment opportunity?
2. What are the disadvantages of tokenisation, can they be solved and in what time frame?
3. What are the main tasks and responsibilities of the investment manager and how can the investment manager add value for the institutional investor?

4. Assuming the attractiveness of tokens of real estate as an asset class, what possibilities does the investment manager have?

1.5 RESEARCH METHOD

Determining the appropriate reaction of these traditional investment managers is the goal of this thesis. In line with the research of Salehar (2017) that studied the potential of blockchain to act as a catalyst for business model innovation in the health care industry, an exploratory research approach is chosen. An exploratory approach is adopted when there are no or only few earlier studies on the research problem to rely upon to predict an outcome. (Salehar, 2017) Literature is studied and the research will be complemented with interviews.

2. TOKENISATION

This chapter starts with a description of tokens as well as its advantages and disadvantages. There is special attention for the difficulty of transferring legal ownership. A solution is presented. Finally a feasibility study is done on the attractiveness of tokens as an investment opportunity.

Transfer of Property Using OpenLaw Core

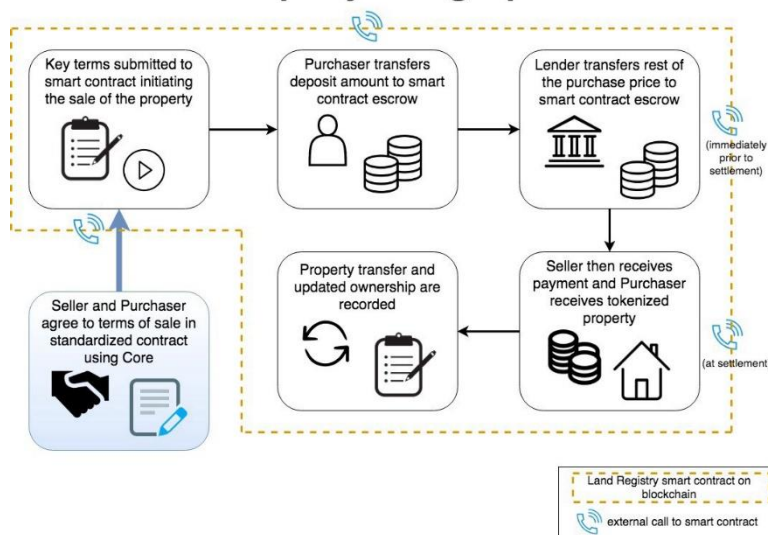


Figure 2: Transfer of Property

Tokenisation is the process of converting rights to an asset into a digital token on a blockchain. This is illustrated in figure 2². The Swiss Financial Market Authority recognises different kinds of tokens:

- Utility tokens: utility tokens are intended to provide access to an application or service by means of a blockchain-based infrastructure
- Asset tokens: asset tokens represent assets such as equity or debt

claims against the issuer. This type of tokens contains a promise, for instance a share in future earnings of a project or company. These tokens are analogous to bonds, equities or derivatives in terms of their economic function. This type of tokens include tokens that enable physical assets to be traded on the blockchain

- Hybrid tokens: the individual token classifications as set out are not mutually exclusive. Utility and asset tokens can also be classified as payment tokens for instance. Payment tokens are designed act as a means of payment and are not functionally analogous to securities. (Baker McKenzie)

Asset tokens are also called security tokens. In the United States these token sales and investments are subject to SEC securities regulations³. This thesis will concentrate only on security tokens as investing in this kind of tokens is an alternative to investing in traditional real estate. It is most common to tokenise equity, but one can also choose to tokenise the debt of a fund or SPV.

Tokenisation (of real estate) has multiple advantages. Nothing ever only has advantage, nor do tokens. Like the advantage, some of the disadvantages are similar to those of blockchain as mentioned in chapter 1. A token is a record of a number which is kept by a specific address on the blockchain and can be divided and transferred to another address (transaction) within the ledger of the blockchain system. A few principal features make tokens perfectly suited for the management of property rights:

- The blockchain protocol is designed to make transactions while not allowing for double spending

² Source: <https://media.consensys.net/the-purchase-and-sale-of-real-property-on-ethereum-55bdc289a7b5>

³ Source: <https://strategiccoin.com/3-types-ico-tokens/>

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- Because only a person who has a cryptographic private key may manage the token, the addresses provide for exclusive access
- The blockchain ledger is a complete and transparent history of records, implying that one is allowed to track each token from the moment of creation, including transactions between any number of addresses and fractional transactions

Certain features make the tokens principally different and more developed compared to a traditional, centralised way of making ledgers that is typical for banks and public registries. These features include:

- The technology offers a decentralised way of keeping records. This means that no one keeps all of the power in his hand, preventing usurpation of power and corruption
- The immutability and the non-returnability of transactions, meaning that is practically unfeasible to delete or alter a record or corrupt it in any other way
- The next generation of blockchains offer algorithms to introduce a high level of automation and security for the management of the tokens while excluding the necessity of a human to operate it manually at the same time

A title is evidence of ownership. This title represents the property rights of an estate: this is an equivalent of estate but on paper, which is legally recognised. The is illustrated in figure 3⁴. The crypto-token is a technology

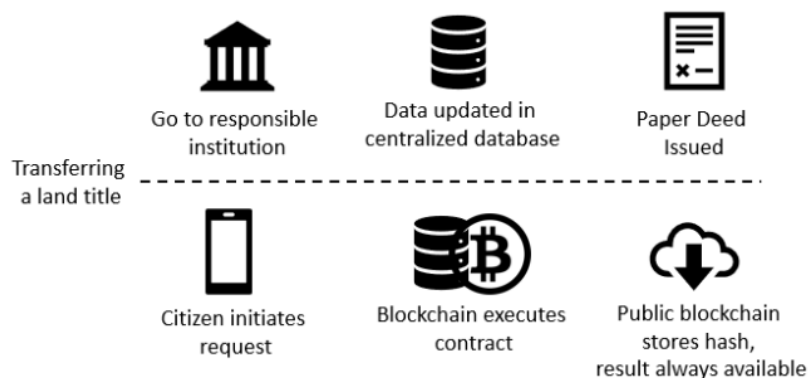


Figure 3: Illustration of transfer of a land title

that has the same purposes; it can represent value and prove ownership. The difference is however that titles of real estate have a long tradition and legacy of regulation and tokens have not yet been recognised in the existing laws. Transactions that are made with real estate tokens will therefore not have any legal

consequences yet. Title deeds must be acknowledged in some countries before a notary or other authorised persons and recorded in the public registry. Using tokens for real estate thus requires legislative changes that legitimise new procedures of acknowledgement and recording on the blockchain.

The title can be divisible. There are two main aspects of property rights: the type of ownership and a set of specific rules which co-owners must follow to respect the rights of other co-owners. The law and the agreement between the co-owners may establish some specific rules the co-owners have to follow. Different jurisdictions may have some specifics in co-ownership law, as well as individual jurisdictions that may have agreements between co-owners to establish specific rules. Considering tokens, at least two layers of technology solutions

⁴ Source: <https://cryptonomics.show/2018/08/27/episode-3-proof/>

must be applied: the first layer is a set of algorithms that establish general rules specific for certain jurisdictions. The second layer are individual rules based on contracts, that do not contradict general rules.

Co-owners are not the only type of third parties that can influence the property rights of an owner. The two other categories of third parties are:

- Third parties which are not owners but have interest in the property as per the agreement or law
- Third parties that have no interest but have legal access to the property and may influence it (judge and notary for example)

The concept of property rights include a bundle of rights: the right to dispose, the right to possess and the right to use. The owner is free to manage these property rights and deeds that he concludes influence this bundle (for example, renting out the property, transfers the right of possess and own the property to another party). The concept of property rights is complex and the situation is even more complicated by the existence of different jurisdictions and traditions of law. There is a need for a model of property rights that matches the concept of tokens driven by smart contracts, taking into account all specifics coming from the blockchain technology (i.e. immutability of records and smart contracts) so all necessary high-level features must be developed by design not on the run.

There is also the other type of third parties that have no interest but have legal access to the property and that may influence it. This includes notaries that execute wills and apply inheritance laws but also the situation when a title is under the obligation to obtain permission from the public body to convey the property, for instance when the government prevents illegal construction on the land. The approval and certain legal actions must be performed before a deed. None of this is implemented in the existing electronic solutions. This needs to be designed in a system that aims to provide a full range of legal instruments to manage property rights by smart contracts. Attention should be paid that in an attempt to design this system, one does not try to use the blockchain as a database of records that reflects acts made offline as the blockchain in this case is not a primary source of evidence. There is not much benefit in this approach as the central registry essentially does the same. Storing hashes on the blockchain of records made in the central database is equally suboptimal. A private company or a public body keeping copies of private keys or use multi signatures also does not bring much value compared to existing approaches because it is still centralised. The company might as well be corrupted while the public body creates bureaucracy. Another arguable solution is the creation of an electronic compliance system. The owner uses a specific smart contract for each transaction of a token. Here the smart contract is not a contract in the common sense but just an electronic algorithm. The contract is not a self-sufficient and closed legal act in real life. It reflects the agreement of parties as to essential conditions, but laws provide norms that are not necessarily included in the agreement and are followed as if they were included in the contract. It is sometimes almost impossible to include all of the provisions in the contract. The contract may only refer to the law in such a case. A smart contract, which is sort of a closed system, is flawed because it cannot be influenced by external factors (like the law). Using an electronic compliance system is a solution; the compliance system will verify the token and the parties before a transaction. It must be ensured that such a system is good enough to protect the rights of parties according to local jurisdiction and is not corrupted, implying similar problems as the

private company managing keys and records. The best solution is to develop a system so that the government will adopt it implemented by design existing specifics of jurisdiction. The law implements required provisions from the legislation and in case something goes wrong, parties will use mechanisms of litigation and arbitration. Algorithms adopted by the government will be a higher layer for smart contracts and will work as obligatory standards; smart laws. These smart laws will establish a mechanism and rules of access of third parties to tokens and some basics principles of work (that reflect existing regulations). Combined with the concept of “oracles”, i.e. special servers from which smart contracts receive reliable information from outside the smart contracts, it will be possible to keep track of authorised persons like notaries that may perform transactions. Any smart contract designed based on these smart laws will be able to provide the whole range of legal instruments and if the situation with property rights and ownership is stuck, parties will be able to settle it in a court.

Smart laws will provide necessary rules to run public oracles. Oracles require manual management, someone must update the notary list for instance, but this is now performed by the government anyway. The only question is whether the digitisation and protection from corruption and fraud is satisfactory. Oracles assume a certain degree of centralisation as it required actions of third parties. The centralisation is not a threat but an environment where risks of corruption and excessive regulation arise from. The question is therefore how the oracles are designed to protect from these risks. To protect smart laws that run oracles from the corruption, backdoor access of someone specific to change them must not be allowed. Once the code is deployed, it must remain unchanged. Blockchain offers a good solution here as it can deploy completely transparent and verifiable applications protected from someone’s manual control. The only way to change something here is to change the code of the blockchain protocol which requires a large consensus.

There will be algorithms of electronic voting on the blockchain at the upper level to grant the necessary access to update the system. Voting will be a public democratic mechanism of the control over smart laws systems and protect these systems from the corruption. (Konashevych, 2018) (Cameron- Huff, 2017)

Another complexity is that it is highly complicated or even outright impossible for private investors to buy exchange-traded funds or real estate funds in some countries due to insufficient connectivity to worldwide exchanges. Investors need expensive broker or bank accounts and are severely limited in their freedom to trade by local governments. No easy and secure way exists to invest in a crypto-basket with full market exposure in exchange for a single token. A fund manager needs to be trusted to allocate the assets and to not take advantage of its position; there is no legally binding contract between the fund manager and the investor. There are no agree-upon verification processes for fund managers or any form of regulation and investors are thus solely dependent on trusting that fund managers spend their funds how they said they would. (Drzazga, Mischke, Schlünzen, & Paetz)

2.1 EVALUATING THE DEVELOPMENT POTENTIAL OF TOKENISATION

Tokenisation thus comes with its own set of advantages and disadvantages, probably even more than mentioned here. As this investment class is so new, it is yet to be discovered by the general public. Is it to be expected that, based on its unique set of advantages and disadvantages, investing in tokens will be attractive to this general public?

2.1.1 CATALYSTS OF INNOVATION

There are five catalysts that serve as an early indicator of a potential innovation. Catalysts can be thought of as shifts from the historic, prevailing conditions to new conditions. These catalysts can change the desirability of an offering or the viability of a business model by either making a new offering technically feasible, enabling a new offering to equal or exceed the features of the current offerings or by changing market conditions. These catalysts precede any action that an individual company would take. The most relevant catalysts for a potential innovation are related to enabling technologies, customer expectations and preferences, platforms, macroeconomics and public policies. Catalysts often exist independent of market or industry designations although specific market conditions may shape the degree of impact a catalyst has on that specific market. Enabling technology drives change in society and in the economy, in both the personal and public sphere and are at the root of most of the innovations. Enabling technologies are technologies that can be applied to drive radical change in the capabilities, structure or economics of a business, user or culture, including blockchain and its applications.

Businesses are driven by customer demand but customers' preferences, values and expectations are not fixed, nor are they universal. At any rate customers have expectations that are shaped by what they see around them, what they experience in their professional and personal life and by financial and social pressures. Sometimes there is a noticeable shift in expressed values but at other times it is not so much that preferences or values change as that customers now believe something is feasible and reasonable that previously was not. Shifts in mindset may take time to register, as feasibility often precedes widespread demand. Customers do not necessarily express a preference for something until they learn that it is possible, often because another producer has offered it to them. Suddenly they expect it everywhere.

Platforms help make resources and participants more accessible to each other on an as-needed basis. As such, they can become powerful catalysts for rich ecosystems of resources and participants. Macroeconomic factors, for example interest rates, affect how businesses and individuals operate and make decisions. Significant changes in the macroeconomy can affect the priorities and assumptions underlying decisions about purchases and investments. Although macroeconomic changes can help to catalyse some aspect of the new approach or amplify its potential, provided that it persists long enough for a new approach to gain critical mass, the threat of innovation and changing preferences will endure independent of economic cycles.

When the government changes to the degree to which it intervenes in a specific aspect of the society or business environment, the result can limit options for new and for existing businesses. The public policy environment is not restricted to regulation and legislation but includes the influence on change to for example tax policy or trade restriction. (Hagel, Seely Brown, Wooll, & de Maar, 2015)

2.2 FEASIBILITY STUDIES

In order to assess whether a certain innovation, like for instance the development of the potential to tokenise real estate, is good business sense, feasibility studies are often conducted. In order for investing in tokens to be attractive to the general public, it must be demonstrated that technical issues are satisfactorily addresses as well as consideration of broader commercial, economic and social issues in the development of a comprehensive business plan, including an assessment of the risk- reward profile. Resolution of technical issues is often seen as the primary focus of a feasibility study whereas in reality these technical issues are the basis upon which the business plan is built. Rather, the feasibility study assesses in detail the technical soundness and economic viability of a project and serves as the basis for the investment decision. The primary goal of the study is to demonstrate that the project is economically viable if it is designed, constructed and operated in accordance with the concepts set forth in the study.

Feasibility studies are typically undertaken after detailed information gathering of all material data relevant to the project to the project development structured to:

- Demonstrate the technical and economic viability of a business opportunity based on the proposed project
- Develop only one investment case and define the scope, quality, cost and time of the proposed project
- Establish the risk profile and uncertainties associated with this risk profile and develop mitigation strategies to reduce the likelihood of significant changes in the project assessment
- Plan the implementation phase of the proposed project to provide a baseline for management, control, monitoring and reporting of the project implementation and establish a management plan for the operating phase (Mackenzie & Cusworth, 2007)

2.2.1 FEASIBILITY STUDY ON TOKENISATION

Investing in cryptocurrencies has attracted much interest over the last year. Not everybody is seriously considering to invest themselves, but at least familiarity has increased. It is not unlikely to assume that this buzz will stay around for some more time and maybe even intensify. The current quest for return is also not expected to end any time soon. These two phenomena can be regarded as catalysts for innovation as they could create openness towards investment categories that are off the beaten track. Questions that now need to be asked first are whether the possibility of investing in real estate tokens is technically and economically viable. The acceptance of the general public is completely dependent on this feasibility of a project or innovation. The implementation phase is next.

2.2.1.1 Technical viability

The investment manager needs to choose a blockchain to use for its tokens, based on the specific characteristics of that blockchain. The technical configurations of blockchain are a series of design choices in which the levers on security (consensus protocol) and speed (size of block) can be selected to make most use cases commercially viable. (Carson, Romanelli, Walsh, & Zhumaev, 2018) Numerous examples of successful applications of blockchains can be mentioned, for example Stellar. The technical viability is thus sufficient.

2.2.1.2 Economic viability

Assessing the economic viability is somewhat more challenging. The size of the real estate market will not pose a problem; the size of the professionally managed global real estate investment market grew from \$7.4 trillion in 2016 to \$8.5 trillion in 2017⁵, leaving ample opportunity for assets to tokenise. The acceptance of customers of the safety, security and completeness of tokens will probably gradually increase in time as it is also doing with cryptocurrencies; total market capitalisation of the top 10 cryptocurrencies in 2014 was \$11 billion in 2014 and \$455 billion in January 2018⁶ and is expected to hit the \$1 trillion mark this year⁷. This growth was everything but linear; several peaks but also troughs have characterised the development of the currencies and are not in the last place spurred by sentiment resulting from hacks, leaving at least some investors somewhat cautious to invest in these exotic investment opportunities. Contrary emotion is what investors fear most is not the risk of a loss per se, but the risk that they may do poorly relative to their peers. This means that even though investments in some investment classes may be extremely risky, investors tend to cluster around such pie-in-the-sky opportunities to avoid being the only one to miss out on the “next big thing”. (Rigoglioso, 2007) Another sentiment that could have a positive effect is the announcement by Blackrock, the largest investment manager in the world, to evaluate investing in cryptocurrencies⁸. This could be a catalyst for upward price movement and encourage other investment managers, even with more conservative strategies, to seriously explore investing in crypto assets. This acceptance to risk and innovative products can also be seen in the adoption of FinTech; FinTech adoption will continue to gain momentum and is expected to increase even further. Largest contributor to this growth is awareness due to the positive relationship between adoption and awareness of FinTech. (Gulamhuseinwala OBE, Hatch, & Lloyd, 2017). What remains are the specific characteristics of tokens and their appeal to (institutional) investors. Investors will be charmed by the transferability, transparency, opening of new sources of finance as well as the immutability and decentralised nature of the data and the diversification potential. Everything, including tokens, has its downsides. The hardest of the current status of tokens being the inability to transfer legal ownership via tokens. Other unsolved questions are which legislation will apply (although that is a plus for some investors, that of course not being the institutional investors).

2.3 ASSESSING THE POTENTIAL OF REAL ESTATE TOKENS FOR INSTITUTIONAL INVESTORS

Tokens offer great opportunity for the investment community. The strengths are unparalleled and will draw investors. There are several downsides however of which the most striking is the inability to transfer legal ownership. The lack of regulation also poses a challenge. These two downsides need to be overcome first before the wider audience will even consider investing, let alone the institutional investors. Until the problems have been solved, tokens will remain only attractive to the ‘geeks’.

⁵ Source: MSCI <https://www.msci.com/www/research-paper/real-estate-market-size-2017/01032786497>

⁶ Source: <https://howmuch.net/articles/top-10-cryptos-past-5-years>

⁷ Source: <https://www.cnbc.com/2018/02/13/cryptocurrency-market-to-hit-1-trillion-valuation-in-2018-kraken-ceo.html>

⁸Source:<https://www.reuters.com/article/us-blackrock-cryptocurrency/blackrock-is-evaluating-cryptocurrencies-ceo-fink-says-idUSKBN1K61MC>

The characteristics of tokens are that appealing and its future that promising that it is to be expected to have full attention of all those involved and to force those involved to engage themselves to find solutions. The notaries will be aware of the potential of tokens and the potential threat towards their positions and their involvements in the process and thus will try their hardest to find a workable solution for the problem of transferring legal ownership. The solution of an electronic compliance system including smart laws and oracles as presented by Konashevych (2018) could also be used.

The same goes for the legislators and financial authorities; the expected size and importance of this market will force them to find a solution. Not only because token issuers will otherwise move to countries that have more supporting legislation, presenting an investment opportunity also to those inhabiting the 'less-favourable' countries.

The advantages are numerous and I therefore consider tokens an attractive investment opportunity for institutional investors. Only and only when the weaknesses are solved. Commitment in itself is not enough for a system to work soon. Given the complexity of the issue and the number of legislators and other parties involved, this solution will not be presented in the short-term. Hopefully a solution will be found in the next five years.

3. ALLOCATION OF INSTITUTIONAL FUNDS: THE INVESTMENT MANAGER

This chapter describes the responsibilities and functions of the investment manager and how the value of the management firm is determined. The motives of an institutional investor to select a specific investment manager as well as those of the investment consultants are described. The investment management process within the institutional investors itself is evaluated last.

The next step is to determine whether there is enough value to unlock for the business case of tokenisation to have value. The trap of developing a solution without a problem is avoided by taking a structured approach in determining whether there is value to be created. This means that the current situation needs to be analysed before the next phase can be executed; improving the current situation.

Investors have different preferences regarding risk and return characteristics, but also along dimensions as the amount of capital available, the possessed expertise relevant to managing investments and the nature of the legal and regulatory constraints under which they operate. Investors cannot or prefer not to manage all of their investments themselves. The development of professional investment management advisory firms has filled this gap. Such firms help investors place and manage capital in many types of investments products and asset classes. Real estate investment management firms come in a variety of shapes and sizes. Some are independent firms specialising purely in the private property market, of which some are specialised in one particular type of property. Others are branches of broader investment or financial firms that offer private property investment management as one of a broad range of investment and financial services.

3.1 RESPONSIBILITIES AND FUNCTIONS OF THE INVESTMENT MANAGER

Professional real estate investment management involves a number of responsibilities and functions:

3.1.1 INVESTMENT ADVISORY SERVICES

Generally, investment advisory services refer to advice regarding macrolevel real estate investment decisions, potentially including both strategic and tactical level policy. Size, quality level and type and geographic distribution of properties that should be targeted for the client are typical questions for which real estate investors need expert answers.

3.1.2 ASSET SELECTION AND TRANSACTION EXECUTION

The tasks and responsibilities differ per investment manager, but virtually all investment managers have to find, buy and sell properties on behalf of their clients or their funds that they operate on behalf of their clients. Asset selection and transaction execution both require familiarity with the local space and asset markets in which the firm operates. A big part of carrying out this function is searching, either for properties to acquire or for buyers who will purchase properties that the managers wants to sell, including negotiating and structuring the deal.

3.1.3 INVESTMENT PRODUCT DEVELOPMENT

Many real estate investment managers offer somewhat standardised products or vehicles designed to enable a relatively large number of smaller investors to place capital into the private real estate asset class. This enables the underlying physical assets to serve the variety of investment needs and objectives of the heterogeneous population of investors.

3.1.4 ASSET MANAGEMENT

One of the salient features of direct investment in private property assets, as compared to real estate funds, is the responsibility for operational management of the assets that are held. This is of course because whole assets are typically traded in the private property market, so equity investors generally have controlling ownership shares. The typical large-scale real estate investment management firm is organised into departments of which one will typically be asset management while another is often called acquisition and disposition. Asset managers are responsible not only for overseeing property-level operational management, but also for the longer-run strategic management and development of the property portfolio. It is important for the asset management function to be integrated rationally with the acquisition and disposition function, for one of the strategic responsibilities that involves both fields, is the decision of when and how to sell assets currently held by the manager and what sort of new acquisitions to target in the portfolio.

In commercial real estate investment, the management function is typically divided into two levels. At the more macro level is the function usually referred to as asset management, which involves the oversight of the entire portfolio of properties. At the lower or property level, operational management is referred to as property management. This property management includes activities like physical facilities management, leasing, tenant servicing, property cash flow budgeting, collection and management and capital improvement planning and budgeting. Property management is often contracted out to specialised property management firms.

3.1.5 SUPPORT FUNCTIONS: COMMUNICATION AND RESEARCH

In order to effectively execute the aforementioned responsibilities and to build and operate the investment management business, the management firm must also provide or acquire several other functions or services; for example, communication with clients is essential in a fiduciary business in which one is managing the clients' money. A key part of this communication is the compiling, analysis and reporting of investment performance information which can also provide a useful diagnostic and decision-support function within the investment management firm. Research is also an important support function for decision making as it can provide valuable insight and information for all of the aforementioned responsibilities as well as useful internal analytical and diagnostic information. The research department needs to develop and manage and organise decision-relevant information and knowledge concerning both the space markets and the property asset markets as well as the broader capital market.

Investment managers have different characteristics and as such can only perform a limited set of the typical responsibilities and functions. General rule is that at least two or three of the responsibilities and functions are bundled together and are not sold separately by investment management functions. The typical investment management process however encompasses all of the functions which thus have to be executed. This implies

A real estate coin has two sides

that the investor can have chosen to execute one or some of the functions itself or contract directly for some functions with other specialised firms. Applying this to tokenised real estate as an investment class, means that some of the functions that are traditionally executed by the investment manager, can be done by the investor itself. Investment research on the attractiveness of certain markets can be done by the investor itself, leaving a stripped-down version of the investment manager.

3.2 VALUE CHAIN

The activities of the investment manager have been fairly static through the years. With the emergence of blockchain and other possibilities to digitalise processes, it can be expected that at least part of these processes will be automated. The blockchain can be used to validate the processes and store the belonging documents. Figure 4 shows an example of the value chain, with the belonging key processes and a selection of the documents that are associated with these processes.

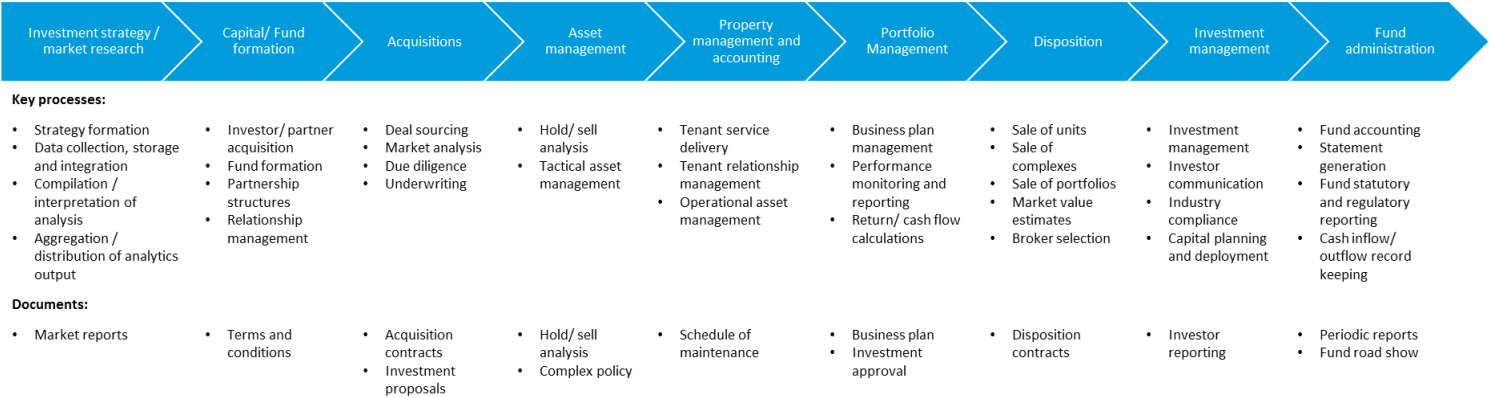


Figure 4: Value chain. Source: own figure

3.3 VALUE OF THE INVESTMENT MANAGER

The real estate investment manager is subject to major causal relationship. This is depicted by figure 5.

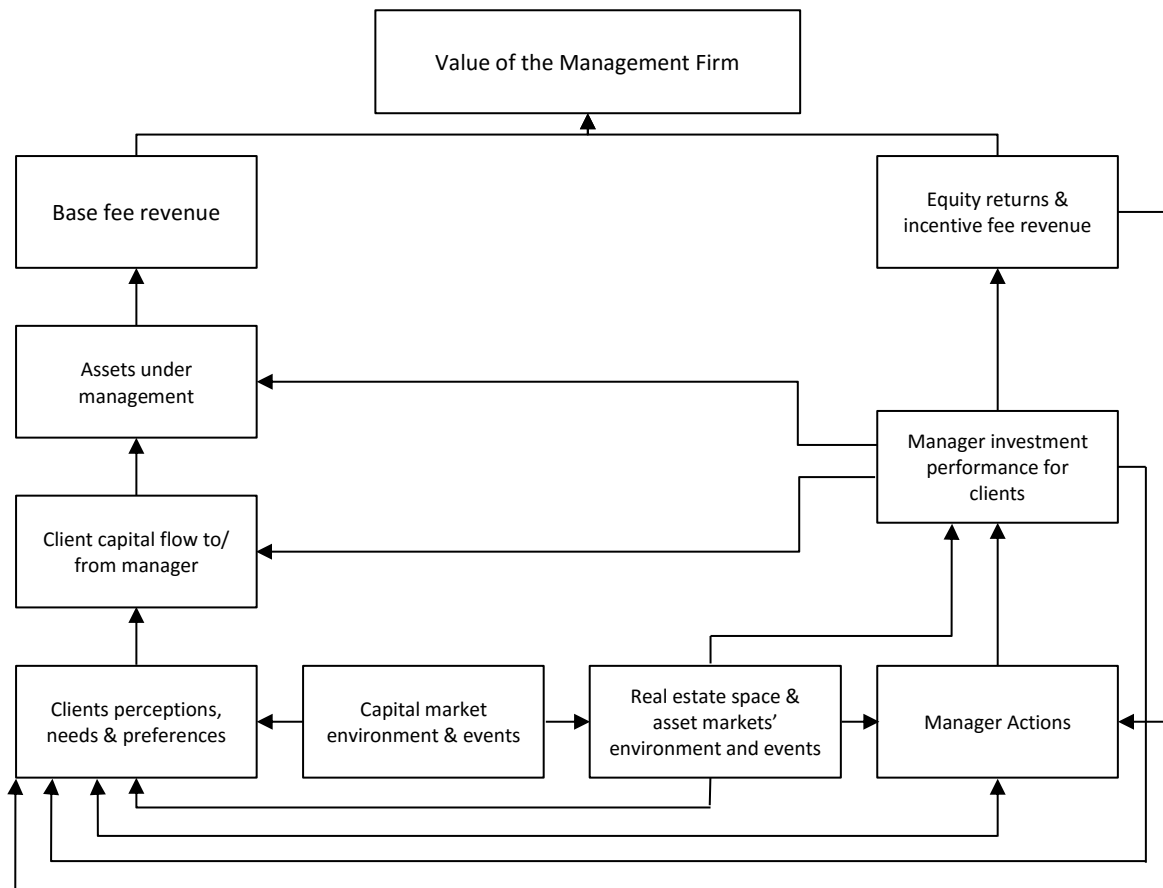


Figure 5: Value of management firm

At the top of the diagram is the major overall long-run consideration for the owners of the firm, namely the value of the firm and the maximisation of this value is considered to be the primary goal of the firm's management. At the bottom of the figure are four broad causal factors that underlie the firm's results, including the overall capital market, the real estate asset and space markets, client preferences and actions taken by the real estate investment management firm itself. These underlying causal factors interact with each other to determine the flow of investment capital into or out of the management firm. The only one of these four causal factors that in management's hands are its own actions and are reactions to past, present, and perceived future trends, events and opportunities in the commercial real estate space and asset markets, which in turn are affected by the capital market and the real economy. The actions of the manager include actions regarding acquisition, asset management and disposition of the property and result over time in a certain investment performance outcome for the client. The manager's actions are limited by the client needs and preferences and the manager can itself take actions to directly influence client attitudes, perceptions and preferences regarding real estate in general and the manager in particular. This includes actions such as client advisory services and communication. This is indicated by the two-way relationship. The client is also influenced directly by the capital market and by the client's own perception of the real estate space and asset markets. Clients attitudes and preferences relevant to

the manager interact with its perceptions of the manager's performance results to determine the amount of capital flowing to (or from) the manager. (Geltner & Miller, 2001, pp. 704-715) As the value of the investment manager is a result of the asset under management, it is of utmost importance to maximise these assets under management. Key is making sure that the part of asset under management that is allocated towards other investment managers that offer alternative investment classes such as tokenised real estate, is as small as possible. Offering these investment classes itself is only part of the answer as clients need to recognise return maximising possibilities and thus the value added by the investment manager. Identifying the appreciated characteristics is the first step.

3.4 EXTERNAL INVESTMENT MANAGEMENT

3.4.1 EXTERNAL MANAGERS

Most institutional investors did not build up the competences in these organisations to invest their assets in financial markets on their own. Rather, the assumption is that the best way to serve their needs is to use the institutional investment organisation as simple conduits for the financial services industry. In this respect, the responsibility of the institutional investor is to contract for investment management services to external asset managers in the private sector. As such, it is not the institutional investor but the private investment manager that makes the actual investments in the (different) asset classes. In addition, custodians are used by institutional investors to manage the actual securities and an array of accountants, auditors, actuaries and consultants are used to provide oversight.

As this suggest, the institutional investor can be entirely outsourced, rarely possessing the expertise and capabilities to execute financial transactions without the help of some sort of external advisor. This model of investment management is known as external investment management as opposed to internal management whereby the different functions of investment management are executed in-house.

The production process of an institutional investor is organised to realise a given objective, typically communicated to management in the form of a return target. Investors are forced to make a series of strategic decisions regarding asset mix, market access points and execution of investment strategy in order to achieve the return target. Investors have three key resources internal to the organisation: systems, processes and human capital. The level of sophistication in these three areas will tend to drive the decisions made by the organisation about the access, execution and assets. (Clark & Monk, 2012)

A typical institutional investor will create a portfolio by choosing a few dozen fund managers among thousands of alternatives in the traditional strategies as well as the alternative asset classes. This is a challenging problem because all investment managers will claim to have skill. For most fund managers, historical returns are at best available on a monthly frequency (which are typically unaudited) and at worst, completely unavailable. The fund managers therefore often rely on performance track records of other funds operated by the same investment manager or the same managers but at other firms. These track records will typically provide a very incomplete and statistically unreliable estimate of the ability of the investment manager to generate excess returns. Institutional investors undertake additional research on investment managers in an attempt to determine their

investment acumen as a consequence. The typical process for evaluating investment managers involves several steps. First, the investor meets the fund manager and typically has a short meeting in which representatives of the fund give an overview of their strategy with a pitchbook presentation. This pitchbook typically includes historical milestones of the fund, organisational charts and the backgrounds of the portfolio managers as well as a description of the investment process from idea generation to portfolio construction and trade execution. Risk management or more generally how the fund weighs an investment opportunity against risk is discussed and what separates the fund's process from the other funds and how this translates into an investment edge. The initial interaction tends to focus on the backgrounds of the fund managers; specifically focusing on funds or managers under which the investment officers under consideration trained. The meeting also addresses broader issues of team and teamwork. Goal is to gain confidence in the people and process. If the investor is sufficiently interested, a series of follow-up meetings will allow for increasingly in-depth information to be collected. During these meetings, the investor will often also observe additional hard information such as the fund's return. Most of the information collected and evaluated however is soft information that will characterise such things as the fund manager's style, idea generation process and organisational structure. How investments are chosen for the portfolio is discussed and further details are provided on holdings and allocations in the portfolio, reflecting how it is positioned to take advantage of broad macroeconomic (global) themes. Understanding of the fund's edge is sought and whether this edge is sustainable or due to special market conditions. Ultimately the investor wants to know if the investments made are consistent with the philosophy and process. The information is summarised and aggregated in a qualitative way through internal reporting systems and memos. When the investor is sufficiently confident in the quality of the manager, it will make a recommendation to an investment committee to undertake an allocation to the fund. (Brown, Gredil, & Kantak, 2016)

3.4.2 INVESTMENT CONSULTANTS

Investment consultants are important intermediaries in institutional asset management. They provide a range of investment management services including asset/ liability modelling, strategic asset allocation, benchmark selection, passive versus active management, performance monitoring and most importantly, fund manager selection, needed when choosing for external asset management. Rationale for the engagement of investment consultants is that ultimate fiduciary responsibility of the assets rests with investors who are non-specialist and require independent and specialty advice from specialist like investment consultants. Day-to-day management of the assets is typically carried out by investment professionals employed by the investor, but the investor is ultimately responsible for hiring, monitoring and firing the investment professionals and fund managers employed, as well as strategic asset allocation decisions. The scope of the advice sought from investment consultants depends on the professional skills of the investor and the extent of in-house expertise, as well as the complexity of the investment strategy being followed. It has been estimated that 82% of U.S. public plan sponsors use investment consultants as do 50% of corporate sponsors. It is assumed that these figures can be applied to the entire global investment market. As such, it is important to understand the processes these investment consultant use when selecting fund managers.

The recommendations of investment consultants are based upon different factors but are in line with the factors that investment managers value most in case of external investment management. At least part of the recommendation is driven by past good performance. Soft investment factors (i.e. factors which relate to the investment process), notable capable portfolio manager and consistent investment philosophy seem to have a more important impact on recommendations. Factors which relate to service delivery and in particular capabilities of relationship professionals and usefulness of reports also appear to be important drivers of recommendations. Investment consultants are skewed towards larger products. This could be related to the fact that consultants focus on products that are suitable for their range and scale of mandates. Most surprising however is that there is a positive relationship between fees and probability of recommendations. This means that funds with higher fees have a greater chance of being recommended. (Jenkinson, Jones, & Martinez, 2014)

3.5 INVESTMENT MANAGEMENT AT INSTITUTIONAL INVESTORS

Now that the most important factors have been identified for the selection of external managers, whether or not assisted by an intermediary, it is important to evaluate the investment management process within the institutional investor itself. After all, this process is the main driver for the allocation of the funds of the institutional investor.

The process of portfolio construction has been integrated in the daily activities of investment management at institutional investors since a long time. Approaches to asset allocation have been changing over time however and institutions have found six important ways to place new prominence on portfolio construction

3.5.1 STRATEGIC ASSET ALLOCATION

Historically most institutions used historical estimated of returns, correlation and volatility, plugged in relevant constraints which generated an efficient frontier with portfolio options that match risk and return objectives, at least on a theoretical level. Last year's strategic asset allocation thus became a powerful anchor for this year's allocation as the estimated and constraints changed very little. Significant adjustments to the strategic asset allocation have been rare, except for a long-term trend among many institutional investors to shift an increasing portion of their portfolio to illiquid assets. Most institutions have tried to find alpha through a number of means, including active management (internal as well as external management) and direct investing in illiquid asset classes instead of adjusting the process of strategic asset allocation. Attempts to improve beta have been focused on reducing costs, often by internalising management, with some exploration of enhanced-beta portfolios. Most attempts to improve results have been focused on improving alpha, not beta. Institutional investors have realised the shortcomings of this approach as recent low levels of interest have added considerable capital to the global financial system, pushing up prices on all kinds of assets and thereby effectively lowering risk premia. Repeating the asset allocations of last year would have had the unforeseen consequence that the return would not accurately reflect the level of risk being taken. Institutional investors have responded to this trend by going to the extreme of allocating more of the portfolio to cash. A more important response is a shift in the 80/20 management approach. This implies that institutional investors plan to rebalance their efforts by doubling down on portfolio-construction capabilities, given that these capabilities drive the vast majority of long-term returns.

The vast majority of institutional investors plan to reinforce their central portfolio-construction team including a more dynamic decision-making process structured around top-down economic scenarios.

3.5.2 LIABILITY DRIVEN ASSET ALLOCATION

The strategic asset allocation process itself will be increasingly driven by a deeper understanding of the liability profile. A shift towards an actuarial understanding of the depositors which goes beyond raw demographics and into depositors' preferences and their exposure from their other assets is visible. Examples include managing the duration risks arising between the investment activities and the beneficiaries' needs. Resulting products are better suited to the beneficiaries, including target-date funds.

3.5.3 MOVE THE PORTFOLIO GOALPOSTS

Many institutional investors use the same set of definitions when examining opportunities and seeking returns. This implies that the investors find the same deals which in turn results in the successful bidder in an auction suffering from the winner's curse. Investors are therefore trying to find new sources of return to complement the traditional asset classes. Another trend is an increased flexibility in allocating capital within each portfolio, thereby leading to broader definitions of asset classes and looser risk guardrails for exposure to particular geographies, sectors or styles.

3.5.4 PROFITING FROM ILLIQUIDITY PREMIA

Institutional investors have been seeking exposure to illiquid asset classes for quite some time to capture the outsized premiums these investments offered. This was done by external managers at the beginning but later a handful of industry leaders developed their own teams to invest directly in illiquid assets. These teams often built their skills through co-investments with experienced external managers.

3.5.5 INFLUENCE FOR VALUE

Value creation across the organisation will be driven more systematically by leading institutional investors. Private equity has already shown the benefits of active ownership. Leading investors are thus realising that they can go beyond a board seat to deliver real value for their investments. It is to be expected that leading institutional investors will take a more assertive role in the governance of both public and private investments, through partnerships with activist investors and through greater internal capabilities. The first frontier for this evolution is governance, which runs a wide spectrum from simple proxy voting to influencing board composition and finally to board representation and majority ownership in case of some illiquid investments. Knowledge of topics such as board effectiveness and composition is still lacking and represents an opportunity for value creation across many portfolios. As institutional investors cannot hope to build portfolio value-creation teams that can cover the full breadth and depth of the issues that their disparate illiquid investments will need, a small central team of generalists operators or consultants, focused on three tasks is a more practical solution. The first task is to systematically prioritise the opportunities in the portfolio by the potential impact and their ability to influence the outcome. The support needed to deliver the expected value should be identified for the chosen priorities. Finally the progress should be monitored, the management team should be held accountable and incentivised for the desired result.

3.5.6 MANAGE ACROSS PORTFOLIO SILOS

Institutional investors have traditionally divided their activities by asset class. Two coming shifts are closing the gaps between the different asset classes. First cross asset-classes perspectives are developed to optimise the overall economics of each deal. Second, institutional investors are improving their ability to assess exogenous factors, including macroeconomic variables and risks as well as market idiosyncrasies that are relevant to a given transaction. Most investors today are not able to compare opportunities in one asset class/ geography combination versus another. Institutional investors will therefore take a more orthogonal approach to portfolio management and consider the spaces between asset classes and the issues that arise there: overlays and hedges, leverage, liquidity, currency risk and so on. Four potential essential risks that could be managed centrally are leverage, liquidity, currency risk and rate exposure. Institutions establishing clear accountability and management responsibility for these essential risks as well as changing performance criteria to include them, will lead to more careful management and governance of these risks. (Ghai & Tarnowski, 2016)

4. BUSINESS MODEL

This chapter describes the different business models a company can choose. Next the questions that arise when considering adopting a dual business, are discussed. Finally the different possibilities (i.e. build, buy or borrow the capabilities) for the company to grow its business are described.

The business model that is considered in this thesis is that of the investment manager. It can be imagined that another person is responsible for tokens than the one responsible for the traditional real estate investments at the institutional investor, but that is outside the scope of this thesis. There is no doubt that maximising the value of the investment management company is important, if not the most important task of management. Maximising the asset under management is therefore key. Assuming the likelihood of allocating at least part of the investment portfolio to tokenised real estate, the investment manager should offer investors the possibility to invest in this tokenised real estate. There are multiple options to do so and the appropriateness and attractiveness of each option depends on the attractiveness of tokenised real estate as an asset class. That is, if it were to be a probability bordering on certainty that tokenised real estate were to be the most attractive investment opportunity, the company would decide to only offer only tokenised real estate and no longer the traditional way to invest in real estate. If on the other hand, tokenised real estate were to be a completely unattractive asset class, the company would decide to only offer the traditional way to invest in real estate. Evidently there is a range of alternatives in between these two.

4.1 CHOOSING A BUSINESS MODEL

The company has to choose a business model that best underlines its choices. This implies that the business model should comply with the position the company has chosen in the range of alternatives between offering only tokenised real estate investment opportunities or only traditional real estate investment opportunities.

There are three key business models the company can choose: it has the choice of being a diversified, specialty or multi-strategy firm.

4.1.1 DIVERSIFIED COMPANY

These large companies play across multiple alternative asset classes and products, including real estate and potentially tokenised real estate. These companies target predominantly institutional investors looking for an investment partner with a diversified offering and experience across asset classes. Synergies across the group are leveraged by cross-selling to clients and sharing ideas, insights and capabilities. The brand and capabilities are stretched across asset classes, seeking to add value through a portfolio approach that materially exceeds the sum of its parts.

This business model could be an obvious choice for many large traditional investment managers as they are trying to expand into the alternative investment market, assembling multi-asset class businesses from within their ranks and filling gaps where needed. It is the strategy that the largest alternative firms will continue to pursue in search of growth.

4.1.2 SPECIALTY COMPANY

Specialty companies devote their resources to becoming best-in-class in for example real estate. This type of companies create very strong core competencies to become the leading player in selected and differentiated strategies. The underlying reasoning is that focusing on a set of core competencies provides the best basis for outperformance and that investors are willing to pay for superior investment capabilities in selected areas. These companies will primarily target the largest institutional allocators globally, offering bespoke and heavily customised solutions.

4.1.3 MULTI-STRATEGY COMPANIES

In the middle of the diversified and the specialised companies are a large number of multi-strategy companies. These types of companies concentrate on generating strong returns and low volatility through strong investment teams and dynamic asset allocation. The multi-strategy structure is leveraged to expand into new, often tangential, investment strategies, creating a repeatable model. Growing assets under management is believed to require offering different strategies within the same asset class. Competitive performance in other styles is delivered by the available resources, capabilities and credibility. The current operating platform is flexible enough to accommodate such a strategy.

4.2 GENERAL OR DISTINCTIVE BUSINESS MODELS

The company will choose to position itself somewhere along the spectrum of offering the possibility of investing in only traditional real estate, in only tokenised real estate or in a combination of the two investment classes. When the company decides to offer the possibility of investing in both investment classes, it needs to question itself whether the chosen business model can be adopted for both investment classes or two distinctive business models are necessary. The vast majority of companies is not able to compete with two business models at once however since the two business models (and their underlying value chains) can conflict with each other. By attempting to compete with the other (existing) business model, companies risk damaging their existing brands and diluting their organisations' cultures for differentiation and innovation. Companies trying to compete with both low-cost and differentiation strategies also risk finding themselves 'stuck in the middle' by not committing fully. The primary solution is to keep the two business models including their underlying value chains separate in two distinct organisations. The rationale is straightforward; the company's existing processes and culture are prevented to suffocate the new business model by keeping the two business models separate. Managers at the existing companies will not feel that the new business model is growing at their expense and will not feel the need to constrain or even kill it and the new unit can develop its own strategy without interference from the parent company. The separation also has its flip side; the synergies between the established company and the separated unit cannot be exploited. A possible solution is the creation of separate business units that are linked by a number of integrating mechanisms. Companies need to consider five key questions if they are to maximise the chance of success in competing with dual business models in the same industry.

1. SHOULD THE MARKET SPACE CREATED BY THE NEW BUSINESS MODEL BE ENTERED?

The market that will be created by the new business model is not necessarily more attractive than the existing market nor are the customers that are attracted to the new business models the kind of customers that the established company should pursue. As the new market consists of new customers looking for different value attributes, being successful requires different key success factors and draws on different skills. Whether or not the new market is attractive to enter will depend not only on the size and growth rate but also on the business's competences and the likelihood it will succeed in the new market. It should not only be assessed if the market is attractive in general but whether, given the collection of core competences of the company, the market is attractive to that company. This involves asking whether this collection of core competences can be applied in that new market in a unique way.

2. DOES THE EXISTING BUSINESS MODEL SUFFICE FOR THE NEW MARKET OR IS A NEW BUSINESS MODEL REQUIRED?

When the established company decides to exploit the new market that has been created by a new business model, the company needs to consider whether the existing business model can be used to serve the new customers or a new one is needed. The answer to this question lies in the question whether the new customers represent an entirely different market requiring a different set of value chain activities or are they just another segment that can be served with the existing business model. A lot depends on how aggressive a company wants to be. Two important considerations in the (subjective) answer to the question are the size of the new market and its growth potential. That is, the bigger the market, the more likely the company is to be aggressive and to attack it as a separate market. Another reason for treating it as a separate market could be that the new market is so strategically distinct from the existing market that the existing business model does not apply, or that serving both types of customers with one business model is so difficult that another solution is necessary. The new market is made up of two types of customers: customers of the established companies that desert it for the new value proposition and new customers entering the market for the first time. The question that needs to be answered therefore is whether the goal is to limit the cannibalisation of the existing market or to exploit the new market. If the goal is the latter, the company will likely choose to approach the market as a new one, requiring its own business model.

3. SHOULD THE INVADING BUSINESS MODEL THAT IS DISRUPTING THE MARKET BE ADOPTED IF A NEW BUSINESS MODEL IS REQUIRED TO EXPLOIT THE MARKET?

The temptation is to mimic the business model of the disruptor as it already proved to work. This should be avoided as it results in trying to beat the disruptor in their own game, by being better than the disruptor. This strategy obviously almost always falls short. Established companies should instead choose to enter the new market by radically different business models, different from both the business model used by the disruptor and the business model it uses in its established market. This basically follows the same logic the disruptor used to attack the established company. The disruptor succeeded in attacking the main market because they used a disruptive business model. If the established corporations want to trump this success, it needs to utilise a disruptive business model to enter the market that the disruptive companies has created. The most important rule is that the adopted strategy breaks the rules of the game in that market. To summarise: if an established

partner decides to enter the market space that the invading disruptive business model has created on the periphery of the main market and decides to use a business model that is different from the one it is using in the established market, then it should design a business model that is fundamentally different from the business model the disruptor uses.

4. HOW SEPARATE SHOULD THE NEWLY DEVELOPED BUSINESS MODEL BE ORGANISATIONALLY FROM THE EXISTING BUSINESS MODEL?

The established company should investigate which activities could be operated together and which activities could be operated separately. The decision on the appropriate degree of separation needs to be made for at least the following five areas:

1. Location: Should the separate unit be close to the parent company?
2. Name: Should the separate unit have a name similar to the parent company?
3. Equity: Should the separate unit be fully or only partially owned by the parent company?
4. Value chain activities: Which value chain activities should the separate unit share with the parent company and which activities should it develop on its own?
5. Organisational environment: Should the separate unit share the culture, values, processes, incentives and people with the parent or should it develop (some of) them on its own?

The trick is to find the answers tailored for the company that enable it to separate and not isolate the unit. It then succeeds in balancing unit independence while helping it with the skills, knowledge and competences of the parent company.

5. WHAT ARE THE UNIQUE CHALLENGES OF PURSUING TWO BUSINESS MODELS AT ONCE?

An organisation that is capable of competing with dual business models, a true ambidextrous organisation, has developed an underlying organisational environment that promotes and encourages desired behaviour. This environment concerns four things: culture (including its norms, values and unquestioned assumptions), structure (including its formal hierarchy, physical setup and systems (i.e. information, recruitment, market research)), incentives (including monetary and non-monetary incentives) and people (including their skills, mindset and attitude). (Markides & Oyon, 2011)

4.3 GROWTH STRATEGIES

The company thus chooses the business model it wants to adopt for each of the appropriate investment classes. The possibility and capabilities to successfully offer the opportunity to invest in tokenised real estate does not come naturally however. The company has three possible growth strategies in this respect: it can either choose to build, buy or borrow the capabilities. The builders will look inwardly for growth, leveraging their existing capabilities and investment talent to create repeatable models, in the belief that their current platform is flexible enough to accommodate change and growth. They have become skilled at identifying, recruiting and developing talent and make doing so a strategic focus and competency. Talent mobility programmes are created as practised by many successful traditional investment companies.

The buyers will primarily comprise of managers who are looking to expand their alternative capabilities across asset classes and strategies by acquiring talent, track record and scale overnight. Large traditional companies build out their alternative platforms while large alternative companies usually buy to fill capability gaps. The company that use the borrow strategy believe that growth can achieved best by partnering with other institutions to expand their capabilities and distribution channels. Specialty firms need to consider whether their differentiated capabilities are allowed to be bought or borrowed by larger firms looking to supplement their asset class or strategy offerings. Teaming up with a larger manager can help to grant access the necessary resources, scale and experience to reach new investor channels. Traditional firms continue to manufacture and distribute their own products but will increasingly decide to buy or borrow the capabilities of dedicated alternatives companies. Diversified alternative firms will also decide on a combination of growth strategies to expand their capabilities. (Yildirim, 2015)

4.4 THE PROCESS OF BUSINESS MODEL INNOVATION

The decision whether or not to offer the opportunity to invest in tokenised real estate depends on where the value is created. Business models are less durable than they used to be and are subject to rapid disruption, displacement and, in extreme cases, even outright destruction. The examples are familiar, consider for example Uber, but what is less well known is how new entrants exactly achieve their disruptive power and what enables these entrants to skirt constraints and exploit unseen possibilities. Or, in other words, what is the process of business model innovation.

Business model innovation is notoriously hard for the established players. These established players, or incumbents, are struggling to recognize the possibilities and suffer from cannibalising profit streams. Others tweak and tinker but rarely change the rule of the game. This raises questions on why it is so difficult for established companies to innovate in their business models and what approach would allow incumbents to overturn the conventions of their industry before others do?

Every business is built around long-standing, usually implicit, beliefs about how money can be made. These governing beliefs reflect widely shared notions about customer preferences, cost drivers, the role of technology, regulation and the basis of competition and differentiation. Until someone comes along to violate them, they are considered inviolable. This attacker usually comes from outside the industry. But while these newcomers capture the headlines, industry insiders, who often have a clear sense of what drives profitability, are also well positioned to play this game. Playing the game begins with identifying an industry's foremost belief about value creation and then articulating the notions that support this belief. Incumbents can look for new forms and mechanisms to crease value by reframing one of the underlying beliefs. Five essential and sequential steps to business model innovations are: 1. Outlining the dominant business model in the industry. 2. Dissect the most important long-held beliefs into its supporting notions. 3. Turning an underlying belief on its head. 4. Sanity testing the innovation. 5. Translating the innovated belief into your industry's new business model.

4.4.1 OUTLINING THE DOMINANT BUSINESS MODEL IN THE INDUSTRY

Outlining the dominant business model in the industry involves determining the long held core beliefs about how to create value. Scale is regarded as crucial to profitability for instance.

4.4.2 DISSECTING THE MOST IMPORTANT LONG-HELD BELIEF INTO ITS SUPPORTING NOTIONS

Dissecting the most important long-held beliefs involves determining notions about customer needs and interactions, business economics, technology, regulation, and ways of operating underpin the long-held beliefs. For example, scale is needed as it is believed that customers prefer automated, low-cost interfaces. These interfaces required scale. The IT underpinning financial services has major scale advantages as most of the cost base is fixed.

4.4.3 TURNING AN UNDERLYING BELIEF ON ITS HEAD

Turning an underlying belief on its head involves formulating a radical new hypothesis, that no one currently in the industry wants to believe.

4.4.4 SANITY TESTING THE INNOVATION

Many of the innovated beliefs will be nonsense. Applying a reframe that has already proved itself in another industry greatly enhances the prospects of hitting something that makes business sense. Unlike product and service one, business model innovations travel well from industry to industry (Airbnb inspires Uber).

4.4.5 TRANSLATING THE INNOVATED BELIEF INTO YOUR INDUSTRY'S NEW BUSINESS MODEL

Once arrived at this step, the new mechanism for creating value suggests itself; a new way of interacting with customers, organising the operating model, leveraging the resources or capturing income. (de Jong & van Dijk, 2015)

4.5 BANKING ON THE COMPETITIVE ADVANTAGE

The decision whether or not to offer the opportunity to invest in tokenised real estate should depend on its ability to create value. Paragraph 3.1 stated the responsibilities of the investment manager. These responsibilities included 1. Investment advisory services. 2. Asset selection and transaction execution. 3. Investment product development. 4. Asset management. 5. Support functions: communication and research. Depending on in which part of the investment process the company adds value, it should decide whether or not to offer the investment opportunity. That is, if the investment manager is best in acquisition, it will probably yield to success if the company decides to enrol in the opportunity while if its core competence is asset management, it will probably decide not to if that is not part of the offer of the token. Last resort to the company could be to buy the capabilities to be able to profit.

4.6 SUMMARY

In summary, the decision of whether or not to offer the opportunity to invest in tokenised real estate depends on the capabilities of the company. The company's ability to add value is the first condition that needs to be met. Assuming this ability, the investment manager needs to decide where it wants to be on the spectrum of offering only traditional real estate to offering only tokenised real estate. Assuming the investment manager will choose

to offer a combination, it will have to consider to separate the business models of the two investment classes. It will have to decide whether it will be able to build the capabilities of the new business model, i.e. offering to invest in tokenised real estate, or it will buy or borrow them the capabilities from a more skilled party. The investment manager will then be able to successfully offer the investment class to current and potential clients, such as institutional investors. Whether or not they will accept this offer depends on the criteria it uses to assess the quality of the investment manager, for instance culture and past returns. Once all these hurdles have been taken, offering institutional clients the opportunity to invest in tokenised real estate should become a success. This is however only theory. Interviews will be performed to test whether these theory also holds in practice.

5.METHODOLOGY

This chapter describes the applied methodology along with the advantages of the applied techniques. The questionnaires as well as the respondents are outlined.

Only very limited research exists on the advantages, disadvantages and disruptive potential of tokenisation of real estate. Therefore, in line with the research of Baur, Bühler, Bick and Bonorden (2017), the research is approached by following an entirely open, inductive, exploratory research design. An interview guideline was designed based on the literature review but also including very open questions to motivate respondents to come up with their own ideas, thoughts and reasoning. To gain maximum insight in how the different aspects of the potential of tokenisation of real estate are viewed, semi-structured interviews are used. (Baur, Bühler, Bick, & Bonorden, 2017)

5.1 SEMI-STRUCTURED INTERVIEWS

Structured interviews use questionnaires based on a standardised or identical set of questions. By comparison, semi-structured interviews are non-standardised. The researcher will have a list of themes and questions to be covered although these questions may vary from interview to interview. This means that some questions may be omitted in particular interviews given the specific organisational context. Some questions may also be required given the events within particular situations. This is relevant as each of the respondents has its own set of knowledge and capabilities and therefore may not necessarily be familiar with all the aspects of the research, due to its novel character. Semi-structured interviews are used in qualitative research in order to conduct exploratory discussions not only to reveal and understand the 'what' and the 'how' but also to place more emphasis on exploring the 'why'. (Saunders, Lewis, & Thornhill, 2000)

5.2 QUESTIONNAIRE

The questionnaire is used to ultimately answer the central question and thus the subquestions. Obviously attention is paid to the right level of detail, not asking two questions in one question, not asking questions that are leading, containing advice or that prevent for some answers to be given, the order of the questions, whether the question are not too long, or unambiguous.

In order for the questionnaire and its results to be reliable, the data is tested for internal consistency and alternative form. The first refers to correlating the responses to each question in the questionnaire with those to other questions in the questionnaire. Goal is to measure the consistency of responses across the questions. The questions are asked in multiple forms to offer the possibility of comparing. This possibility of comparison ensures a higher level of reliability. Furthermore, the background of the respondents is included in the analysis to explain why certain answers are given.

The interview questions are listed in Appendix I: Interview Questions.

The interview questions apply to the different subquestions. An overview of the relation between the interview questions, subquestions, literature and central question is shown in the figure below (figure 6).

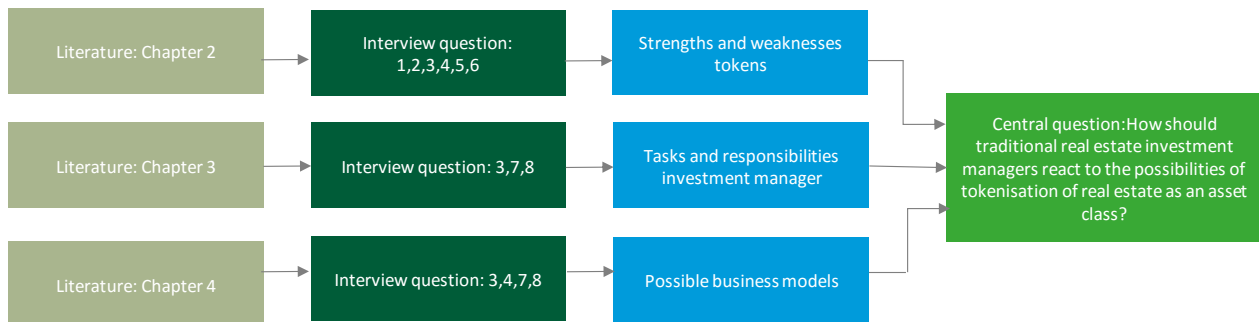


Figure 6: Overview relation between central question, subquestions, interview questions and literature

5.3 RESPONDENTS

The tokenisation of real estate is such virgin territory that it is virtually impossible to find respondents that know everything there is to know about all the different aspects. Instead it is chosen to interview experts of the different facets of tokenisation, investing in real estate and investment management. Special attention is paid to have multiple experts per aspect so that it can be checked whether any deviation as compared to the other experts is caused by the background. The specific respondents are chosen as they are leading in their different areas of expertise. It was therefore to be expected that these respondents were best informed on the (different aspects of the) subject. This is endorsed by the high level of participation of the respondents in boards or other interest groups (i.e. the respondents best informed on tokenisation have been panel members on various debates about tokenisation and are advisors/ board members on associations on blockchain and the notary is advisor of 'permissionless blockchain' project. More examples can be mentioned)

The questions asked are dependent on the background, implying that not all questions are necessarily answered by every respondent.

It would have been preferred to have more experts included in the research, but the quality of the interviews and gained knowledge can be guaranteed as the participating experts are leading in their different areas of expertise. It is not to be expected that adding more experts would have changed the outcome. This is endorsed by the overall unity of answers. During the interviews the respondents were asked to elaborate in case of deviating answers. Deviating from previous answers but also from expectations. This is of course done with utmost caution to avoid sending the respondents towards certain answers.

Of the twelve interview experts, five have been performed by telephone while the remaining have been done face-to-face. The interviews have been recorded and written down. These interviews are included in Appendix III: Reports interviews Respondents have reviewed and approved the interviews. Respondent 6 was the only one that did not approve. Codes have been used to summarise the interviews and to be able to compare the answers. This summary is presented in Appendix II: Summary Interviews. This information is presented in the next chapter and is used to answer the subquestions and ultimately the central question. The shortest interview lasted 48 minutes and 32 seconds while the longest interview lasted 1 hour, 30 minutes and 16 seconds.

6. RESULTS

This chapter presents the results of the interviews. Figure 7 shows the overview of the central question, subquestions and the results.

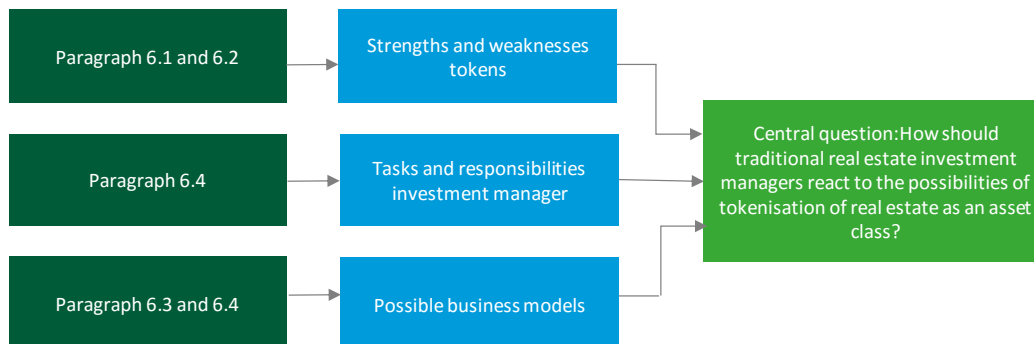


Figure 7: Overview of the central question, subquestions and the results

6.1 TOKENISATION

The respondents show consensus on the attractiveness of tokens. The transferability and the associated liquidity and speed of transactions, as well as the transparency and access to global markets/ financing opportunities are amongst the most cited answers. To a lesser extent the immutability of the data, the ability to profit from capturing the illiquidity premium and diversification potential are mentioned. It is to be noted that institutional investors are not always looking for liquidity due to the long-term horizon. An advantage, although not mentioned in the studied literature, is the reduction of risk by allowing simultaneous transfer of money and token. This is only mentioned by the supervisor, which is by nature risk averse. The possibilities as a tool for marketing are merely seen by the respondents that are working with private investors. An explanation could be that institutional investors base their decision to choose for a certain investment manager on different grounds than the private investor that is merely focused on the reputation of the investment manager in question. The results are in line with the literature although the decentralisation of information was only mentioned once.

The answers to the question what the most important weaknesses and reasons are for rejection of tokenisation of real estate as an interesting opportunity for investment managers to benefit from the stated strengths, show maybe even more consensus than the answers to the question what the most important advantages are. Most cited weakness is by far that it is not yet possible to transfer legal ownership. Both the company that is amidst the process of tokenising a fund as well as the supervisor indicate that tokenising the fund or SPV that owns the real estate is a solid workaround. In this case the investor thus indirectly owns the underlying real estate, instead of owning it directly by means of an intervening fund or SPV and custodian. The notary adds that this is not the same as actual ownership but it does provide the tokenholder with some of the advantages (i.e. receiving the cash flows and ability to sell while also having the advantages of investing via tokens such as liquidity). A boundary herein is KYC but the same goes for traditional financing where banks are also hesitant to finance in case somebody owns more than 20% of the equity. It is only more difficult with tokens to identify who the owners are. This needs to be solved and will be solved in time. The unfamiliarity and the associated link with the reputation of cryptocurrency follow. Education and communication can be used to solve this problem. Over time

people will realise the benefits. The obstacle that there is not yet a marketplace for the secondary market is only cited by few respondents but can be easily explained by their respective backgrounds: the respondents with a legal background or the one that actually trades cryptocurrency. The respondents are also worried which legislation will apply. One of the most cited attractive characteristics was the ability to trade the tokens on a global market. The other side is that this complicates the legislation. Should this be the country of residence of the token issuer? Or the monetary union behind the currency of listing? Most respondents agree that this should be on a global level, possibly implying that it will take several years for the legislation to be agreed upon by all those involved. Additional complication is that if the tokens were to be traded in a secondary market, MiFID applies. This is expensive and complicated. This would rule out the possibility of small issuers but there are workarounds. If there were to be a global standard, it would facilitate trading like AIFMD lowers trading costs. The liquidity that is seen as one of the main advantages is also recognised as a downside since it forces the owner to mark to market the asset value, also in case of a crisis. This implies that it can be forced to write down the value with potential repercussions on loan covenants and alike problems. The ability to use tokens for funding of terrorism is also mentioned as a big threat. Not so much a threat, but at least inconvenient is that there is not yet a standard blockchain which everybody uses. Migrating the systems is not expected to be a very difficult exercise but experience is lacking.

The difficulty of the transfer of legal ownership on the token is thus recognised by the respondents. The solution is complex and lies in a different interpretation of the role of the notary. The deed will have to be digitised and can be included on the blockchain but the actual registration will still have to be done at the Kadaster. The notary will still be involved but its role will be somewhat different. The what and how of this solution is not clear yet. This could very well include the smart laws and oracles as mentioned by Konashevych (2018).

The weaknesses of tokenisation as mentioned by the respondents is comparable to the weaknesses mentioned in the studied literature. The bottom line is that the respondents are positive on the future of tokens and tokenisation. The time frame in which it will take place is highly uncertain. Estimates range between two months to ten- fifteen years, averaging some years. The large spread is caused by the different interpretation of the question (i.e. shortest time frame includes the workaround of the fund). Respondents however agree that once law makers make an serious effort, it could speed up the process dramatically. In the meantime the issuance of tokens including an intermediary fund can proceed.

Implementation of the process of tokenisation should be done with partners. Respondents agree that investment managers should concentrate on their core competences and leave the actual tokenisation to the smart people that have the skills and are aware of the most recent developments. This is in line with the literature that states that teaming up with a larger manager can help to grant access the necessary resources, scale and experience to reach new investor channels. It is to be desired to standardise the tokenisation process.

6.2 ATTRACTIVENESS TO INSTITUTIONAL INVESTORS

The product is attractive to institutional investors, at least according to the respondents. The benefits outweigh the disadvantages. Side effect of the tradability of the tokens is the likelihood of diversification of the shareholder

(tokenholder) base. Know your customer (KYC, is the process of a business verifying the identity of its clients and assessing potential risks of illegal intentions for the business relationship, implying that you have to underwrite investors that own more than twenty percent) is mentioned as a possible challenge for the attractiveness of tokens. None of the respondents consider this a deal breaker and expect that to be solved by technology.

White lists could exclude the entrance of private investors while most of the respondents considered that to be an advantage of tokens. Having the possibility is one thing, using this possibility is another. On the one hand there is the potential difference in investment horizon and the difference in management style, but on the other hand the volume of trades of these private investors is so small that the only way they will be able to trade with institutional investors is when the latter rebalances. In- or outflow of tokens is of too large volume. It is also considered undesirable to have many investors that have a small stake since they have very little stake in the game. This endorses a minimum lot size. The legislation for issuing securities to private investors is more restrictive, yet another argument to restrict the issue to institutional investors as the size of this market appears to be sufficient to have a profitable business case. The long-term horizon of institutional investors is also acknowledged by the literature; last year's asset allocation is a powerful anchor for this year's allocation.

6.3 PORTFOLIO

Respondents agree that it is best to start with a small(er) portfolio. Besides that, it is also mentioned by several respondents that a lower risk portfolio is a good way to begin. High quality and high profile are advised (to start with). Once the market is used to tokens, the more specialised tokens can be issued. This ability to customise and therewith diversify the portfolio is highly valued. It is desired to be able to do the diversification itself. The other side is that the size and volume of the portfolio needs to be big enough; there is a minimum threshold that needs to be exceeded before the institutional investor is willing to commit itself. The respondents that are more focused on the private investor also consider tokenisation of complexes or maybe even on a rentable unit scale but in order to be attractive to institutional investors, a minimum size is necessary.

6.4 BUSINESS MODEL INVESTMENT MANAGER

Just like the respondents can imagine tokens comprising of only one building as well as complete portfolios, the possibility of having both participations as well as tokens is also possible. The only thing is that existing shareholders should not be harmed by the issuance of tokens.

Specialised portfolios ask for specialised management. This means that the management of the token should be well equipped for the portfolio. Managing a portfolio in one location is not different from managing a portfolio in another location (given that it is in the same country/ legislation) but managing a portfolio that comprises of only high quality assets that is fully let is very different from managing a lower quality portfolio of assets that are to be privatised. The management should be tailored to these requirements. It is mentioned that it is very important that the token is internally managed. This means that personnel should be assigned to specific tokens or, less preferred, allocated to the tokens, based on hours spent or maybe on rent as a percentage of total rent. This is not preferred as this could imply that tokenholders could be harmed by a lack of attention resulting from

the problems at another token. Management must in any event prevent the existing shareholders to be harmed by the decision to issue tokens (or other participations or shares, that is not different).

The portfolio will always be managed in the most efficient way as management strives to maximise the performance, regardless of the legal status of the security. According to the respondents, the responsibilities and activities of the investment managers do not change. Token or participation/ share, the buildings need to be acquired, managed and eventually sold. The respondents show consensus on the approach of the manager; it needs to work more efficient and cheaper than the competition. Just like with shareholders, respondents expect the company to do everything in its power to extract value from the portfolio. In the meantime, the investors want to be kept updated on the real estate market and its outlook as well as the results of the portfolio. Investment managers are praised for their knowledge of the real estate market. It is important for the investment manager to meet investor demand and to allow the institutional investor to have an appropriate say in the strategy of the token (for example on the core characteristics of the portfolio and of its financing. Management will still be responsible though. The institutional investor could try to have the manager fired or sell its stake but it cannot directly control the company. It can try to influence management which of course is more likely to have success if the investor holds a large stake or finds other investors that agree but again, management is responsible. This is agreed upon by the institutional investor. The contract with management should provide in proper incentives.). Including the need for control from the institutional investor (i.e. influence for value), the activities and responsibilities of the investment managers as mentioned by the respondents agree with those mentioned in the literature.

The portfolio is cited as the main reason to invest at a certain investment manager as is management. One respondent even said that he would rather invest in a fund with a great management team and a portfolio of low quality than the other way around. But he also said to invest based on first and foremost portfolio characteristics. It seems like the return characteristics are matched to the portfolio while the assessment of the accompanying risk is based on the perceived quality of the management. This is not tested. The large role of the management in the investment decision is aligned with the investment process of private investors; this type of investors bases its decision mostly on the reputation of the management according to the respondents.

In line with emphasis on the investment manager working efficiently and at low costs, is the expectation of the respondents that the standard processes of the investment manager will be replaced by automated processes. Applications like checking the ability of the potential tenant to satisfy its payment requirements are already being developed and it is expected that other applications will follow. The respondents are mixed in their opinions but some claim that digitalisation of the processes is a necessity before the investment manager can start to issue tokens. This is mostly said by the respondents that have a more innovation driven background where automation and digitalisation are more pronounced parts of the daily activities (innovation managers at Dutch Banks, the product owner blockchain and the investment manager for cryptos). It is noted however that people will always need some form of human contact thus there will always have to be some employees. Investment managers now have different angles of competitive advantage but if all the processes were to be digitalised, a level playing field would be created where all the investment managers have more or less the same starting position to play the

level playing field. Source of competitive advantage is then, apart from being better at unlocking the data and being better at interpretation the data, to offer additional services. Examples include forming platforms with distributors as well as tenants, or as an extension of this, loyalty points as mentioned respondents.

Customising and specialising the tokens is a worthy goal in the quest of institutional investor to cherry pick the investments but it would also imply that the strategic management of the investment would be placed exclusively at the institutional investor. After all, the investment manager will only be responsible for bundling alike investments and not be in charge of creating a portfolio with certain specified risk/ return characteristics. This is specifically not desired by the respondents. Market knowledge (including investment advisory services) was already mentioned but the institutional investor also indicates that it hires the investment manager based on extensive due diligence and that the investment manager should do what it is hired for, including strategic management, but that the investor wants some form of involvement. This implies that the investment manager would still acquire the same assets as if it would still offer a large fund, but that the institutional investor would still allocate the way as if it were a large fund, based on information of and communication with the investment manager. This will have to be tested.

According to the respondents, the most obvious way for the investment manager to separate itself from the competition is thus its real estate market knowledge, its ability to successfully acquire, manage and sell, whether it would be digitised or not, its ability to form platforms and effective communication. Literature mentions that the decision to invest at a certain investment manager is based on the experience of that certain investment manager (proof of its abilities) and service delivery. This is endorsed by the respondents. Communication is mentioned by several respondents as an essential qualification of investment managers. Communication with tenants but also with the investors (for example on the strategic management of the portfolio). In line with communication or maybe actually the driving force behind the need for communication, is the need to trust the issuer and the token. Reputable and well know parties therefore have the preference, at least to start with. This is all in line with the literature. In the case of tokens, a large role in satisfying demands lies in User Interface/ User Experience as well as a nice app to manage the investments. This is more important in satisfying the private investors than the institutional investors.

Potential difficulty in funding is mentioned by several respondents. This is especially important for pension funds as they are not allowed to lever investments themselves. It is feared that the token size will be, as a result of the specific structure, too small in order for the cost of capital to be attractive. The possibility of debt funding would be restricted to non-recourse debt (a loan secured by collateral) in case of external management, thereby limiting the number of available parties for funding. In case of internal management the investment manager would have more options. Either way, it is not unimaginable for the cost of capital to increase as compared to participations of larger portfolios. This need to exceed the threshold is implicitly mentioned in the literature; investment consultants are skewed towards larger products, yet another reason for the token size to exceed a certain threshold. Respondents endorse this minimum size. Boundary for the profiting from the funding potential remains KYC and AML.

7. CONCLUSION

In order to answer the central question of this thesis, i.e. How should the traditional real estate investment manager react to the possibilities of tokenisation of real estate as an asset class?, the subquestions need to be answered first. The conclusion is that:

1. you may need different business models but
2. you do not need two separate organisations to execute those different business models but
3. you only need the right person on the right position and
4. you need a clear separation of the different tokens

This conclusion is substantiated in paragraph 7.5.

7.1 WHAT IS TOKENISATION AND WHAT ARE ITS STRENGTHS AS AN INVESTMENT OPPORTUNITY?

Tokenisation is the process of converting rights to an asset into a digital token on a blockchain. Its main strengths as an investment opportunity are the transferability and the associated liquidity and speed of transactions, as well as the transparency and access to new sources of finance. The immutability and decentralisation of the data (timestamping), diversification potential and the potential use as a marketing tool can also be counted amongst the strengths of tokens as an investment opportunity. Another advantage, although not mentioned in the literature but only by the respondents, is the reduction of risk by allowing simultaneous transfer of money and token.

7.2 WHAT ARE THE DISADVANTAGES OF TOKENISATION, CAN THEY BE SOLVED AND IN WHAT TIME FRAME?

The largest disadvantage of tokenisation appeared to be the inability to transfer legal ownership of property via tokens. Up until now at least in the Netherlands a notary still needs to be involved (although a structure with an intermediate fund and custodian is a good workaround and provides the tokenholder with some of the advantages of owning the real estate directly. In this case the investor thus indirectly owns the underlying real estate, instead of owning it directly by means of an intervening fund or SPV and custodian). Other disadvantages include the unfamiliarity of the general public as well as institutional investors, the associated link with the reputation of cryptocurrency, the obstacle that there is not yet a marketplace for the secondary market, KYC, anonymity, uncertainty which legislation will apply (global level?) and what legislation will apply (MiFID?) as well as the lacking of a standard in blockchain. The threat of quantum computing is mentioned in the literature but is not confirmed by the respondents, although one mentioned that we do not know how to operate them yet.

Tokens offer great opportunity for the investment community. The strengths are unparalleled and will draw investors. Tokens therefore offer attractive investment opportunities for institutional investors. The weaknesses need to be solved. Commitment in itself is not enough for a system to work soon. Given the complexity of the legislation of the issue and the number of legislators and other parties involved, this solution will not be presented in the short-term. Hopefully a solution will be found in the next five years. The other obstacles appear to be somewhat easier to correct. The weaknesses need to be solved but are no deal breakers, only temporary hiccups.

7.3 WHAT ARE THE MAIN TASKS AND RESPONSIBILITIES OF THE INVESTMENT MANAGER AND HOW CAN THE INVESTMENT MANAGER ADD VALUE FOR THE INSTITUTIONAL INVESTOR?

Responsibilities of the investment manager include acquisition, asset management and disposition of the real estate, as well as real estate market research (including investment advisory services) and communication. The ability to develop investment products is of course implicitly assumed. The responsibilities do not change when the investment managers decide to no longer only issue participations but instead also focus on tokens.

It is assumed that the investment manager will want to maximise its performance fee. It can therefore be assumed that the portfolio will always be managed in the most efficient way or the way in which the performance is maximised. The investment manager can separate itself from its competitors and add value when he works more efficient and cheaper than the competitors. It is important for the investment manager to meet investor demand and to allow the institutional investor to have an appropriate say in the strategy that will be followed (within the boundaries of corporate governance. If the investor is dissatisfied, it can choose to sell its interest.).

7.4 ASSUMING THE ATTRACTIVENESS OF TOKENS OF REAL ESTATE AS AN ASSET CLASS, WHAT POSSIBILITIES DOES THE INVESTMENT MANAGER HAVE?

Issuing tokens is considered to be attractive by the respondents. These respondents also indicated that institutional investors will be interested in the product and in order to maximise assets under management and therewith the value of the investment management company, the investment manager should offer the opportunity to investors, both new and existing investors. It is to be concluded that the more traditional types of securities will continue to exist, at least in the short term, but will gradually lose popularity at the expense of tokens, thus being a specialty company is not a business model that is to be recommended. Given the nature of the tokens, i.e. respondents indicated the desirability of the tokens to be specialised by a distinctive strategy/ portfolio, implying different strategies within the same asset class, a multi-strategy business model seems most likely. Synergies between the different strategies should be exploited.

The business model is often referred to as everything that is believed to give a competitive advantage according to the studied literature. It is focused on a description of the elements and relationships that outline how a company creates and markets value. A business model consists of two essential elements: the value proposition and the operating model. The value proposition answers the question what is offered to whom. The target segments, product and service offering as well as the revenue model are considered. The question is whether the token issuer's business model can be adopted for both investment classes or two distinctive business models are necessary. After all, the issuer would not want to risk finding itself stuck in the middle by not committing fully. The five questions as mentioned in paragraph 4.2 need to be answered to maximise the chances of success. Due to the determined attractiveness of issuing tokens, the new market space should be entered. The next question is whether the existing business model can be used to serve the new customers. The answer to this question is twofold; the question whether new customers will be served needs to be answered first after which it has to be determined whether a new business model is needed. Offering tokens to private investors could be attractive as this is another potential source of financing and increases liquidity. This possibility comes with

disadvantages though; the horizon of this type of investors differs from that of institutional investors, the revenue model differs and the investment manager will have to address more participant holders in the corporate agenda to name only a few disadvantages. One of the most important disadvantages is the more restrictive regulation. The investment manager will have to comply to much stringent regulation, accompanied by higher costs. Starting assumption herein is to protect the private investor of losing its investment. The increased liquidity is not really that needed by the institutional investor as a result of the long-term horizon and the large size of the investment compared to the private investor. Conclusion is that the disadvantages of issuing tokens to private investors outweigh the advantages and the investment manager therefore should stick to serving the institutional investor (given that this was the original clientele of course). Since the target segment does not change, a new business model is not needed. In the end, tokens are not so strategically distinct from participations given the assumption that the portfolio would always be managed in the most optimal way. This is the base case. If the issuer were to offer very specific portfolios and/ or add additional services (product and service offering), a separate business model could be necessary since managing a high-quality, fully let portfolio is very different from managing a lower-quality portfolio that you privatise. This separate business model would then not be necessary based on the difference between participations and tokens however, but based on the difference in strategies of the portfolios. It is quite conceivable that for the one portfolio a low-cost operational strategy would be chosen while the other one a focus strategy would be chosen. In this light it would be advisable to opt for a new business model. The new activities should pertinently not have a different name than the existing business model. In a world so filled with distrust against cryptos and fear that an investor is not buying what he thinks he is buying, leveraging the existing brand will bring lots of advantages. The potential app for UI/UX can developed within the current organisation (value chain activities). Although it is recommended to have the tokens internally managed and thus have dedicated people, there is no need for the two organisations to be completely separated. You only need dedicated people for operating the portfolio. Thus, concluding, yes, you may (should) need different business models but you do not need two separate organisations to execute those different business models. Only the right person on the right position and a clear separation of the different tokens.

Respondents have indicated that the token issuer should not try to do the actual tokenisation itself but instead should find a partner to do it together (borrow the capabilities). Every party should concentrate on its core competences.

7.5 HOW SHOULD THE TRADITIONAL REAL ESTATE INVESTMENT MANAGER REACT TO THE POSSIBILITIES OF TOKENISATION OF REAL ESTATE AS AN ASSET CLASS?

Given the attractiveness of tokens as an investment opportunity to at least part of the investment community, the traditional investment manager should decide to offer investors the opportunity to invest in these tokens. It should therefore issue tokens on its existing or a newly acquired portfolio. It is recommended to issue tokens with a size above a certain threshold to assure enough volume and facilitate funding. The portfolio that is to be tokenised is recommended to be of high quality and high profile.

The portfolio is cited as the main reason to invest at a certain investment manager. Management is a crucial factor too. The operating model answered the question how the offering is delivered profitably. It captures the business' choices in three critical areas: value chain, cost model and organisation. None of the respondents mentioned the need of a change in value chain, only that it is better to leave the actual process of tokenising the assets to a specialised partner. Both for the traditional real estate as well as for the token investment management arm, the core competences should be exploited. The investment manager can separate itself from its competitors and add value when it works more efficient and cheaper than the competitors (cost model). Imperative is the experience of the investment manager and its service delivery. It is important for the investment manager to meet investor demand and to allow the institutional investor to have an appropriate say in the strategy of the token.

It is expected that within the next couple of years a large part of the activities of the investment manager will be digitalised (organisation). The presented simplified value chain gave an impression of several activities that could be digitalised. This process does not have to be finished before the investment manager can start issuing tokens. Starting point for the business model is internal management. Investment managers now have different angles of competitive advantage but if all the processes were to be digitalised, a level playing field would be created where all the investment managers have more or less the same starting position to play the level playing field. Source of competitive advantage is then, apart from being better at unlocking the data and being better at interpretation the data, to offer additional services. The portfolio being the most important reason to invest at a certain investment manager thus needs to be composed such that the investment manager will be able to manage it optimally, meet investors' desires for product category and location and offer the best suited set of additional services.

Although it is recommended to have the tokens internally managed and thus have dedicated people, there is no need for the traditional real estate and token investment manager to be completely separated. Especially since the decision which business model to use is prompted by the portfolio and based on the most optimal way to manage the portfolio. You only need dedicated people to the fund. This is on an operational level though. Actually issuing the tokens is highly specialised and should be executed by specialised people. Partnering is essential herein. As illustrated by scams with cryptocurrencies and investors losing their money, it is essential to manage the (security) risks of blockchain based investment vehicles. This is also a highly specialised function that needs to be done by people that are trained to do this. This could be done in-house or by partners, but as this is a staff function it does not require a separate organisation. Thus, concluding, yes, you may need different business models but you do not need two separate organisations to execute those different business models. Only the right person on the right position and a clear separation of the different tokens. The investment manager will thus be able to profit from the same competitive advantage in the two different investment classes and there is no reason to assume the institutional investor will not choose the investment manager to manage its investments in tokens given the large similarities in investing in the two categories. Investment demand will then maximise the value of the investment manager.

8. RECOMMENDATIONS

Tokens are considered an interesting investment opportunity, if and when the most important challenges are solved. As such, investment managers are recommended to offer the institutional investors the opportunity to invest in and issue these tokens. In line with the literature on the feasibility study and with the answers of the respondents, the first step is to develop one investment case. The scope, quality, cost and time need to be defined. The risk profile and uncertainties associated with this risk profile need to be established. The implementation phase then needs to be planned including an experiment leading to a pilot with partners and a management plan for the operating phase is the last step in this process.

It is recommended to investigate the strengths and weaknesses of each blockchain and make a fundamental decision on which blockchain to use based on this analysis. When de facto industry standards are widely adopted we may see more products, services and practices. The underlying technical blockchain platform and standard environment specifications become a point of reference for all market players because the standards have a significant market share. These standard environment specifications are presently referred to and build by many other parties. A significant market share is a necessary condition for a standard environment specification to become a de facto industry standard. Otherwise it is just market competition. (Swedish Competition Authority, 2010) In order for a standard environment specification to become a de facto standard, it first needs to be promoted, the market will then experiment with the technology and consequently adopt it. A dominant blockchain will stand up if it is founded or based on a de facto industry standard. It is to be noted that it is currently technically not possible to have one blockchain catering all processes in the world due to capacity issues. The consequences for an issuer of tokens of choosing a blockchain that is less optimal are not entirely clear, but certain is that prevention is better than cure. Subsequently it is recommended that the investment managers start with a portfolio of high quality and high profile assets, with an inherent low risk profile. You do not know all the risks and challenges until you try.

9. REFLECTION

Analysing the potential of tokens and the subsequent writing of this thesis has been an interesting period. I have enjoyed the cooperation with my coach and with the respondents. I strongly believe in the potential of this asset class and expect it to take of the coming years just as I expect much more research to be done in this field. Although I am pleased with the quality of this theses, it is just a first step in the research of the potential of tokens. More extensive research on the literature could be done but most gain can be reaped from interviewing more respondent. Although I am convinced of the expertise and knowledge of my respondents and am especially pleased with the difference in backgrounds of the respondents, increasing the number of respondents could have given more certainty on the validity of the analysis and conclusion. Once there actually are a variety of real estate tokens on the market, the actual attractiveness towards institutional investors and the appropriate actions or business models for investment managers can be determined. There is still a long road ahead of us.

BIBLIOGRAPHY

- Baker McKenzie. (n.d.). *Regulatory Aspects of Initial Coin Offerings (ICOs) in Switzerland*. Zurich: Baker McKenzie.
- Baur, A., Bühler, J., Bick, M., & Bonorden, C. (2017, January 27). *Cryptocurrencies as a Disruption? Empirical Findings on User Adoption and Future Potential of Bitcoin and Co.* Retrieved from HAL: <https://hal.inria.fr/hal-01448070>
- Brown, G. W., Gredil, O., & Kantak, P. (2016, June 21). *Finding Fortune: How Do Institutional Investors Pick Asset Managers?* Retrieved from SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2797874
- Cameron- Huff, A. (2017, March 30). *Op Ed: How Tokenisation is Putting Real- World Assets on Blockchains.* Retrieved from Bitcoinmagazine: <https://bitcoinmagazine.com/articles/op-ed-how-tokenization-putting-real-world-assets-blockchains/>
- Carson, B., Romanelli, G., Walsh, P., & Zhumaev, A. (2018). *Blockchain beyond the hype: What is the strategic business value?* Digital McKinsey.
- Christensen, C. M., Raynor, M., & McDonald, R. (2015). *The Big Idea What Is Disruptive Innovation?* *Harvard Business Review*.
- Clark, G. L., & Monk, A. H. (2012, December 16). *Principles and Policies for In-House Asset Management.* Retrieved from SSRN: <http://ssrn.com/abstract=2189650>
- Crosby, M., Nachiappan, Pattanayak, P., Verma, S., & Kalyanaraman, V. (2015). *Blockchain Technology beyond Bitcoin.* Berkeley: Berkeley University of California Sutardja Center for Entrepreneurship & Technology Technical Report.
- de Jong, M., & van Dijk, M. (2015). *Disrupting beliefs: A new approach to business-model innovation.* McKinsey & Company. Retrieved from McKinsey & Company.
- Drzazga, J., Mischke, M., Schlünzen, H., & Paetz, P. (n.d.). *Brickblock - The Future of Stock Trading on the Blockchain v.1.02.* Retrieved from Brickblock: https://www.brickblock.io/Brickblock_General_Whitepaper.pdf
- Geltner, D. M., & Miller, N. G. (2001). *Commercial Real Estate Analysis and Investments.* United States of America: South-Western Publishing.
- Ghai, S., & Tarnowski, M. (2016). *From big to great The world's leading institutional investors forge ahead.* McKinsey & Company.
- Gulamhuseinwala OBE, I., Hatch, M., & Lloyd, J. (2017). *EY FinTech Adoption Index 2017 The rapid emergence of FinTech.* EYGM Limited.
- Hagel, J., Seely Brown, J., Wooll, M., & de Maar, A. (2015). *Patterns of disruption Anticipating disruptive strategies in a world of unicorns, black swans, and exponentials.* Deloitte Touche Tohmatsu Limited.

- Jenkinson, T., Jones, H., & Martinez, J. V. (2014, September). *Picking Winners? Investment Consultants' Recommendations of Fund Managers*. Retrieved from Berkeley: <https://www.stat.berkeley.edu/~aldous/157/Papers/jenkinson.pdf>
- Konashevych, O. (2018, July 26). *Comparative Analysis of the Legal Concept of Title Rights in Real Estate and the Technology of Tokens: How Can Titles Become Tokens?* Retrieved from Oleksii Konashevych : <https://fc18.ifca.ai/wtsc/WTSC18-PreProceedings.pdf>
- Lindgardt, Z., Reeves, M., Stalk, G., & Deimler, M. S. (2009). *Business Model Innovation When the Game Gets Tough, Change the Game*. The Boston Consulting Group.
- Mackenzie, W., & Cusworth, N. (2007, June). *The Use and Abuse of Feasibility Studies*. Retrieved from Enthalpy: <https://enthalpy.com.au/wp-content/uploads/2013/09/The-Use-and-Abuse-of-Feasibility-Studies-Enthalpy.pdf>
- Malviya, H. (2018, 3 12). *www.itsblockchain.com*. Retrieved from Blockchain for Real Estate: <https://ssrn.com/abstract=2922695>
- Markides, C. C., & Oyon, D. (2011, Winter). *What to Do Against Disruptive Business Models (When and How to Play Two Games at Once)*. Retrieved from MIT Sloan Management Review: <https://sloanreview.mit.edu/files/2011/06/INS0111-Top-Ten-Innovation.pdf#page=44>
- Osterwalder, A., Pigneur, Y., & Tucci, C. L. (2005). Clarifying Business Models: Origins, Present, and Future of the Concept. *Communications of the Association for Information Systemes*.
- Probst, L., Frideres, L., Cambier, B., Martinez- Diaz, C., & PWC Luxembourg. (2016). *Blockchain Blockchain applications & services*. European Union.
- Rigoglioso, M. (2007, October 1). *How the Fear of Missing Out Makes Investors Risk Blind*. Retrieved from Stanford Graduate School of Business: <https://www.gsb.stanford.edu/insights/research-how-fear-missing-out-makes-investors-risk-blind>
- Salehar, D. (2017). *Pattern Based Evaluation of Blockchain Technology as a Catalyst for Business Model Innovation*. Delft: TU Delft.
- Saunders, M., Lewis, P., & Thornhill, A. (2000). *Research Methods for Business Students Second edition*. England: Pearson Education Limited.
- Susan Hudson- Wilson e.a. (2005). Why real estate? And how? where? and when? *Euromoney Institutional Investor PLC*, 12-22.
- Swedish Competition Authority. (2010). *The Pros and Cons of Standard Setting*. Sweden: Konkurrensverket.
- Yildirim, S. (2015). *Alternative asset management 2020 Fast forward to centre stage*. PwC.

APPENDIX

APPENDIX I: INTERVIEW QUESTIONS

1. How did you get introduced to tokenisation? And what does tokenisation mean for your business?
2. How do you think tokens compare to investing in the other types of real estate (direct/ indirect)?
3. What is the business model of offering tokens to invest in, i.e. how do you issue a token and what happens after issuance?
4. And where do you see possibilities for issuers of tokens to separate themselves from competition?
5. What are the main hurdles for acceptance by the general public/ institutional investors?
6. What are the main advantages of investing in direct real estate (to institutional investors) as compared to the other investment opportunities (including tokens)?
7. How do you think the investment managers separate themselves from the other investment managers? And in what way do investment managers create value in their business model? What could they do to improve their quality and value creation potential?
8. Do you think change is needed in the business model of the 'traditional' investment manager to be able to offer tokens as an investment opportunity?

APPENDIX II: SUMMARY INTERVIEW

	Respondent 1	Respondent 2	Respondent 3	Respondent 4	Respondent 5	Respondent 6	Respondent 7	Respondent 8	Respondent 9	Respondent 10	Respondent 11	Respondent 12
Background	Working at the innovation department of a Dutch bank.	Founder of a management consultant specialising in real estate.	Head of Listed Real Estate at an institutional investor. Research Fellow.	Director origination and investment at a cryptocurrency real estate fractional ownership platform.	Notary. Member of group of specialists at a firm with lawyers, notaries and tax advisers that are involved in a.o. blockchain and smart contracts. Member of KNB and advisor of 'permissionless blockchain' project.	CEO and founder of a company that is to issue tokens.	Innovation manager at a Dutch bank. In the lead for tokenisation project.	Product owner and initiator of blockchain for real estate at a provider of financial services.	Cryptofinance application and solution architect.	Working at the supervisor.	Founder of Dutch Cryptocurrency investment manager.	CEO of a company that partners, invests and develops blockchain products and companies for the long-term. EU Blockchain Observatory and Forum contributor
Tokenisation												
Process	With partners. Gradually.	With partners. Start with small project.	Not to harm existing shareholders. Maybe start with acquisitions. Start small.	20% or less of the cap stack.	Standardisation. Process will be applied to different funds.		Partnering but emphasis on finding the right partner. You need to have the skills and knowledge yourself as well. Actively seeking for partners and ecosystem with respect to blockchain.	Start with one newly acquired building or portfolio. With partners.	Hire a company to do the tokenisation for you. Label it yourself. Settlement twice a year. Important to have an ecosystem approach.		Standardisation . Need to make sure token is safe. What happens if you lose your token	With partners. Stick to your core business.

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	Respondent 1	Respondent 2	Respondent 3	Respondent 4	Respondent 5	Respondent 6	Respondent 7	Respondent 8	Respondent 9	Respondent 10	Respondent 11	Respondent 12
Strengths	Simplicity, speed, efficiency. Transferability of assets, safety, transparency, standardisation.	Liquidity, speed, efficiency, transparency, costs, increase in valuation as a result of increased liquidity.	Liquidity. Potentially profit from mismatch token price and underlying asset value. Transaction costs. Transparency, no need for intermediaries. Additional source for financing.	Liquidity, valuation (benefit of disappearing liquidity premium). Immutable data. Cheaper, faster, simplification of processes. 24/7 capital market. Diversification potential.	Transferability of tokens, liquidity, co-investment (small units possible), speed, less formalities	Has seen marketing advantages of (being the first one) offering tokens. Tradability (which at times can also be an undesired feature).	Immutability, speed of settlement and transparency. To a lesser extent marketing.	Liquidity, transparency (in quality of underlying asset), access to global investment market, reliability data.	Accessibility, costs, liquidity. Immutability of data. Decentralised. Opening a global market. Reliability, timestamping.	Transfer of tokens easy and clear. Reduction of risk by simultaneous transfer of money and token. Transferability although necessary. No need for notary due to peer-to-peer transactions. Opening a global financial market.	Efficiency back office. Ability to attract foreign investors. Tradability. Upside lot larger than downside. Ability to diversify.	Global, unified market. Access to more (smaller) investors. Transparency, trust. Attracting talent. Marketing.
Challenges	Transfer of legal ownership. Unfamiliarity.	Legal ownership. Global regulation? Control who invest. Link with Bitcoin. KYC.	Need full understanding (of governance) before willing to invest. Link with cryptos. Too much teething troubles. Volume should be large enough. Volatility. Implications existing shareholders? What happens to cost of capital. For pension funds important to have leverage. Having a fair value price based on an appraisal will result in speculation. Reputable party issuing tokens.	Reputation cryptocurrencies and explaining what tokens are and what the benefits are. KYC and AML. Necessity to mark the value to market	Transfer of legal ownership not possible. Some of the benefits can also be achieved by using traditional fund structure. Governance: what law is applicable, legal dispute resolution, how to implement court decisions on blockchain? Financial supervision laws: which legal status fund and tokens ? Reputation of cryptocurrencies . Code is law?	Transfer of legal ownership. Issuing tokens on a fund is a solid workaround.	Need to have a critical mass in order to have an attractive market. People will be less likely to invest in a standalone token. Important that the tokens match with the system the investor uses. Reconciliation? Guarantee that you acquire what you think you're buying (legal status). Risk of association with cryptos and enough liquidity.	Is what you think you buy, actually what you are buying? Transfer of legal ownership. KYC. Lack of trust. Involvement of the majority shareholder in the location and its wellbeing and social importance.	Generate trust. Transfer of legal ownership. Convincing people and development resources of the solution.	Trust. Being sure that you will get what you paid for. Anonymity and associated money laundering, funding of terrorism etc. Not one blockchain standard. Will come in time through cooperation.	Lack of liquidity in cryptocurrency market as a result of sentiment. Need to develop market place for trading security tokens. Custody of security tokens not yet possible. Regulator needs to move quickly because otherwise processes will be moved to locations where it is allowed. Unfamiliarity.	Legislative part. Fear of the unknown or loss of investment.

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	Respondent 1	Respondent 2	Respondent 3	Respondent 4	Respondent 5	Respondent 6	Respondent 7	Respondent 8	Respondent 9	Respondent 10	Respondent 11	Respondent 12
Solution	Explain the benefits. Show proof of work.	Engagement of reputable parties. Explanation. Hierarchy in tokens (voting rights)	Only tokenise new acquisitions. Liquidity and volume not a huge issue for institutional investors as they tend to have a long horizon.	Building trust. Positive news on cryptocurrencies . Good user experience. Education.	License for fund manager to trade. 'Permissionless blockchain'. Standardisation of terms.	Change in legislation. Substitute notary by smart contracts.		Investing in certificates of actual owner of the assets. Adjusting role of notary. Education and communication , clear rules and responsibilities for owners' associations.	Digital signature of the notary. Multi-signature. Online title insurance, build on 'Web of Trust' like software. Explain benefits.	Need a trusted third party. Shares are backed by MiFID but that is really expensive. If the current legislation would be stretched, ICO would be backed by MiFID. That could be too heavy. Or secondary trading via a RM or MTF (regulated exchange). Could also be disproportional. Self- regulation for those parts where regulation is not decided or clear. Given the current small market cap of most of these developments it is too soon to start already define rule. The end state is still in flux. Seeking partnership with global regulators. Dialogue with involved parties and market. Consensus solutions are the bigger challenges for Blockchain. A reputation system is the alternative but this choice for any consensus solution will be driven by the business need	Engagement of reputable party.	Standardisation of legislation (global market). Marketing, being open and transparent, frequent meetings. Showing your knowledge and experience. Emphasis on communication.

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	Respondent 1	Respondent 2	Respondent 3	Respondent 4	Respondent 5	Respondent 6	Respondent 7	Respondent 8	Respondent 9	Respondent 10	Respondent 11	Respondent 12
Business model	Same. More efficient.	Same. Corporate rating needed.	Strong preference for internally managed fund. Avoid conflicts of interest. Want to keep influence on strategy.	Difficulties with leverage resulting from KNY and AML and small investments.	Still need property and asset management and rating agency. Needs to be digitised.	Changes the revenue model.		Co-ownership with tenants? With companies that do the maintenance? Digitise all processes?	Utilise an app. Large role for UI/ UX.			Especially suitable for those that have their own investment management company. All about trusting the manager.
Attractive for institutional investors?	Yes.	Yes. Will start with small investments.	Yes.	Yes.		Yes.	Yes.	Yes.	Yes.	Yes.	No. Risks too big.	Yes.
Time frame	Within now and two years.	Two to three years.		Couple of months first deal.	Ten, fifteen years for real legal ownership on blockchain. Five years for real estate token funds.	Two months.	Too soon to answer.	Involved parties (for example AFM) are working on it so it can be done quickly. No immediate need for it since investment managers have ample opportunities for capital raising.	Years.	Identity problem solves within five years.	Year.	Some countries two years.
Investment manager												
Adding value	Being quicker and cheaper. Meeting client demands. Nice app. Being better at interpreting big data.	Transparent system. Data available. Optimise portfolio. Active management	Reputation is considered in the allocation of funds towards investment managers. Portfolio, management, return and control over the strategy are important.	Good UI/ UX. Deal flow and real estate market knowledge.		Same. Ability to outperform on certain activity will not change, only how you do it. Competitive advantage based on reputation.		Portfolio and concept that you offer. Quality counts.	Digitalise your processes and have an app that informs investors. Offer platform that aggregates high quality tokens. Visual art.	Good token separates itself by trust. Business model is the same as same people and activities are involved.	Competitive advantage and USP for investors will always be the portfolio. Competing on costs and working efficiently.	Same value adding capabilities for tokens as well as traditional real estate. Buy, add value and sell. Ability to separate the issuer by trust.

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	Respondent 1	Respondent 2	Respondent 3	Respondent 4	Respondent 5	Respondent 6	Respondent 7	Respondent 8	Respondent 9	Respondent 10	Respondent 11	Respondent 12
Additional services	Yes.	Yes. Possibly with partners.	Yes. Possibly with partners.	Yes.		Yes. Leverage knowledge.		Yes. New business models.				Yes. Maximise value growth.
Business model investment manager												
Similarities and differences (i.e. acquisition, exploitation, disposition or 'lite-version'?)	Same.	Same.	Same.	Same. Comes down to pipeline and deal flow, knowledge of real estate market and UI/UX. Still need a property manager and a GP.	Still need property and asset management and rating agency. Needs to be digitised.	Same. Need for flexibility and entrepreneurship .		Could be different. What you choose.			Same. Only legal form of investment is different. More local parties.	Same but maybe more opportunity for additional services. Marketing and communication very important.
Portfolio	Specific.	Not too small. Lowest risk possible. Start with appealing portfolios.	Could be very interesting to have portfolio with very different style of management. Allow cherry picking. Need for diversification mostly on regional level. Expect institutional investor to gravitate towards core portfolios.	High quality and high profile. International attractive		Specific	The underlying asset is what separates tokens, although the differences between two brands will be negligible. Token is on a granular level. Maybe have a minimum amount of tokens for investors to invest in to manage risks.	Rentable units, complexes, portfolios and on company level. Everything is possible.			Will be comparable. Both buildings and portfolios.	

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	Respondent 1	Respondent 2	Respondent 3	Respondent 4	Respondent 5	Respondent 6	Respondent 7	Respondent 8	Respondent 9	Respondent 10	Respondent 11	Respondent 12
Private and institutional investors	Both.	Both.	Both. Volume of trades of institutional investors much larger so only expected to trade in case of rebalancing. Difficulty of different time horizons.	Both.		Both. Although market and management of institutional investors is very different.	Both. Although the product might be too complex for private investors to understand. Maybe more suitable for a later phase. Check on initial investors.	Both. But profile of a fund for private investors deviates substantially from that of institutional investors. Could opt for majority institutional investors.	Both. Private investors will start small and will be looking for robust solutions as the portfolio grows.	Both. Legislation needed to protect private investors.	Private investors. More attractive to younger people. People doing it because everybody tells them not to. Small part of portfolio.	Both.
Digitalisation	Digitalise basic processes first. Can be enough to just have ownership status logged on the blockchain.	Can start with proper ERP. Does not have to be blockchain.			Interoperability. Need for smart contracts, designed with involvement of Legal and real estate experts.	Easier on the more homogenous product.	You need to have digital information. It is not necessary to have all your processes digitalised yet. Can be done simultaneously	Digitalise basic processes first.	Absolute necessity.	Do not need to digitise processes first. Keep the process small to avoid failure. Just focus on those parts where added value is most obvious. Do not try to put the whole company on the Blockchain end on one go.....	Tokenisation is last step in the process. First avoid failure. Just focus on those parts where added value is most obvious or human contact. Use big data.	

