Practical Applications According to the Law on Tokens and TT Service Providers (Token- and TT Service Provider Act; TVTG)*

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Abstract
The blockchain and the associated applications and potentials represent one of the most significant developments in the context of digitization. This gave rise to the Liechtenstein Government's plan to create legal certainty in this area. The Act on Token and TT Service Providers (Token- and TT Service Provider Act; TVTG), on the other hand, is intended to regulate the Token-Economy by protecting providers and users equally. The present paper therefore deals with the question of how the TVTG can be applied in financial industry practice in Liechtenstein. In this context, the Liechtenstein approach is discussed and compared to solutions of other European jurisdictions. Within the framework of a qualitative research method, a survey of different classical business models on practice-relevant subareas took place. With the status of the report and application of the TVTG and the findings from the data collection, the following assumptions have been derived for practice. These show cross-divisional relevance. (1) There is a need for a universal classification of the legal definition »token« in a technology-neutral environment. (2) value rights constitute a relevant sub-area for practical applications in the Liechtenstein financial industry. And (3) The time factor is an essential indicator for measuring business activities within the framework of the Token-Economy. Finally, the Blockchain-Act represents a first well-founded regulatory framework which looks deeper into the matter than the legal regulations of other nations. Liechtenstein wants to position itself as a blockchain-affine location and take on a pioneering role.

Catchwords
TVTG; TTT-Act; Blockchain; Blockchain-Act; Token-Economy

Regulations
Government of the Principality of Liechtenstein, Token and TT Service Provider Act (Token- and TT Service Provider Act; TVTG)**

Structure

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I. Introduction

Blockchain technology is often described as disruptive and the biggest innovation since the upcoming of Internet.[1] It has the potential to sustainably and completely transform the entire financial system as we know it today.[2] This digital revolution thus creates a »mixed reality« in which virtual and real worlds fuse more and more with each other.[3] This technology has established a new form of trusted transaction systems. Due to the information technology approach, these systems operate without subjective and arbitrary human decisions and influences.[4]

Blockchain is often directly associated with crypto currencies. However, there are many other areas of application from which new business models can emerge.[5] As a result of digitization, new technology-based business models have already been formed and implemented in the financial sector (FinTech). The continuous further development of blockchain technology has made it possible to identify various areas of application for this technology.[6] In principle, blockchain technology is described as extremely multi-faceted and has far more potential than crypto currencies, such as Bitcoin, by its own.[7] However, there are still some obstacles that need to be overcome in order to sustainably position blockchain technology and its areas of application.[8] In this context, legal and regulatory aspects in the area of blockchain technology are thus decisive for further business activities in a number of business areas in the Principality of Liechtenstein. Consequently, in March 2018, the Liechtenstein Government made its intention to create a new law public.[9] This stems from the fact that a certain legal certainty in conjunction with the use of blockchain technology in economic activities would strengthen Liechtenstein's attractiveness as an international business location.[10] The resulting idea of creating a so-called »Token-Economy« has not only generated a lively exchange of opinions domestically but also in large parts of foreign countries.[11]

Due to the fact that the government's consultation report (Vernehmlassungsbericht) on the creation of a law on transaction systems based on trusted technologies (VTG)[12] was only adopted on the 28th of August, 2018[13], numerous questions remain unanswered in this area.[14] The aim, however, was to establish a profound legal basis for the extensive range of applications of the blockchain technology. Liechtenstein has therefore decided to introduce the »Token-Economy« because a too detailed description of the technology would exclude important areas of application.[15] This is intended to create legal certainty which has not existed up to now.[16] The approach was deliberately chosen not only to regulate individual sub-areas as such, but also to develop a cross-technology solution.[17] Popular subcategories of blockchain technology that enjoy high media attention are, for example, initial coin offerings (ICOs) or crypto currencies. The present proposal focuses on issues relating to asset protection, money laundering, consumer protection and the technological applicability of Trusted Technologies (TT). As a result, TTs provide an ideal foundation for securing digital assets and intellectual property.[18] After the consultation period, the draft law was revised again, which resulted in a renaming of the law itself. On May 7th 2019, the Bericht und Antrag concerning the creation of a law on tokens and TT Service Providers (Token- and TT Service Provider Act; TVTG) and the amendment of further laws was submitted by the Government to the Parliament of the Principality of Liechtenstein.[19] Pursuant to Art. 1, the TVTG establishes

1 *Adams/Parry/Godsiff/Ward,* The future of money and further applications of the blockchain, Strategic Change 2017, 417 (417); *Quaderer,* Blockchain wird das Leben ähnlich nachhaltig verändern wie das Internet (29.06.2018), <www.volksblatt.li/Nachricht.aspx?src=vb&id=205765>. *Atzori,* Blockchain Governance and The Role of Trust Service Providers: The TrustedChain® Network, The JBBA 2017, 55 (55).

2 *Bont,* Blockchain-Technologie fordert Regulator, Volksblatt.

3 *Adams/Parry/Godsiff/Ward,* Strategic Change 2017, 418.

4 *Büch,* Die Blockchain und das Recht, LJZ 2018, 55 (59).

5 *Quaderer,* Mit diesem Gesetz will ich die Entwicklung der Blockchain-Ökonomie weiter aktiv fördern (24.03.2018), <www.archiv.volksblatt.li/zeitung/2018-03-24/13/text>. *Adams/Parry/Godsiff/Ward,* Strategic Change 2017, 417.

6 Vernehmlassungsbericht der Regierung betreffend die Schaffung eines Gesetzes über auf vertrauenswürdigen Technologien (TT) beruhende Transaktionssysteme (Blockchain-Gesetz; TT-Gesetz; VTG) und die Änderung weiterer Gesetze (28.08.2018) 5 et seq.

7 *Bont,* Volksblatt.

8 *Salzgeber,* Warum das liechtensteinische Blockchain-Gesetz revolutionäres Potenzial haben könnte, <www.ico.li/de/blockchain-gesetz-mit-revolutionaerem-potenzial/>.

9 *Quaderer,* Mit diesem Gesetz will ich die Entwicklung der Blockchain-Ökonomie weiter aktiv fördern (24.03.2018), <www.archiv.volksblatt.li/zeitung/2018-03-24/13/text>.

10 *Büch,* LJZ 2018, 55.

11 *Wanger,* Braucht Liechtenstein ein Blockchain-Gesetz? Liechtensteiner Monat, 26 (26).

12 Act on Transaction Systems Based on Trusted Technologies (TT-Act; VTG).

13 *Ministry of Presidential Affairs and Finance,* Vernehmlassung zum Blockchain-Gesetz gestartet (29.08.2018).

14 *Nägele/Bergt,* Kryptowährung und Blockchain-Technologie im liechtensteinischen Aufsichtsrecht, LJZ 2018, 63 (69).

15 Bericht und Antrag der Regierung an den Landtag des Fürstentum Liechtenstein betreffend die Schaffung eines Gesetzes über Token und TT-Dienstleister (Token- und TT-Dienstleister-Gesetz; TVTG) und die Abänderung weiterer Gesetze (07.05.2019), 41.

16 *Quaderer,* Mit diesem Gesetz will ich die Entwicklung der Blockchain-Ökonomie weiter aktiv fördern (24.03.2018), <www.archiv.volksblatt.li/zeitung/2018-03-24/13/text>.

17 Blockchain-Gesetz verabschiedet, Volksblatt, 17 (17).

18 Vernehmlassungsbericht, 6 et seq.

19 Bericht und Antrag.

a legal framework for TT-based transaction systems and regulates (1) the civil law basis with regard to tokens, (2) the representation of rights by tokens, as well as their transfer[20], and (3) the supervision of TT Service Providers.[21] This is intended to ensure confidence in digital legal transactions and the creation of optimal framework conditions for services.[22]

This means that it is highly relevant for research, not only in legal terms, but also from a technological point of view. Blockchain technology has become indispensable in today's age, which ultimately means that the current legal basis cannot be ignored. Experience from information systems (IS) research shows that there are still some uncertainties about blockchain technology. This can be derived from technological, regulatory or even social aspects.[23] The Principality of Liechtenstein has great potential to assume a pioneering role through the above-mentioned project of creating a new law.[24] Strategically speaking, it is very important for the country, its government and its authorities to build up knowledge about the technology per se and its security gaps. This allows the development of regulatory solutions to be proactively shaped, thus ensuring legal certainty for future developments in the blockchain area.[25]

This topic continues to be of great importance for research in the field of IS. With regard to the numerous application areas and fields of application of TTs, information technology has had a lasting impact on the financial sector from the very beginning.[26] Therefore, the goal is to recognize how the blockchain can be used as profitably as possible and at the same time legally compliant within national borders. In addition, a legal view of blockchain technology can provide important insights into potential future developments. Nevertheless, network systems, as the blockchain is, operate transnationally and across the mentioned borders. Therefore, the fundamental difference must be considered that the respective national law in the area of such systems ends at the respective national borders. Accordingly, this leads to the decision to limit the present work to the Principality of Liechtenstein.

Consequently, a reassessment is necessary, as the existing forms of regulation and laws are not adequate to the current legal issues.[27] The measure »Code is Law«[28] refers to the idea that through the spread and emergence of digital technologies, the »Code« is gradually taking the dominant path to regulating the behavior of Internet users[29].[30] The »code« cannot take on a legislative function, provided that the same understanding of the function and purpose of a legal basis is assumed. For this reason, technological developments must be viewed and analyzed from a legal point of view in order to guarantee legal certainty. Despite the differences of opinion, the fields of information systems and law have much in common.[31]

A. Facts and Objectives

To reduce the legal uncertainty described above, the starting signal has been given for Liechtenstein to develop suitable framework conditions. This was triggered by the further increase in the use of blockchains in business and the first steps taken by other jurisdictions towards national regulations.[32] The impetus for this master's thesis is thus the plan of the Liechtenstein government to create a law on tokens and TT Service Providers (TVTG).[33] The term »trusted technologies (TT)« is used in the consultation process as a synonym for blockchain systems due to the high pace of innovation and the ever-increasing range of applications.[34] Unofficially, the draft law is therefore often referred to as the »Blockchain-Act«.[35] At the time of the consultation, this was also a possible abbreviation of the draft law at that time.[36] The term »TT« was deliberately chosen due to the fact that the dominant design of the technology has not yet fully established itself at the present time. The extensive paraphrase should not jeopardize the timeliness of the law if the basis technology should change.[37] On the whole, the aim of abstract descriptions is to preserve their validity across generations.[38]

20 Cf. Art. 1 para. 1 lit. a Act on Token and TT Service Providers (Token- and TT Service Provider Act; TVTG).
21 Cf. Art. 1 para. 1 lit. b TVTG.
22 Cf. Art. 1 para. 2 lit. a-b TVTG.
23 *Iansiti/Lakhani,* The truth about blockchain, Harvard Business Review 2017, 118 (119).
24 *Büch,* LJZ 2018, 55.
25 *Quaderer,* Mit diesem Gesetz will ich die Entwicklung der Blockchain-Ökonomie weiter aktiv fördern (24.03.2018), <www.archiv.volksblatt.li/zeitung/2018-03-24/13/text>.
26 Vernehmlassungsbericht, 8.
27 *Büch,* LJZ 2018, 59.
28 *Post,* What Larry Doesn't Get: Code, Law, and Liberty in Cyberspace, Stanford Law Review 2000, 1439 (1439).
29 For reasons of better readability, the generic masculine is used in this paper and always refers to both female and male persons. Female and other gender identities are explicitly mentioned if it is necessary for the statement.
30 *Filippi/Hassan,* Blockchain Technology as a Regulatory Technology: From Code is Law to Law is Code, First Monday (1).
31 *Büch,* LJZ 2018, 59.
32 *Salzgeber,* Warum das liechtensteinische Blockchain-Gesetz revolutionäres Potenzial haben könnte, <www.ico.li/de/blockchain-gesetz-mit-revolutionaerem-potenzial/>.
33 TVTG.
34 Vernehmlassungsbericht, 6.
35 Volksblatt.
36 Bericht und Antrag, 122.
37 *Wanger/Johann,* Liechtenstein, in *Global Legal Group Ltd.* (Hrsg), Blockchain & Cryptocurrency Regulation 2019 (2019) 373.
38 Volksblatt, 17.

This paper focuses on legal developments in the Principality of Liechtenstein. A rough overview and a comparison with other European jurisdictions and their approaches should then contribute to a broader understanding. In the course of the thesis, different business models in the financial sector will be contemplated and representatives of these will be interviewed. Blockchain-based transaction systems have a high potential to revolutionize large parts of Liechtenstein's financial center. This can be concluded from the consideration that such systems could have a significantly higher influence on numerous fields of application in the future.[39] Liechtenstein's financial center strategy also pursues the main objective of ensuring the robustness of national economic strength. The greatest possible support and integration of diversified and innovative business models is intended to remedy this situation. With the help of a legal framework, legal certainty for all market participants is to be provided, due to the dependence of a wide variety of external influencing factors.[40]

The aim of the work is to establish elementary connections and differences between the current legal view and the practice. The term »practice« should be understood as an umbrella term for various business models in the financial industry. In this respect, it is important to find out where possible weaknesses lie in the drafting of the bill that has taken place so far, or even to question the entire project. The goal is to provide insights into the regulatory and legal aspects of blockchain technology, which could have an essential impact on further economic activity. On this occasion, the present work provides assistance in considering the current legal situation with regard to practical cases of application. Therefore, it is indispensable to deal with the practice in this technological field, the blockchain, in order to be able to build up a certain know-how.[41]

The fact is that there is currently no profound legal anchoring with regard to the Token-Economy. However, even in practice there is still no clear picture of how this new form of economic activity can be handled. This can therefore lead to concern on the part of both consumers and businesses. Be it in relation to contractual acts or in view of the tax circumstances at national and international level. The increased risk of this legal uncertainty, which results from this and represents a central point of discussion, can be mitigated by regulations or a regulatory framework.[42] Fundamental features, such as decentralization and the independence of the various blockchains, make a uniform cross-border regulation much more difficult. This creates barriers to implementation, both technical and regulatory, which could hamper the widespread introduction of various services.[43] Therefore, adequate regulation is needed to keep pace with technological developments.[44] Internationally, this plan provided a lot of discussion material. The central interest with the creation of a new law is to create a basis on which risks, and abuses can be effectively combated and legal certainty for users can be guaranteed.[45] To this end, valid and possibly internationally applicable framework conditions must be created for a successful Token-Economy. On the one hand, this would allow the technology to develop its full potential and, on the other hand, it would preserve the user protection and stability of the entire financial sector.[46] Therefore, the Blockchain-Act is to provide a basis at national level on which to can be further developed in the future.[47]

In order to create this foundation, the TTT-Act establishes a legal framework for transaction systems based on TT and in particular regulates the following: (1) The civil law principles relating to tokens, the representation of rights by means of tokens and their transfer, and (2) the supervision as well as the rights and obligations of TT Service Providers.[48] The purpose is to secure confidence in digital legal transactions and to create optimal, innovation-friendly and technology-neutral framework conditions. In this way, the actions of users and service providers on TT systems should be able to be handled in a legally compliant manner.[49]

B. Research Question

The following research question thus results from the considerations made:

To what extent is the Act on Token and TT Service Providers (Token- and TT Service Provider Act; TVTG) applicable to different business models in the financial industry in the Principality of Liechtenstein?

39 Vernehmlassungsbericht, 11.
40 *Government of the Principality of Liechtenstein,* Finanzplatzstrategie der Regierung des Fürstentums Liechtenstein (February 2019) 8.
41 *Quaderer,* Mit diesem Gesetz will ich die Entwicklung der Blockchain-Ökonomie weiter aktiv fördern (24.03.2018), <www.archiv.volksblatt.li/zeitung/2018-03-24/13/text>.
42 *ECB,* Virtual currency schemes. A further analysis (2015) 21 et seq. Vernehmlassungsbericht, 6.
43 *Atzori,* The JBBA 2017, 55.
44 *Adams/Parry/Godsiff/Ward,* Strategic Change 2017, 417.
45 Volksblatt, 17.
46 *Bont,* Volksblatt.
47 *Quaderer,* Mit diesem Gesetz will ich die Entwicklung der Blockchain-Ökonomie weiter aktiv fördern (24.03.2018), <www.archiv.volksblatt.li/zeitung/2018-03-24/13/text>.
48 Art. 1 Abs. 1 TVTG.
49 Cf. Art. 1 Abs. 2 TVTG.

II. Theoretical Foundations

The following chapter serves to ensure a uniform understanding of the essential terms. Such formal definitions could not fully satisfy all stakeholders, hence for the purpose of this work they are clarified as follows:

A. Distributed Ledger Technology

Distributed Ledger Technology (DLT) is a new and unique technology. Their processing capability runs in real time, is virtually tamper-proof and is becoming more and more cost-effective over time.[50] Central offices have traditionally managed the records. The DLT has been the reason to open up a radical alternative to capturing information. DLT therefore has the potential to be as groundbreaking as the invention of double-entry bookkeeping in Italy in the 14th century. Consequently, this could completely revolutionize the coverage of financial transactions and property rights.[51] DLT is regarded as the basis for all blockchain systems, since each participant in the network system stores a copy of this »Distributed Ledger«.[52] It leads to transparency, quality assurance and trust, and to new ways of thinking, which in combination with different solutions leads to a disruptive future of business and economic models.[53] DLT enables a new paradigm in financial services, where companies collaborate and interact at the infrastructure and transaction levels. In the course of this, resources can be freed up for innovation and competition at the application and value creation levels.[54] In addition, DLT supports other software- and hardware-based innovations such as Smart Contracts and the Internet of Things.[55] This will reveal a transformation of different business models and the boundaries between the material and digital worlds will begin to merge.[56] Distributed ledgers are a type of database that are distributed across multiple locations, countries or institutions, and are usually public. The recordings are stored one after the other in a continuous ledger and not sorted into blocks but can only be added when the participants have reached a certain quorum.[57]

The underlying philosophy of distributed consensus, open source, transparency and community can be disruptive for individual industries and their services. In particular, their decentralized, consensual nature within traditional hierarchical organizations, such as banks and government agencies, can create unrest. Many of these classic activities are complemented by innovations in the form of distributed ledgers, yet others are challenged.[58]

B. Blockchain/Trusted Technologies

The blockchain is a disintermediating and decentralizing proposal that does not rely on a trusted third party to guarantee counterparties or transactions, but relies on consensus for authentication.[59] It allows such orders to be recorded efficiently, verifiably and permanently between two parties.[60] On such a computer network, each individuals path is stored and secured decentral, resulting in a transaction register that offers complete transparency.[61] Every agreement, every process, every task and every payment is digitally recorded and signed. As a result, all these transactions are identified, validated, stored and shared.[62] TT not only enables the secure exchange, but also the storage of digital rights for a wide range of assets. The associated provision of services can thus also be secured.[63] The considerations regarding this network technology are based on the concept paper »Bitcoin: A peer-to-peer electronic cash system« by Satoshi Nakamoto. He launched this paper in 2008.[64] Theoretically, this technology would make financial intermediaries such as banks or lawyers superfluous.[65] The idea of the blockchain is similar to the game theory, in which incentives are created for each link that is checked via the network.[66]

Blockchains are considered a subcategory of cryptographically supported DLTs. They are a specific type of distributed ledger that are written by decentralized, mostly anonymous groups of persons (miners) and not by known centralized parties. The ledger is made publicly visible and comprehensible. In the course of this, a consensus can be reached on the transactions that have been settled. Ideally, a ledger should (1) correctly capture all information and do so (2) cost-effectively and

50 *Walport,* Distributed ledger technology: Beyond blockchain 14.
51 *Abadi/Brunnermeier,* Blockchain economics 2.
52 Vernehmlassungsbericht, 13.
53 *Maull/Godsiff/Mulligan/Brown/Kewell,* Distributed ledger technology: Applications and implications, Strategic Change 2017, 481 (483 et seq.).
54 *Reynolds,* The Internet of Public Value, The JBBA 2018, 37 (37).
55 *Walport,* Distributed ledger technology: Beyond blockchain 14.
56 *Maull/Godsiff/Mulligan/Brown/Kewell,* Strategic Change 2017, 481.
57 *Walport,* Distributed ledger technology: Beyond blockchain 17 et seq.
58 *Walport,* Distributed ledger technology: Beyond blockchain 14.
59 *Adams/Parry/Godsiff/Ward,* Strategic Change 2017, 417.
60 *Iansiti/Lakhani,* Harvard Business Review 2017, 118.
61 *Bont,* Volksblatt.
62 *Iansiti/Lakhani,* Harvard Business Review 2017, 119.
63 Cf. Art. 2 Abs. 1 lit. a-b TVTG.
64 *Nakamoto,* Bitcoin, bitcoin.org/bitcoin.pdf.
65 *Iansiti/Lakhani,* Harvard Business Review 2017, 119.
66 *Feng/W. Wang/Xiong/Niyato/P. Wang/S. S. Wang,* On Cyber Risk Management of Blockchain Networks: A Game Theoretic Approach (27.04.2018).

(3) fully decentralized to avoid a concentration of power.[67] These properties are advertised per blockchain and DLT. This is based on an honest majority, which is based on perfect self-organization. Through this self-organization and the trust in it, the integrity of the data and its security shall be guaranteed.[68]

The technical innovation that the blockchain represents concentrates on a distributed, decentralized data architecture. It enables a change from central authority to community consensus; away from the control of manual community management. Blockchains are designed to provide a tamper-proof record of transactions. Users keep and manage them in a distributed form so that they cannot be owned and controlled by a single person.[69] Due to the fact that different human and also technical components are part of this entire system, it is utopian that all three listed characteristics (the correct collection of information, cost efficiency and decentralization) can be fulfilled simultaneously and completely.[70] This can lead to attacks on a network, among other things, to which some blockchains – especially those that do not allow any identity control – react in a vulnerable way.[71]

Similar to a database, transactions are recorded in the blockchain and stored as unchangeable data records in the general ledger. Each of these sequential data-blocks – also called blocks – contains a copy of the entire general ledger, which is constantly updated via a consensus algorithm. The algorithm described ensures that all copies within the blockchain are kept consistent and also decides how a block can be added to the respective blockchain. In addition, each block contains a so-called hash, or a cryptographic fingerprint. This can therefore verify and release the contents of the previous blocks.[72] Mathematical methods and encryption techniques are used to ensure the security of the users of a particular blockchain application.[73] Additionally, the records within the blockchain are not changeable, which means that they can neither be changed nor deleted.

Another feature of the technology is that it is more than just a database. Nakamoto initially limited his concept to electronic monetary units, in the form of Bitcoin and its transactions.[74] However, there were already other applications at that time, which go beyond these partial aspects. The blockchain can also define rules for a certain transaction or business logic that is linked to the transaction itself. In practice, as well as in the literature, these are referred to as »Smart Contracts«.[75] Basically, these codes represent the codes that are executed automatically as soon as a certain, previously defined, event occurs.[76] This is in contrast to traditional databases, where the rules are often set at the level of the entire database or in an application itself, but not in the transaction.[77] However, on the basis of the blockchain infrastructure, tokenization can now take place using such special contracts.[78]

C. Token and Token-Economy

The token is the English expression for an »embossed coin«, or coin. It is defined as digital information consisting of a sequence of characters or bits. It can also be the result of a calculation on a Distributed Ledger, in which a certain person can be assigned undoubtedly justifiable rights to goods or other rights. Accordingly, a token can embody or represent numerous rights.[79] Basically, a token is purely a digital information unit which, however, according to the classical view, cannot exhibit any physicality. Because of this, the question arises how the token should be handled legally; whether it is a legal object and, if so, how it can be categorized.[80] The token is used to identify and authenticate objects. In any case, such information can take on different functions.[81] If one or more TT-identifiers can be assigned to the information, these can therefore be referred to as »tokens«.[82] According to the Blockchain-Act, tokens serve to embody absolute and/or relative rights.[83] The blockchain ensures that the token is unique and unmistakable. Because of this, there is currently no possibility to copy a token.[84] At the European level, the definition and legal classification of tokens is not yet fully developed. This is because the European Securities and Markets Authority (ESMA) has not yet taken clear steps to integrate the token into

67 *Abadi/Brunnermeier,* Blockchain economics 2.
68 *Feng/W. Wang/Xiong/Niyato/P. Wang/S. S. Wang,* On Cyber Risk Management of Blockchain Networks: A Game Theoretic Approach 1.
69 *Adams/Parry/Godsiff/Ward,* Strategic Change 2017, 417.
70 *Abadi/Brunnermeier,* Blockchain economics 2.
71 *Feng/W. Wang/Xiong/Niyato/P. Wang/S. S. Wang,* On Cyber Risk Management of Blockchain Networks: A Game Theoretic Approach 1.
72 *Committee on International Trade,* Blockchain: a forward-looking trade policy.*Nägele/Bergt,* LJZ 2018, 64.
73 Bericht und Antrag, 5.
74 *Nakamoto,* Bitcoin, <www.bitcoin.org/bitcoin.pdf>.
75 *Committee on International Trade,* Blockchain: a forward-looking trade policy.
76 *Wood,* Ethereum, Ethereum project yellow paper 2014, 1 (2 f).
77 *Walport,* Distributed ledger technology: Beyond blockchain 17.
78 *Ante/Fiedler,* Cheap Signals in Security Token Offerings, SSRN Journal 2019 (2).
79 *Nägele/Bergt,* LJZ 2018, 64.
80 *Layr/Marxer,* Rechtsnatur und Übertragung von «Token« aus liechtensteinischer Perspektive, LJZ 2019, 11 (13).
81 *Nägele/Bergt,* LJZ 2018, 64; Vernehmlassungsbericht, 15.
82 Cf. Art. 2 para. 1 lit. c Z 2 TVTG.
83 Cf. Art. 2 para. 1 lit. c Z 1 TVTG.
84 Vernehmlassungsbericht, 15.

the European Prospectus Regulation[85] and the Markets in Financial Instruments Directive (MiFID II[86]).[87]

The literature distinguishes between three types of tokens: (1) Equity or Security Tokens, (2) Payment Tokens or Cryptocoins and (3) Utility Tokens. On the one hand, equity or security tokens represent a kind of extension of the concept of ownership of shares or assets in the blockchain. Investors are granted the same rights as in traditional financial matters.[88] These may, among other things, take the form of shares in a company or shareholder rights. Payment tokens only have a means of payment function.[89] According to the TVTG, they are regarded as a substitute for legal means of payment, especially for the fulfilment of any contractual obligations.[90] Utility tokens show a new concept compared to the other types. This information is easily redeemable within the closed economy of a company and can be exchanged for goods and services. However, pure utility tokens are still relatively rare to date. The main difference to the other token classifications is that utility tokens have no enforceable rights.[91] They only allow access to digital services, or applications.[92] Mostly these, in practice, therefore occur as hybrids in combination with payment tokens.[93]

According to Art. 2 para. 1 lit. c TVTG, the token is defined as »information on a TT system« to which the following tasks or properties are assigned:

- Reasonable claim or membership rights against a person
- The embodiment of rights to property, or other absolute or relative rights
- Assignment to one or more public keys[94]

In the chapters above, it was discussed that the blockchain opens up many different application possibilities. Although tokens are largely represented in this technology, the term »Token-Economy« is still a discipline in which some questions remain unanswered and could not be answered in detail until now. In the course of the Blockchain-Act, the Token-Economy has come to the center of attention. The use of blockchain-based tokens enables the creation of new types of economies. These can be designed to be fully customizable and adaptable, while at the same time ensuring security and transparency without a central supervisory authority.[95] The goal of the token and also of the Token-Economy is to be able to ensure the tradability and representation of different rights with the generation of the token. This functionality is often compared with that of securities or value rights.[96]

D. Initial Coin Offerings und Security Token Offerings

When talking about ICOs and Security Token Offerings (STOs), the opinions in the literature sometimes differ considerably. In order to create a theoretical framework and thus a starting point for the discussions in Chapters V and VI, these two areas are examined and compared in more detail.

Initial Coin offerings (ICOs)

ICOs are regarded as a method of financing on a blockchain. This application within the DLT is often referred to as »Initial Token Offering« (ITO), or »Token Generation Event« (TGE).[97] However, no universally valid theoretical definition has yet been elucidated. Usually these are used for projects for the construction of further blockchains. With the help of these, an uncomplicated transfer of assets can be guaranteed.[98] An ICO often describes a mechanism that functions similarly to crowdfunding processes.[99] However, ICOs are not regulated in large parts of Europe. Some of them are even banned.[100] The main objective of an ICO is to sell project-related tokens to a group of donors in order to generate capital to finance the project.[101] An ICO includes the following properties: (1) a business idea, (2) a target amount of capital[102] and (3) a team that initiates the ICO. In most cases, the target sum is to be achieved with the help

85 REGULATION (EU) 2017/1129 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 14 June 2017 on the prospectus to be published when securities are offered to the public or admitted to trading on a regulated market and repealing Directive 2003/71/EC ABI L 168/12.
86 See DIRECTIVE 2014/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 15 May 2014 on markets in financial instruments and amending Directives 2002/92/EC and 2011/61/EU OJ L 173/349.
87 *Ante/Fiedler,* SSRN Journal 2019, 3.
88 *BTC ECHO,* Was ist ein STO (Security Token Offering)? btc-echo.de/tutorial/security-token-offering-definition-was-sind-stos/.
89 *Nägele/Bergt,* LJZ 2018, 65.
90 Cf. Art. 2 para. 1 lit. d TVTG.
91 *Fisch,* Initial coin offerings (ICOs) to finance new ventures, Journal of Business Venturing 2019, 1 (3).
92 *Ante/Fiedler,* SSRN Journal 2019, 2.
93 *Kampakis,* Why do we need Tokenomics? The JBBA 2018, 83 (83). *Nägele/Bergt,* LJZ 2018, 65.
94 Cf. Art. 2 para. 1 lit. c TVTG.
95 *Kampakis,* The JBBA 2018, 83.
96 *Layr/Marxer,* LJZ 2019, 14; *Wanger,* Liechtensteiner Monat, 26.
97 *Amsden/Schweizer,* Are Blockchain Crowdsales the New ›Gold Rush‹? Success Determinants of Initial Coin Offerings, SSRN Journal 2018 (5).*Nägele/Bergt,* LJZ 2018, 64 f.
98 *Fenu/L. Marchesi/M. Marchesi/Tonelli,* The ICO phenomenon and its relationships with ethereum smart contract environment, 2018 International Workshop on Blockchain Oriented Software Engineering (IWBOSE) (20. 03. 2018–20. 03. 2018) 26.
99 *Fisch,* Journal of Business Venturing 2019, 1 ff.
100 *Fenu/L. Marchesi/M. Marchesi/Tonelli* 26.
101 *Fisch,* Journal of Business Venturing 2019, 3.
102 Comparable to crowdfunding projects.

of a newly created crypto currency. These can be purchased before market entry in exchange for established crypto currencies.[103] Initially, the aim of the method was to create incentives to support innovative ideas. In the beginning, the initiators mainly addressed small investors. With the development of the approach, however, a clear change in the overall approach has become apparent. The ideas have grown, and so have the investors and the acquired capital. This development has gone so far that, at the peak of the ICO hype in 2017, the assets collected as a result have accounted for a large proportion of all fundraising activities worldwide.[104]

The quintessence behind an »investment« in an ICO is (for investors) to achieve the highest possible return before entering the market.[105] In 2017, there was an enormous increase in the initiation of ICOs and the related capital acquisition[106]. Compared to traditional financing methods, such as bank lending, initial public offerings (IPOs), venture capital financing, or crowdfunding, ICOs have produced faster results for both capital seekers and investors.[107] This application of the blockchain has once again demonstrated the great potential of the technology.[108]

In the past, however, this form of financing has contributed to some cases of fraud due to the lack of regulation. With the growing hype around ICOs, players have entered who have abused ICOs to cheat investors. It is estimated that about ten percent of all ICO funds were raised through fraud, phishing attacks, Ponzi schemes and other machinations.[109] These types of misuse are all cyber-attacks, all of which have the same purpose of stealing data or manipulating it and using it for their own benefit.[110] This is due to the fact that most ICOs are based on loopholes in the law and thus fall into a regulatory grey area. In addition, it also happens that, where regulatory frameworks exist, these are also disregarded and that the focus is purely on the goal of profit.[111]

Security Token Offerings (STOs)

STOs are becoming more and more popular and are often referred to as »ICO 2.0«. They are regarded as a new generation of financing methods based on security tokens. Due to the properties that security tokens possess[112], it can be guaranteed that STOs cannot fall into any legal grey zone.[113] Basically, these are securities that occur in the form of blockchain tokens.[114] Regulators start with security tokens and roughly divide them into tangible assets or financial market products. However, a clear definition and allocation is still in the development phase.[115]

The basic concept of STOs is not based on innovative approaches but can in principle be compared with IPOs or similar classical financing mechanisms. The decisive innovation that comes up with STOs is the blockchain component. Transparency and security play important roles here.[116] As with ICOs, the intentions of the project to be financed, including a description of the business model, are written down in a whitepaper. The whitepaper contains additional information regarding the purpose of the project, the envisaged technologies etc. pp.[117] Every transaction that follows via the platform can be publicly viewed at any time. This ensures more efficient placement and settlement, which in other traditional methods can take days.[118] Further work is being done on licensing security tokens to ensure sustainable security and to prevent misuse and money laundering.[119]

Comparison between ICOs and STOs

Traditional forms of financing play an important role, especially in start-ups. However, there are some disadvantages to consider, such as more difficult access to these and sometimes high costs.[120] As a result, more innovative methods are becoming more and more popular, and dependence on financial institutions is dwindling.[121] The main feature that distinguishes ICOs and

103 *Fenu/L. Marchesi/M. Marchesi/Tonelli* 26.
104 *Zetzsche/Buckley/Arner/FFhr,* The ICO Gold Rush: It's a Scam, It's a Bubble, It's a Super Challenge for Regulators, SSRN Journal 2017 (2).
105 *Fenu/L. Marchesi/M. Marchesi/Tonelli* 26.
106 *Fisch,* Journal of Business Venturing 2019, 1.
107 *Amsden/Schweizer,* SSRN Journal 2018, 2.
108 *LEXR,* Security Token Offerings (STO) in Switzerland: Tokenization of Shares, <www.lexr.ch/news-feed/artikel/security-token-offerings-sto-in-switzerland-tokenization-of-shares/>.
109 *Chohan,* Initial Coin Offerings (ICOs): Risks, Regulation, and Accountability, SSRN Journal 2017 (2).
110 *Federal Financial Supervisory Authority (BaFin),* Consumer warning: the risks of initial coin offerings, <www.bafin.de/SharedDocs/Veroeffentlichungen/EN/Meldung/2017/meldung_171109_ICOs_en.html>.
111 *Zetzsche/Buckley/Arner/FFhr,* SSRN Journal 2017, 11.
112 See chapter II.D.
113 *BTC ECHO,* Was ist ein STO (Security Token Offering)? btc-echo.de/tutorial/security-token-offering-definition-was-sind-stos/.
114 *Ante/Fiedler,* SSRN Journal 2019, 2.
115 *LEXR,* Security Token Offerings (STO) in Switzerland: Tokenization of Shares, <www.lexr.ch/news-feed/artikel/security-token-offerings-sto-in-switzerland-tokenization-of-shares/>.
116 *Ante/Fiedler,* SSRN Journal 2019, 3.
117 *Nägele/Bergt,* LJZ 2018, 64.
118 *Mills/K. Wang/Malone/Ravi/Marquardt/C. Chen/Badev/Brezinski/Fahy/Liao/Kargenian/Ellithorpe/Ng/Baird,* Distributed Ledger Technology in Payments, Clearing, and Settlement, FEDS 2016 (17).
119 *Zhao,* Coinbase Says It Now Has Regulatory Approval to List Security Tokens, coindesk.com/coinbase-adds-eos-to-its-crypto-education-rewards-program.
120 *Ante/Fiedler,* SSRN Journal 2019, 4.
121 *Ahlers/Cumming/Günther/Schweizer,* Signaling in Equity Crowdfunding, Entrepreneurship Theory and Practice 2015, 955 (958 ff).

STOs from crowdfunding or similar is that these methods can run over blockchain networks. A distinction can be made between these as follows: ICOs and STOs use different types of tokens for project financing. The ICO is often a utility token, while the STO – as the name suggests – works with security tokens.[122] Since utility tokens do not have to meet any special regulatory requirements, there is a wide scope for design with regard to the design of these tokens.[123] They can be used, for example, to purchase services.[124] These are usually structured accordingly, so that existing regulatory or legal requirements can be avoided as far as possible. In most cases, this can be attributed to limited measurability. Until now, only technical descriptions of individual projects have been required, which has led to discrepancies in the content of the underlying white papers. As a result, ICOs are usually located in regulatory grey areas and are therefore difficult to discuss from a legal perspective.[125]

In addition, companies that do not offer digital services or applications cannot meet the requirements or characteristics of an ICO.[126] With this and the increasing number of fraud cases involving ICOs, a »better« version of this, namely that of an STO, was promoted.[127] Compared to this, STOs are becoming more and more popular and are now almost eclipsing ICOs. In contrast to ICOs, they are tokenized assets that fall under various regulatory frameworks and thus bring a certain degree of legal certainty.[128]

III. Methodology

The present facts include both economic aspects and contents of a legal nature. With this basis a combination of jurisprudential and economic research methods is applied in this work. This is done to ensure that an overall result can be achieved. This should provide a sustainable answer to the research question posed in Chapter I. The basis of the present work is a comprehensive literature analysis. Here the topicality of the sources has the highest value. Due to the fact that the field around the Blockchain-Act is a novelty, the »Case Study« method is applied in the empirical part of this work. Another reason for this qualitative data collection is the existing knowledge gap regarding practical applications in connection with the TTT-Act. Unlike many other empirical methods, the case study is a reflection of special features and individual cases. Therefore, the results that can be derived from this methodology cannot be generalized.[129] Furthermore, this work is to be geographically limited to the Principality of Liechtenstein, on the occasion that the Blockchain-Act is also limited to the Principality as national law. The case study methodology is used to take a closer look at the views of different business models and analyze them.

The individual methodological procedures are described in detail below. With the help of a literature research and analysis the theoretical basis of the present thesis shall be formed. Subsequently, a case study analysis serves for further argumentation and discussion of the results from the theory. This is carried out in the form of semi-structured expert interviews. The aim of the work is to analyze the generated data from practice and to link them together with the results of the literature analysis of various books and journal articles. Finally, the research question above should be answered profoundly.

A. Literature Review

At the beginning there is a comprehensive literature analysis of decisive texts from databases and literature. This is intended to create a uniform understanding of the essential concepts. The field of blockchain and Token-Economy has its beginning in practice. The legal view of this technological development has manifested and consolidated itself. For this reason, the scientific basis of this specific subject area is rather reactive and fragmented. Consequently, in this part of the paper, the different orientations of the existing literature will be examined.[130]

An analysis of this existing literature aims to build knowledge on a particular topic by creating a solid foundation derived from relevant documentation.[131] The limitation of this methodology is that not all relevant sources can be considered. Literature analysis is often used to reproduce previous research results, which can also be used for future research.[132] It facilitates theoreti-

122 *BTC ECHO,* Was ist ein STO (Security Token Offering)? <www.btc-echo.de/tutorial/security-token-offering-definition-was-sind-stos/>.
123 *Ante/Fiedler,* SSRN Journal 2019, 2.
124 *Nägele/Bergt,* LJZ 2018, 65.
125 *Zetzsche/Buckley/Arner/FFhr,* SSRN Journal 2017, 11.
126 *Ante/Fiedler,* SSRN Journal 2019, 2.
127 *LEXR,* Security Token Offerings (STO) in Switzerland: Tokenization of Shares, <www.lexr.ch/news-feed/artikel/security-token-offerings-sto-in-switzerland-tokenization-of-shares/>.
128 Cf. *BTC ECHO,* Was ist ein STO (Security Token Offering)? <www.btc-echo.de/tutorial/security-token-offering-definition-was-sind-stos/>.
129 *Thomas,* How to do your case study (2016) 3.
130 *Hakala,* Strategic Orientations in Management Literature: Three Approaches to Understanding the Interaction between Market, Technology, Entrepreneurial and Learning Orientations, International Journal of Management Reviews 2011, 199 (210).
131 *Webster/Watson,* Analyzing the past to prepare for the future, MIS Quarterly 2002, xiii (xiii).
132 *Fink,* Conducting research literature reviews. From the Internet to paper (2010) 3. *Tranfield/Denyer/Smart,* Towards a methodol-

cal development, closes gaps in knowledge and opens up areas where further research is needed.[133] With the help of this comprehensive research and analysis, the bias against previous research results will be reduced.[134] The intellectual property made available can thus be identified, further developed and refined.[135] Basically, a literature analysis provides a profound basis for decision-making and consequently for the development of suitable measures.[136]

In the present work the methodology of objective hermeneutics is applied. The aim here is to reconstruct objective structures of meaning.[137] It is one of the most notable approaches expressing the logical-analytical independence between manifest and latent sense structures.[138] It is based on five fundamental principles:

The (1) freedom of context provides, in contrast to the initially misleading term, that a context-independent description of the respective contents must be drawn up. Only in the second step the context of the present literature may be included in the discussion. (2) Literality is about interpreting statements literally and consequently interpreting them almost naively. The principle of (3) sequentiality is of great importance in objective hermeneutics. It is also referred to as reconstruction methodology and is at the center of the entire analysis. The individual text sources are processed strictly and step by step. (4) Extensiveness is methodological thoroughness. Here, however, not all sequences must be interpreted in their entirety, but in principle the essential parts must be taken out and precisely illuminated. The last principle is (5) economy. Basically, it is about the prevention of insinuations in the texts which cannot be justified. In terms of research economics, not only readings are to be limited. In order to make the contents accessible to the readers, the entire process of literature analysis must, theoretically, be as controlled as possible.[139]

From the meeting of these described fundamental principles objective sense structures can be formed, as soon as the sense can be brought together repeatedly from different sources.[140] Objective hermeneutics thus makes a valuable contribution to qualitative research methods in the field of social research.[141] For this reason, the literature analysis on the basis of this described method serves as the basis and main part of the present work.

B. Qualitative Research Approach

The qualitative research approach is described below. This approach is complex and quite ambiguous. Reasons for this are numerous techniques, views and philosophies, which are connected with the conceptuality. A holistic definition does not exist in the technical literature. Basically, this type of research allows to study the experiences of specifically selected individuals. This leads to the crystallization of detailed information on a specific research topic. Due to the fact that each person experiences things and situations differently, it is expected that the different impressions and experiences will be interpreted in order to draw conclusions for further research. Accordingly, the phraseologism »interpretative research approach« also applies.[142]

In general, the main task of qualitative social research is to provide a theoretical basis for a certain research topic, which has not yet been researched. Hypotheses can be formed as a result. However, there are many ways in which conclusions can be reached. Therefore, the term cannot be defined conclusively and clearly. Most qualitative research approaches aim at creating a holistic view and a holistic understanding of the defined research topic.[143] Semi-structured expert interviews serve as a form of case studies to support the results of the comprehensive literature analysis. Due to the novelty and complexity of the topic, the consideration of different forms of knowledge should help to reproduce a polyphony of the contents and to represent them appropriately.[144]

In the research method of the case study, individual cases and peculiarities in a certain subject area are pre-

ogy for developing evidence-informed management knowledge by means of systematic review, British journal of management 2003, 207 (207 f).

133 *Webster/Watson,* MIS Quarterly 2002, xiii.

134 *Hakala,* International Journal of Management Reviews 2011, 203.

135 *Fink,* Conducting research literature reviews 44. *Tranfield/Denyer/Smart,* British journal of management 2003, 208.

136 *Frank/Hatak,* 6. Doing a research literature review, in *Fayolle/Wright* (Hrsg), How to get published in the best entrepreneurship journals (2014) 94 et seq.*Tranfield/Denyer/Smart,* British journal of management 2003, 208 f.

137 *Reichertz,* Objektive Hermeneutik, in *Hitzler/Honer* (Hrsg), Sozialwissenschaftliche Hermeneutik (1997) 31 et seq. *Wernet,* Einführung in die Interpretationstechnik der Objektiven Hermeneutik (2009) 21 ff.

138 *Oevermann,* Strukturprobleme supervisorischer Praxis. Eine objektiv hermeneutische Sequenzanalyse zur Überprüfung der Professionalisierungstheorie (2010) 28 et seq. *Reichertz* in *Hitzler/Honer* 32.

139 *Wernet,* Einführung in die Interpretationstechnik der Objektiven Hermeneutik 21 ff.

140 *Kerschner,* Wissenschaftliche Arbeitstechnik und Methodenlehre für Juristen (2014) 15.

141 *Kleining,* Umriss zu einer Methodologie qualitativer Sozialforschung, Kölner Zeitschrift für Soziologie und Sozialpsychologie 1982, 224 (228).

142 *Mayring,* Qualitative Inhaltsanalyse. Grundlagen und Techniken (2015) 22 et seq.

143 *Eriksson/Kovalainen,* Qualitative methods in business research (2016) 4 et seq. *Mayring,* Qualitative Inhaltsanalyse 22 et seq.

144 *Bogner,* Experteninterviews. Theorien, Methoden, Anwendungsfelder (2009) 11.

dominantly considered.[145] To this end, experts from various specialist areas are interviewed. The interview partners (IP) of this paper are regarded as representatives of individual business models in the financial industry. Expert interviews are of great importance in qualitative social research. They are regarded as a suitable form of data collection, especially in situations where access to new theoretical knowledge is difficult or even impossible. Nevertheless, the position of the expert interview within a research design can vary greatly.[146]

How many observations have to be recorded in order to achieve a successful and valuable result is basically difficult to identify.[147] Strictly speaking, however, the findings of this qualitative research method can never be evaluated in a completely objective way. Despite this, as many subjective opinions of the interviewees as possible should be excluded.[148] It is clear that theoretical saturation has been reached if the observations carried out do not generate any new findings and thus cannot offer any further added value. Consequently, this thesis implies that no fixed number of surveys is defined. Nevertheless, the quantity of the qualitative survey must be adapted to the complexity of the subject area[149]. In the present study, a representative of different business units based in Liechtenstein is interviewed. These business areas include (1) the legal profession, (2) banking, (3) asset management, (4) fund management and (5) trusteeship. This decision was taken in order to achieve feedback on the research area in question that is as cross-disciplinary as possible. Consequently, the resulting results and analyses could embody the opinions of large parts of the Liechtenstein financial center.

C. Research Design

A semi-structured interview guide was prepared for data collection. The questionnaire contains twelve questions for the individual test persons. Based on the previous literature research, the case studies were selected to extend the existing theory and close the defined research gap. In addition, this case selection aims to illustrate possible areas of application in the financial sector. A major advantage of the interview guide is the ability to add or eliminate a question as needed, provided it does not mean a significant mutation in data collection. This flexibility implies the opportunity to identify potential new perspectives of thinking. Thus, the adaptation of one's own interview questions may impart new knowledge under certain circumstances.[150] In order to be able to deal specifically with each test person, the order of the questions asked may also vary from case to case. Since the tone of the interviews should be relatively informal, some questions may already be answered in the discussion on another topic. Therefore, not every question from the interview guide is asked to every participant. In individual cases, additional questions may be asked from time to time in order to keep the conversation going and to obtain more in-depth information on a specific part of the topic.

At the beginning of the interview general questions are asked about the interviewee in order to get some background information about the participant himself.[151] Subsequently, the questions usually deal with the changes since the blockchain technology emerged in Liechtenstein and the assessments of future developments in this regard. It will be discussed how blockchain applications can be used in the respondent's company or how they could be used in the future. The main part of the guide deals with the opinions on the draft law, so that the research question can be answered by analyzing the different statements in connection with the results of the literature search. The concluding questions aim to summarize the entire conversation and to bring the interview to a close.

In summary, it can be said that the empirical data collection of this master's thesis concentrates on companies that have already gained experience with blockchain technology or are dealing with current developments. The selection of cases is completely limited to the Principality of Liechtenstein. One participant per company is selected for the survey. Each interview represents a single case which can be analyzed individually or in combination with the other cases. In addition, the interviews are designed as »guided interviews«, which include open, direct as well as indirect questions. The semi-structured style of the investigation implies the main advantage that the investigation could make additional adjustments in each individual interview. Thus, each case can be treated in its own way and individually.

D. Selection of Interview Partners

Given the characteristics of blockchain technology and the associated TTT-Act, the selection of IP is limited to

145 *Thomas,* How to do your case study 3.
146 *Bogner,* Experteninterviews 8.
147 *Yin,* Case study research and applications. Design and methods (2018) 18.
148 *Flick,* An introduction to qualitative research (2009) 13. *Bogner,* Experteninterviews 13.
149 *Eisenhardt,* Building Theories from Case Study Research, The Academy of Management Review 1989, 532 (545). *John W. Creswell/J. D. Creswell,* Research Design. Qualitative, Quantitative, and Mixed Methods Approaches (2017) 186.
150 *Eisenhardt,* The Academy of Management Review 1989, 537 et seq.
151 *Hennink/Hutter/Bailey,* Qualitative research methods (2011) 112 et seq.

potential respondents who work in a company familiar with blockchain technology, or who know the draft law and consultation report, or the Bericht und Antrag. In addition, a basic understanding of legal aspects would be beneficial, but is not essential.

From the beginning of the thesis process, about five interviews are planned, which will be processed and evaluated as case studies. The choice fell on representatives, from five of the most important industries, in the financial services sector. This is in order to cover a broad spectrum of opinions and thus ensure a high degree of resonance from different financial institutions. The chosen business models are: (1) the legal profession, (2) banking, (3) asset management, (4) fund management and (5) trusteeship. Eisenhardt (1989) refers that there is no absolute number of cases to follow. Experience has shown that between four and ten cases are an excellent basis for sound results from qualitative data collection. On the one hand, the collection of more than ten individual cases represents a large number of data sets. As a result, they are extremely complex, which can make it difficult to process and analyze such volumes of data. On the other hand, less than four individual cases do not provide enough data to achieve significant outcomes.[152]

In addition, the findings are often based on a tiny number of qualitative cases. For this reason, any additional confirmation strengthens the generalizability and also the validity of the final results of the research. An important aspect of qualitative research is the question »When will saturation be reached?«. In general, two issues are relevant to this point. First, the researcher stops adding further cases and notes that »theoretical saturation« has been reached. Theoretical saturation occurs when no new surplus is achieved through data collection. So, it is the point at which the learning curve has reached its peak. Thus, more data has only a minimal impact on the overall outcome of the research. Secondly, the researcher should stop the iteration that takes place between theoretical approaches and the collected data sets.[153]

It was decided to conduct five interviews with five participants, all working in different companies and in different sectors. The analysis thus consists of five individual case studies. With regard to the selection process of potential IPs, the latter began with personal contacts in the Principality of Liechtenstein. Each individual case data collection had a time frame between 30 and 45 minutes. The appointments with the individual test persons were scheduled between the end of March and the beginning of May. All respondents signed a confirmation of anonymity regarding the use of the recorded data. All interviews were also conducted during this period in the form of personal meetings in the German language. In a further step, the recordings were transcribed and coded in order to present and compare the results of the empirical data collection in a structured way.

E. Interview Partners

A total of five respondents from five different companies will be interviewed. All of these companies are domiciled in the Principality of Liechtenstein. General information on each IP is presented in Table 1: Interview Partners. Due to academic practice, all participant data is anonymized or modified during the evaluation and analysis of the individual data records. Therefore, all names and also company names are replaced by pseudonyms in order to keep the identity of the test persons private. As mentioned above, all participants have signed a declaration of consent to this effect in order to confirm the scientific use of the data collected.

Table 1: Interview Partners

Company	Interview Partner	Position	Business Division
C 1	Interview Partner 1 (IP1)	Partner	Legal
C 2	Interview Partner 2 (IP2)	Project Developer	Banking
C 3	Interview Partner 3 (IP3)	Managing Director	Asset Management
C 4	Interview Partner 4 (IP4)	COO	Fund Management
C 5	Interview Partner 5 (IP5)	Managing Director	Trusteeship

Source: Own figure based on empirical results

IP 1

The first interviewee (IP1) is a lawyer, partner and board member of a Liechtenstein law firm. The firm offers representation of clients as well as advice in a wide range of legal areas. IP1 is active in the area of blockchain and advises various bodies on legal issues. The respondent has acquired the knowledge of further education and self-study.

152 *Eisenhardt,* The Academy of Management Review 1989, 545.

153 *Eisenhardt,* The Academy of Management Review 1989, 545; *Glaser/Strauss,* The Discovery of Grounded Theory: Strategies for Qualitative Research, Grattan, RF (2004), »The Cuban Missile Crisis: strategy formulation in action«, Management Decision 1967, 55 (65).

IP 2

The second interviewee (IP2) works as a project developer in the blockchain area at a Liechtenstein bank. The bank offers not only classic banking, but also so-called »blockchain banking«. This is not only applied in the area of ICOs, but also in various other blockchain-based questions and projects.

IP 3

The third interviewee (IP3) is considered a proven expert in the field of asset and wealth management. For many years IP3 held a leading position in a bank. For several years, the proband has been working in the management of a Liechtenstein asset management company. In addition, IP3 is a member of the Investment Committee, which decides on investment strategies for various risk classes and client groups.

IP 4

The fourth interviewee (IP4) conducts fund management and fund administration in a Liechtenstein asset management company. As Operating Officer, IP4 is responsible for the launch and management of numerous funds. Together with investors, the respondent develops investment solutions that increasingly contain blockchain shares.

IP 5

The fifth interviewee (IP5) is the founding partner and managing partner of a Liechtenstein trust company. With a doctorate in law, he has been advising national and international institutional as well as private clients in the field of asset structuring for many years. IP5's expertise advises shareholders as well as high-net-worth private individuals and supports them in setting up companies as well as setting up structures.

IV. Blockchain and the Law in Liechtenstein

Liechtenstein has proactively decided to support the Blockchain technology and wants to establish itself further as »Crypto Country«. This project also seems to be bearing fruit. Liechtenstein was awarded the »Blockchain Ecosystem of the Year« prize in 2018. It honors the strong commitment and openness to work with blockchain applications and provide services accordingly.[154] This led to the goal of becoming a pioneer, especially in regulatory terms. With the Blockchain-Act, the Principality was the first country in Europe to take the step towards an adequate and as broad a regulatory system as no other European jurisdiction.[155] Whether Liechtenstein can thereby use the location as a competitive advantage and, from the point of view of legal policy, act as an actual pioneer will become apparent after the entry into force of the TTT-Act.

In recent years, the Liechtenstein Financial Market Authority (FMA) has also recorded a strong growth in inquiries from new, technology-based financial companies. Furthermore, the FMA has observed that traditional financial services companies are increasingly investing in such novel financial technologies, such as blockchains.[156] How Liechtenstein positions itself with regard to these innovations and what is connected with them will be examined in more detail below.

A. The Liechtenstein Financial Center – Principles and Goals

The Liechtenstein financial center advertises, among other things, with a »high degree of legal certainty« or a »liberal economic order« and an »efficient system of authorities and supervision«.[157] These qualities have brought the Liechtenstein financial industry to where it stands today. In the long term, the country will continue to strive to preserve and maintain the country's prosperity and economic importance.[158]

In the financial sector, as a considerable sub-sector with about 25 % of the Liechtenstein economy as a whole, there is a great responsibility to facilitate long-term financial stability.[159] Nowadays, the topic of sustainability and innovation is increasingly coming to the fore.[160] Accordingly, the financial center strategy of the Principality of Liechtenstein, which was presented in February 2019, is based on the following four principles: (1) Legal certainty and stability, (2) Integrity and quality, (3) Innovation and (4) Cooperation and integration. These principles are supported by the goals: (1) Strengthening the competitiveness of the location, (2) maintaining and expanding value creation, (3) protecting and expanding market access and (4) strengthen-

154 Liechtenstein wins Blockchain Prize, Vaterland.

155 *Wanger,* Liechtensteiner Monat, 26; Blockchain-Gesetz tritt wohl erst 2020 in Kraft, Vaterland.

156 *FMA,* Zahlen und Fakten zu den Finanzintermediären unter Aufsicht der FMA 2017 (2018) 10.

157 *Lenherr,* Finanzplatz Liechtenstein 8 et seq.

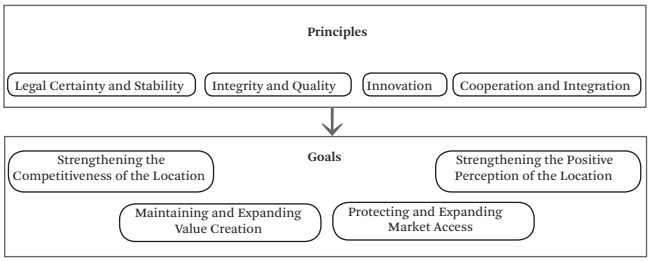
158 *Government of the Principality of Liechtenstein,* Finanzplatzstrategie der Regierung des Fürstentums Liechtenstein 8.

159 *FMA,* Zahlen und Fakten zu den Finanzintermediären 10 et seq.

160 *Franke,* Simon Tribelhorn: »Und gerade hier sehe ich auch die grosse Stärke und Chance für unseren Finanzplatz« (11.04.2019), 4 f, <www.bankenverband.li/application/files/4815/5541/4882/036_VBHP_4c_2019-04-11_Interview_Simon.pdf>.

ing the positive perception of the location.[161] The terms »sustainability« in connection with »innovation« and »safety« float along in all of the sub-areas mentioned. With regard to the implementation of this strategy and the achievement of the set objectives, action will be taken with the help of ongoing observations relating to regulatory and also political developments.[162] To this end, the country must proactively develop the current legal situation at an early stage. In concrete terms, measures were defined to achieve the strategic goals at the content and organizational level. The mandate is to bring these measures, which comprise the categories (1) governance and recognition, (2) market access and (3) value creation, into line with the defined principles in a macroeconomic context.[163]

Figure 1: Financial Center Strategy of the Principality of Liechtenstein 2019



Source: Own presentation based on *Government of the Principality of Liechtenstein,* Financial Centre Strategy of the Government of the Principality of Liechtenstein (February 2019) 9 et seq.

The Figure 1: Financial Center Strategy of the Principality of Liechtenstein 2019 above shows the principles and objectives developed by the government to pursue the financial market strategy. Liechtenstein is constantly trying to develop the individual business areas of the financial industry in such a way that an adjustment to the dynamics of today's digitalized world can be made in good time. This is mainly due to the fact that the framework conditions for new technologies and innovative companies can be further improved.[164] The current financial center strategy was divided into different sub-areas, which are based on four separate principles, defined by objectives and consequently quantified and implemented with the help of concrete measures.[165] These measures were defined to achieve the strategic objectives and must be considered in the context of the principles developed. This includes, for example, the continuous observation of international regulatory developments or the strict monitoring of conformity in order to ensure and increase legal certainty for customers. Ultimately, these efforts contribute to strengthening the financial center.[166]

The ability to innovate is particularly emphasized in various discussions so that locational advantages can be further expanded. It should also not be forgotten, of course, that the country and its financial industry should continue to be perceived as a reliable, professional and stable financial center.[167] With the draft law and the consultation report presented first; opinions have diverged widely in some cases. Through extensive revision, renaming of the law and answering relevant legal questions, a broader consensus has been achieved.[168] It is clear, however, that the Principality is the first country in the world to offer a broad range of solutions for a pan-European approach to blockchain technology.[169]

This positive external perception is an essential starting point for the international activities of the industry. In addition, Liechtenstein company forms are examined for international competitiveness in order to improve their recognition.[170] Unrestricted market access for domestic financial service providers plays a very important role here. Only by complying with various international and national standards it will be possible to achieve equal access to the EU's internal markets.[171] With the help of international regulations and a valid legal framework, the potential of the blockchain technology could fully unfold. This can be accompanied by great added value for the national economy and international cooperation.[172] However, the »digital financial center« must not be disregarded here. This is why it is becoming more and more important. The TVTG is to form part of this in order to create national regulatory framework conditions for the Token-Economy for the time being.[173]

161 *Government of the Principality of Liechtenstein,* Finanzplatzstrategie der Regierung des Fürstentums Liechtenstein 9 et seq.
162 *Fritz,* Ein schärferes Auge auf die Treuhänder, Volksblatt, 5 (5).
163 *Government of the Principality of Liechtenstein,* Finanzplatzstrategie der Regierung des Fürstentums Liechtenstein 12 et seq.
164 *Matt,* »Regierung will Wettbewerbsfähigkeit des Finanzplatzes stärken« (23.02.2019), 5, <www.archiv.volksblatt.li/zeitung/2019-02-23/5/text>.
165 *Fritz,* Volksblatt, 5.
166 *Government of the Principality of Liechtenstein,* Finanzplatzstrategie der Regierung des Fürstentums Liechtenstein 12 et seq.
167 *Matt,* »Regierung will Wettbewerbsfähigkeit des Finanzplatzes stärken« (23.02.2019), 5, <www.archiv.volksblatt.li/zeitung/2019-02-23/5/text>. *Fritz,* Volksblatt, 5.
168 *Salzgeber,* Liechtenstein verabschiedet Blockchain-Gesetz zur Schaffung einer regulierten Tokenökonomie, <www.ico.li/de/liechtenstein-verabschiedet-blockchain-gesetz/>.
169 Vaterland; Liechtenstein unterzeichnet European Blockchain Partnership, Volksblatt, 19.
170 *Government of the Principality of Liechtenstein,* Finanzplatzstrategie der Regierung des Fürstentums Liechtenstein 14 et seq.
171 *Matt,* »Regierung will Wettbewerbsfähigkeit des Finanzplatzes stärken« (23.02.2019), 5, <www.archiv.volksblatt.li/zeitung/2019-02-23/5/text>.
172 *Bont,* Volksblatt.
173 *Government of the Principality of Liechtenstein,* Finanzplatzstrategie der Regierung des Fürstentums Liechtenstein 18 et seq.

B. Need for Regulation in Liechtenstein and its Objectives

Due to the high diversification and the international network of the financial market in Liechtenstein, more and more technology-based companies and FinTechs have settled in the Principality in recent years.[174] These dispute the status of the classic business models at the financial center. A legal framework is needed to maintain customer protection and ensure the continued stability of the financial center and its system.[175] The main objectives of the proposed regulation are mainly legal certainty, especially for the users of the blockchain, and the strengthening of confidence in this sector. However, this should not result in excessive restrictions for FinTech or Blockchain companies.[176] Furthermore, Liechtenstein is to be perceived as a »blockchain-friendly« patch, with the consequence that more and more blockchain-based companies will explicitly settle in the Principality.[177] The bill states that the law applies only to domestic service providers[178] and therefore does not regulate providers established abroad.[179] This could create competitive advantages that need to be consolidated in the long term. This proves to be possible only with adherence to various international standards, innovation and profound communication.[180] Furthermore, a legal basis for Security Coin Offerings (STOs), Initial Coin Offerings (ICOs) and Token Generation Events (TGEs) is to be created. This is intended to simplify the financing of companies by eliminating traditional financing options and cumbersome IPOs.[181]

The present draft law gives the token a legal form for the first time. The term is used as a paraphrase for all applications on TT systems.[182] It has also become clear relatively quickly that a legal definition, especially for crypto currencies or digital money, does not do justice to the entire application potential of blockchain technology. As a newly created legal object, the token has thus moved into the center of attention. Furthermore, the term »token« itself is understood as technologically neutral. It can therefore be understood as a starting point for the embodiment of various rights on a TT system.[183]

To date, it has been assumed that a token cannot represent a claim or a thing but is defined only as a purely digital data set.[184] This changes with the Blockchain-Act. With this, the token also takes on a legal form by being granted claim or membership rights vis-à-vis a person, rights to property or other relative or absolute rights.[185] Thus, properties similar to securities or comparable financial instruments are attributed to it. A token should thus be able to certify rights in digital form and also transfer what was previously not possible and can only become lawful with the TVTG. For this purpose, in the Liechtenstein Personen- und Gesellschaftsrecht (PGR)[186], a security is defined as a »deed in which a right is documented in such a way that it cannot be used, asserted or transferred to others without the deed«.[187] Due to the fact that some similarities between tokens and securities are recognizable, the question arises whether the token sui generis can or should not be called a thing, but a property object.[188] An agreement on this issue is controversial. However, it is considered that such types of securities transactions could be one of the most important and profitable applications of the technology.[189]

In this context, it is necessary to answer the question whether the right to an object can be transferred by the transfer of a token or not. First of all, a valid commitment transaction, such as a contractual agreement, must be executed.[190] In principle, the token cannot be proven to be of a certain quality, but these similarities do show.[191] A too narrow definition of the token would, however, lead to new discussions with regard to rights to property and, conversely, to legal uncertainty.[192] Therefore it is necessary to find a suitable solution for this question.

C. The Blockchain-Act and its Focal Points

With the development of the Blockchain-Act, new designations and legal channels are created which have not existed in this form to date. The draft law can be divided into five main chapters, namely (1) the basic token model, (2) the areas of activity on a TT system, (3) the supervisory approach, (4) the due diligence obligations and (5)

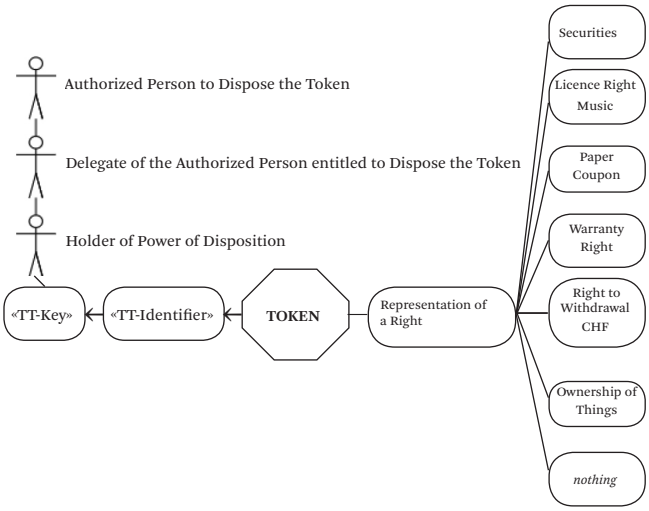
174 *FMA,* Zahlen und Fakten zu den Finanzintermediären 15.
175 *Bont,* Volksblatt.
176 *Salzgeber,* Warum das liechtensteinische Blockchain-Gesetz revolutionäres Potenzial haben könnte, <www.ico.li/de/blockchain-gesetz-mit-revolutionaerem-potenzial/>.
177 *Wanger,* Liechtensteiner Monat, 26.
178 Cf. Art. 3 para. 2 lit. a TVTG.
179 Vernehmlassungsbericht, 82.
180 *Matt,* »Regierung will Wettbewerbsfähigkeit des Finanzplatzes stärken« (23.02.2019), 5, <www.archiv.volksblatt.li/zeitung/2019-02-23/5/text>.
181 *Salzgeber,* Warum das liechtensteinische Blockchain-Gesetz revolutionäres Potenzial haben könnte, <www.ico.li/de/blockchain-gesetz-mit-revolutionaerem-potenzial/>.
182 Bericht und Antrag, 13.
183 Vernehmlassungsbericht, 43 et seq.
184 *Wanger,* Liechtensteiner Monat, 26; *Layr/Marxer,* LJZ 2019, 13.
185 Cf. Art. 2 para. 1 lit. c Z 1 TVTG.
186 *Wanger,* Liechtensteiner Monat, 26.
187 Cf. §73 Bst. A Ziff. 1 (Schlussabteilung) Personen- und Gesellschaftsrecht.
188 *Layr/Marxer,* LJZ 2019, 14.
189 Vernehmlassungsbericht, 81.
190 *Layr/Marxer,* LJZ 2019, 15.
191 Vernehmlassungsbericht, 47.
192 Bericht und Antrag, 41; *Layr/Marxer*LJZ 2019, 14.

the value rights.[193] These sub-areas are discussed in more detail in the following sub-chapters. It should be noted that the TVTG is a supplement to other legal regulations, such as the Trustee Act (TrHG)[194], the Asset Management Act (VVG)[195]or the Banking Act (BankG)[196].[197] For this reason, individual subject areas are always viewed and discussed from different perspectives.

1. The Basic Token Model

The Blockchain-Act contains relevant solution approaches for a pan-European way concerning the blockchain technology and the Token-Economy developed and defined from it.[198] For this purpose, the government working group has developed a basic token model in order to be able to present this complex undertaking in a simplified and clear manner.[199] The aim is to use the token to map the »real« world in a legally secure way.[200]

Figure 2: The Basic Token Model



Source: Bericht und Antrag of the Government to the Parliament of the Principality of Liechtenstein concerning the creation of a law on tokens and TT Service Providers (Token- and TT Service Provider Act; TVTG) and the amendment of further laws 60.

In order to facilitate the understanding of the legal basis for various areas of application in practice, Figure 2: The Basic Token Model shows the »tokenization« of different rights. The law is therefore not limited to crypto currencies but includes the »tokenization« of various assets and other innovations.[201] The term »right« and the associated term »representation of a right« is regarded as the highest level of abstraction through which the entire Token-Economy can be represented. It should also be implied that one or more persons have rights to a token and as a result can also transfer them.[202] Conversely, only digital rights can be mapped on TT systems. However, the initial right and all legal consequences associated with it remain intact. The token is introduced into this construct as a vessel so that the embodiment of the different rights in digital form becomes possible.[203] From a technical point of view, this is only a piece of information.[204] Therefore, the token should also be classified as technology-neutral.[205] The token and its rights raise clear fundamental questions regarding the maximum possible legal security for the users of the Token-Economy as well as its service providers.[206] Legally, however, the token has many similarities with the security.[207] For this reason, the figure of the »value right«[208] is also included in the statutory regulation in order to be able to differentiate between TVTG and securities law.[209] Depending on the configuration of the token, various classifications may apply.[210] For example, it can represent debt rights, rights in rem on movable and immovable property, or absolute rights.[211]

2. Areas of Activity and Service-Provider-Roles on a TT System

The government working group has identified various activities that can be carried out on a TT system and has defined ten service provider roles as a result: (1) the Token Issuer, (2) the Token Generator, (3) the TT Key Depositary, (4) the TT Token Depositary, (5) the Physical Validator, (6) the TT Protector, (7) the TT Exchange Service Provider, (8) the TT Verifying Authority, (9) the TT Price Service Provider and (10) the TT Identity Service Provider.[212] Basic aspects regarding the creation and storage of a token, as a new legal object, shall be described by the TT activities.[213] These different roles have arisen from the realization that not only direct transactions between natural or legal persons are possible on a TT system, but also a multitude of other services and processes.[214]

193 Bericht und Antrag, 58 et seq.
194 Cf. Trustee Act (TrHG).
195 Cf. Asset Management Act (Vermögensverwaltungsgesetz; VVG).
196 Cf. Act on Banks and Securities Firms (Banking Act; BankG).
197 Vernehmlassungsbericht, 82.
198 Volksblatt, 19.
199 See Figure 2: The Basic Token Model.
200 Volksblatt, 17.
201 *Wanger/Johann* in *Global Legal Group Ltd.* 373.
202 Bericht und Antrag, 62.
203 Vernehmlassungsbericht, 43 et seq.
204 *Layr/Marxer,* LJZ 2019, 13.
205 Bericht und Antrag, 41 et seq.
206 Volksblatt, 17.
207 *Wanger,* Liechtensteiner Monat, 26; *Layr/Marxer,* LJZ 2019, 14.
208 See chapter 4.3.5.
209 Securities Prospectus Act (WPPG).
210 *Wanger/Johann* in *Global Legal Group Ltd.* 373.
211 Bericht und Antrag, 60 et seq.
212 Cf. Art. 2 para. 1 lit. l-u TVTG.
213 Volksblatt, 17.
214 Vernehmlassungsbericht, 59.

One of the possible services is the token issuance, which is carried out by the Token Issuer. This was developed especially for the public offering of tokens, whereby the token emission differs significantly from the pure token generation.[215] Although the issue often includes the generation of the token at the same time, in this case it is inevitably linked to a public offering – e.g. ICO or similar.[216] The token emission therefore always represents a public character. This will be associated with regulatory obligations that will have to be met by the Token Issuers. This includes on the one hand a registration obligation for the service provider and on the other hand an obligation to disclose certain basic information about the token to be issued in order to achieve the greatest possible transparency.[217] The basic information mentioned above provides information on these tokens issued. They are intended to enable the user to make a judgement about the associated rights and obligations as well as about the respective TT Service Providers.[218]

The process basically starts with the creation of a token and the associated representation of law. The token creators[219] are given extensive freedom of design.[220] This is due to the fact that there is no mandatory development of a new TT system if a new token is to be generated. The goal is also to differentiate itself as far as possible from the token emission.[221]

According to the bill, it is possible for customers to have private keys kept[222] by a TT Key Depositary. Arguments in favor of this role include a higher level of security and also a potentially simpler disposal.[223] In principle, however, the service provider should also be the Token Generator at the same time in order to be able to ensure that there is no duality. Nevertheless, there are some risks for the user – among others a possible asset loss, bankruptcy of the custodian, etc. – which are limited by the TVTG.[224] Unless otherwise specifically regulated, the provisions of the custody agreement pursuant to §§ 957 et seq. ABGB shall apply.[225] For this purpose, the TT Token Depositary can be compared. This is a service provider who holds a token for another person's account and in another person's name.[226] The process of token storage is as follows: the custodian assigns all tokens from all customers to different identifiers and converts them into a TT key. With this, in turn, an assignment can be made to the respective customer via another, mostly internal database. This role shows a high practical relevance. This procedure enables multiple transactions of different accounts at the same time.[227]

Due to this problem and the fact that there is no hundred percent certainty that a certain token is actually present (and only once), the Physical Validator[228] comes into play. His responsibility is to ensure the rights and also the transfer of rights on a TT system to protect the buyer and also the Token Generator. In addition, the possibility must be assumed that there is a duality between tangibles and intangibles (ergo tokens).[229] This involves (1) identifying the tangible asset, (2) securing storage conditions, (3) identifying the client as the legal owner, and (4) preventing a collision between digital and analog rights.[230] Here it must be clarified that the Physical Validator does not have any right to the validated object (e.g. precious metals, diamonds, etc.) itself, but only represents the claims of its customer.[231]

The role of the TT Protector[232] is possibly the most relevant for practice. This service is comparable to that of the trusteeship, in the sense that tokens can be administered in the name of the user on a trustee basis and thus the privacy of the user can be protected. This is because the TT-Custodian assigns several tokens to public keys and distributes them in its name to different databases. The fact that he has the power of disposal of his customers also guarantees the protection of privacy.[233] As the custodian of a token may not designate it as property or possession, but only as the owner, the token may not be »managed« either.[234]

With the help of the TT Exchange Service Providers,[235] FIAT currencies[236], such as Euro or Swiss franc, can be exchanged into digital currencies. These actions take place on a TT system. This is also controlled by a TT test station, which is often software.[237] It checks and assesses compliance with the regulatory requirements for all services in the Token-Economy.[238]

215 Bericht und Antrag, 71.
216 Bericht und Antrag, 78.
217 Vernehmlassungsbericht, 67 et seq.
218 Cf. Art. 2 para. 1 lit. iVm Art. 33 TVTG.
219 Cf. Art. 2 para. 1 lit. m TVTG.
220 *Layr/Marxer,* LJZ 2019, 14.
221 Vernehmlassungsbericht, 59 et seq.
222 Cf. Art. 2 para. 1 lit. n TVTG.
223 Bericht und Antrag, 76.
224 Cf. §957ABGB; Vernehmlassungsbericht, 64 et seq.
225 Bericht und Antrag, 77.
226 Cf. Art. 2 para. 1 lit. o TVTG.
227 Bericht und Antrag, 77 et seq.
228 Cf. Art. 2 para. 1 lit. p TVTG.
229 Bericht und Antrag, 72.
230 Bericht und Antrag, 73.
231 Vernehmlassungsbericht, 60 et seq.
232 Cf. Art. 2 para. 1 lit. q TVTG.
233 Vernehmlassungsbericht, 65 et seq.
234 Cf. §958 ABGB.
235 Cf. Art. 2 para. 1 lit. r TVTG.
236 FIAT currencies are currencies or means of payment which are artificially created by a constitutional state (cf. commodities); cf. *J. Chen,* Fiat Money, <www.investopedia.com/terms/f/fiat-money.asp>.
237 Bericht und Antrag, 82 et seq.
238 Vernehmlassungsbericht, 71 et seq.

The TT Price Service Provider[239] starts at this point in order to calculate prices and to make them known to the public. This service can be compared to a stock exchange, but due to a modular registration approach, it is deliberately not so titled. Fundamental, especially technical, distinctions must be made between traditional exchanges and exchanges on TT systems. For customer protection and protection against misuse or fraud, the TT Price Service Provider plays an essential role in the construct of a Token-Economy.[240]

The government has defined the »TT Identity Service Provider«[241] as the last role. Tasks which this service provider is to take over include, for example, the identification of a right of disposal and the maintenance of a directory of tokens.[242] This field of activity is one of the most important in terms of the Token-Economy. Due to Liechtenstein's clear attitude towards the protection of privacy, all parties are registered and identified by the TT Identity Service Provider. In[243] order to continue to guarantee the reliability of the financial center, intelligent machines that support the Internet of Things also fall under this category.[244]

All roles were designed and defined as follows, so that the innovative power of the Token-Economy is not artificially and legally restricted. Due to the extensive formulation of the individual TT Service Provider roles, individual regulatory solutions tailored to the customer can be developed by combining the tasks of the individual roles in exemplary fashion.[245]

3. Registration and supervision according to the TVTG

In order to create more confidence in today's technologies, the government wants to establish a financial industry standard in which TT Service Providers are licensed and supervised by the FMA.[246] Due to the high dynamics and rapid development of the blockchain technology itself and its areas of application, the government has decided against regulating the technology itself. Nevertheless, it is planned to supervise TT Service Provider groups. TT Service Providers must register with the FMA in order to meet the high international standards, protect users to a large extent and not endanger the reputation of the country.[247] This regulation applies to all those who carry out activities that are relevant to the protection of customers.[248] Basically, an actionable »professional« exercise[249], through the involvement of a third party, is provided to oblige the registration for TT Service Providers.[250] The FMA shall also enter the applicant in[251]the TT Service Provider register, provided that the applicant fulfils the requirements pursuant to Art. 13 para. 1 lit. a-k TVTG. The idea behind the compulsory registration is the possibility of creating a kind of »quality stamp« for financial service providers in the country. Consequently, this could also serve as a sales argument and thus facilitate the acquisition of new customers. In addition, due to this, the TT Service Provider also enjoys increased legal security. For this reason, an application for registration also checks the professional qualification.[252] A clear adjustment has been made on this point. In the previous consultation report, it was argued with the disproportionate effort of a well-founded technical quality review and the lack of experience, why a lack of technical qualification should not have been an exclusion criterion.[253]

According to the current legal situation, the application for registration must contain a great deal of information and evidence on the requirements pursuant to Art. 13–17 TVTG.[254] In the following, the FMA must comply with a period of three months to review the completeness and fulfillment of these requirements.[255] It is planned that not only the reliability[256] of the applicant will be examined, but also the capacity to act according to Art. 11 PGR, and further requirements according to Art. 13 TVTG. The applicant may only commence his activities once he has been entered in the TT Service Provider register.[257] The time factor is not an insignificant aspect here. In today's technological age, this plays an essential role and must be considered in such constructs. Therefore, from a practical-economic point of view, the registration of a TT Service Provider should actually take place as quickly as possible. What this will look like in practice will be shown with the first empirical values. In addition, ongoing supervision by the FMA of the registered TT Service Providers is planned. The

239 Cf. Art. 2 para. 1 lit. t TVTG.
240 Bericht und Antrag, 81 et seq.
241 Cf. Art. 2 para. 1 lit. u TVTG.
242 Bericht und Antrag, 82.
243 *Matt,* «Regierung will Wettbewerbsfähigkeit des Finanzplatzes stärken« (23.02.2019), 5, <www.archiv.volksblatt.li/zeitung/2019-02-23/5/text>. Vernehmlassungsbericht, 71.
244 Bericht und Antrag, 82.
245 Vernehmlassungsbericht, 76.
246 *Salzgeber,* Warum das liechtensteinische Blockchain-Gesetz revolutionäres Potenzial haben könnte, <www.ico.li/de/blockchain-gesetz-mit-revolutionaerem-potenzial/>.
247 Bericht und Antrag, 84 et seq.
248 Bericht und Antrag, 120.
249 Cf. Art. 11 PGR.
250 Bericht und Antrag, 85 et seq.
251 Cf. Art. 23 TVTG.
252 Cf. Art. 15 TVTG.
253 Vernehmlassungsbericht, 73 et seq.
254 Cf. Art. 18 para. 1 lit. a-e TVTG.
255 Cf. Art. 19 para. 1–2 TVTG.
256 Cf. Art. 14 TVTG.
257 Cf. Art. 19 para. 5 TVTG.

focus is on compliance with the present law.[258] In an international comparison, however, neither the 5th Money Laundering Directive nor the Financial Action Task Force (FATF) prescribe ongoing supervision.[259] However, the Government reserves the right to make any necessary adjustments, or new practices, over time and within the framework of regulations.[260] It can therefore be assumed that the prudential rules could be continuously adapted to practical circumstances.

4. Due Diligence Obligations

The Sorgfaltspflichtgesetz (SPG) is regarded as an essential reference point for the contents of the TVTG and helps to shape it. Open questions regarding the application of applicable laws and compliance with various international standards therefore require detailed technical considerations.[261] This on the basis of money laundering, organized crime, terrorist financing, etc. Abuses should also be avoided as far as possible here.[262] In order to be able to comply with the SPG on a sustainable basis, a number of questions must be clarified with regard to the differing views between classic business models and, for example, FinTechs.[263]

Digital currencies and payment tokens[264] and how to deal with them are an essential part of this. As a TT exchange office operator, for example, the differentiation between payment tokens and other tokens is of great importance. The legal obligation may vary significantly depending on the interpretation. This interpretation possibility exists due to the legal situation pursuant to Art. 2 para. 1 lit. l SPG. Virtual currencies here are digital monetary units that can be exchanged for legal tender, used to purchase goods or services or to store value, and thus assume the function of legal tender.[265] Due to the numerous areas of application of the Token-Economy, a clear demarcation between digital monetary units and tokens is an important prerequisite for the activities of an exchange office.[266]

Another aspect of general interest is the fight against money laundering and the prevention of a wide variety of criminal activities. How this objective is to be implemented within the framework of TT systems has not yet been fully clarified. This is the reason why the relevant questions are taken up and discussed. The areas of customer protection and asset protection are also included.[267] However, the project aims at a solution that is as efficient as possible so that supposed risks or abuses can be counteracted in a targeted manner. As discussed in Chapter B the token is not granted a new right to embody rights, but is regulated by transfer and legitimation orders.[268] Since a too narrow definition could even lead to legal uncertainty, with the current solution the existing SPG provisions would also be sufficient for TT systems of the Token-Economy.[269] Nevertheless, TT systems have the potential for the emergence of new forms of money laundering or the like frauds. For this reason, the government is focusing on presenting a solution that goes beyond international standards to combat such abuses.[270]

5. Value Rights

Value rights are dematerialized assets that have similar properties to a certificate.[271] However, this form of asset is not a novelty in Liechtenstein law.[272] According to the PGR, uncertificated securities are legally defined as »rights with the same function as securities«.[273] In order to transfer these rights into a legitimate form, an interface is to be created between securities law and the TVTG.[274] The legal definition is extended by the fact that justifiable securities can be replaced by book-entry securities. However, it must be ensured that this is either provided for in the conditions of issue or in the articles of association of the company, or that consent has been given accordingly. All functions of securities are thus treated equally to book-entry securities.[275]

A register in electronic form is to serve thereby as basis, for the issue and transfer of value rights in the form of tokens. This is to replace the original form of the document. Here, the interface to the TVTG and the TT systems associated with it is regarded as an efficient improvement measure. This enables a controllable and clear classification of legal competence. This is intended to further introduce a well-founded order of value rights into the jurisdiction.[276] All in all, the revision of the value right represents an innovation which can be highly relevant for practical application.[277]

258 Cf. Art 43 TVTG.
259 Bericht und Antrag, 97.
260 Cf. Art. 43 para. 8 TVTG; Bericht und Antrag, 85.
261 Volksblatt, 17.
262 Act on professional due diligence to combat money laundering, organised crime and terrorist financing (Due Diligence Act; SPG); Vernehmlassungsbericht, 78.
263 Bericht und Antrag, 93 et seq.
264 Cf. Art. 2 para. 1 lit. d TVTG.
265 Cf. Art. 2 para. 1 lit. l SPG.
266 Vernehmlassungsbericht, 78.
267 Volksblatt, 17.
268 Bericht und Antrag, 93 et seq.
269 Vernehmlassungsbericht, 78 et seq.
270 Bericht und Antrag, 96.
271 Volksblatt, 17.
272 Bericht und Antrag, 109.
273 Cf. §81a para. 1 SchlT PGR.
274 Bericht und Antrag, 112.
275 Cf. §81a SchlT PGR new.
276 Bericht und Antrag, 108 et seq.
277 Bericht und Antrag, 120.

D. Comparison of other Jurisdictions and their Approaches

Apart from the Principality of Liechtenstein, only a few nations have so far dared to take their own regulatory steps with regard to the legal classification of blockchain technology. Particularly in Europe, however, individual states have thought about this issue and have developed and adopted their own regulations. A few of them channel parts of the blockchain technology, while others make changes to existing laws and regulations.[278] This different nature and these different approaches are summarized and compared in the following subchapter and their different approaches are examined.

1. Malta

A pro-blockchain setting has also made itself felt in Malta since the advent of technology. The island state is positioning itself as a key function and would like to establish itself sustainably as »Blockchain Island«.[279] The Maltese solution, which was presented in 2017, consisted of different draft laws, each covering the individual topics »blockchain«, »crypto currencies« or »DLT«. These were published in spring 2018. All three proposals are based on a strongly technology-driven perspective.[280] These laws include: the (1) Malta Digital Innovation Authority Act (MDIAA)[281], the (2) Innovative Technological Arrangement and Services Act (ITASA)[282] and the (3) Virtual Financial Assets Act (VFAA)[283]. All three were finally unanimously adopted by the Maltese government on 04 July 2018 and thus officially entered into force.[284] For these three regulations, the umbrella term »Digital Innovation Framework« is used.[285] The fight against money laundering is at the forefront of these efforts. Malta became, with the entry into force of the framework, the first nation worldwide to create a sound regulatory framework for DLT and the entire business sector.[286]

Assets are divided into four different categories in Malta. These include (1) e-money, (2) financial instruments that depend on the technology, (3) tokens that focus on utility tokens[287] and (4) virtual financial assets (VFAs).[288] ICOs and STOs are a central subdivision of the developed legislative proposals. A strong focus is placed on a detailed description of the projects, which must be submitted to the local financial market supervisory authority.[289]

The Malta Digital Authority (MDIA) was established in order to sustainably implement the adopted regulations from the MDIAA and to supervise the resulting activities.[290] The main task of this agency is to observe and promote the development of blockchain technology in the island state. The MDIA carries out the registration and supervision of service providers and their applications.[291]

The ITASA is based on the regulations in the MDIAA. This law mainly deals with the abstract definition of services, their providers and their requirements. The abstraction of the descriptions should enable a sustainable applicability of the legal framework conditions. The strongly technology-based regulation further includes the verification and securitization of used software, and the technological construction of e.g. Smart Contracts, DLT concepts, or crypto exchanges.[292]

The VFAA specializes in the individual service providers and their areas of activity on the blockchain. These service providers were presented as new intermediaries in the financial center.[293] Again ICOs, as well as STOs are in the foreground. This law lays down any requirements regarding the transparency of information, which are controlled and registered by the MDIA. In addition, regular reporting to the competent authority is required.[294]

2. Gibraltar

A different approach was adopted in Gibraltar. The country has set itself the goal of establishing itself as a solid and secure location for DLT service providers.[295] This approach has been in force since 2018 in the form of a so-called »DLT framework«.[296] The Gibraltar Financial Services Commission (GFSC) established regulatory principles for DLT service providers with regard to the handling of their applications on 1 January.[297] All Gibral-

278 *Salzgeber,* Liechtenstein verabschiedet Blockchain-Gesetz zur Schaffung einer regulierten Tokenökonomie, <www.ico.li/de/liechtenstein-verabschiedet-blockchain-gesetz/>.
279 *Falzon/Valenzia,* Malta, in *Global Legal Group Ltd.* (Hrsg), Blockchain & Cryptocurrency Regulation 2019 (2019) 378.
280 Bericht und Antrag, 51.
281 Malta Digital Innovation Authority Act (MDIA Act; MDIAA).
282 Innovative Technological Arrangement and Services Act (ITAS Act; ITASA).
283 Virtual Financial Assets Act (VFA Act; VFAA).
284 *ICO Launch Malta,* Malta ICO Regulation, <www.icomalta.com/ico-regulation/>.
285 *Falzon/Valenzia* in *Global Legal Group Ltd.* 378.
286 *Wolfson,* Maltese Parliament Passes Laws That Set Regulatory Framework For Blockchain, Cryptocurrency And DLT, Forbes.
287 See chapter II.C.
288 *Falzon/Valenzia* in *Global Legal Group Ltd.* 379.
289 Bericht und Antrag, 51.
290 *ICO Launch Malta,* Malta ICO Regulation, <www.icomalta.com/ico-regulation/>.
291 *MDIA,* About, www.mdia.gov.mt/about/>.
292 *ICO Launch Malta,* Malta ICO Regulation, <www.icomalta.com/ico-regulation/>.
293 *Falzon/Valenzia* in *Global Legal Group Ltd.* 379.
294 *ICO Launch Malta,* Malta ICO Regulation, <www.icomalta.com/ico-regulation/>.
295 *GFSC,* Statement on Initial Coin Offerings (22.09.2017).
296 Bericht und Antrag, 50.
297 *Gibraltar Financial Services Commission,* Distributed Ledger Technology Regulatory Framework (DLT framework), <www.gfsc.gi/dlt>.

tar DLT service providers must be approved by the GFSC. This authorization requirement arises if assets are kept or transferred in any form. The basic idea here is to minimize the potential risk of cases of crime or abuse at the financial center as far as possible. To do this, the supervised DLT service providers must be able to consciously assess risks and take steps if this risk is exceeded.[298]

As a further step, the Gibraltarian government (HMGoG) and the Ministry of Trade in cooperation with the GFSC presented the plan to continue the regulation in spring 2018. The legal framework shall be extended to open questions concerning the handling of tokens of different kinds.[299]

ICOs are an area that has not yet been explicitly dealt with in these legal policy discussions, but which is of great importance in other jurisdictions.[300] The GFSC has decided to leave the topic of ICOs out for the time being from a legal perspective, mainly because of the high volatility, individuality and risk of each individual. Instead, these non-regulated tokens should continue to be observed in order to be able to recognize possible patterns.[301] Gibraltar presents its project in such a way that the legal framework with regard to the multitude of possible applications – and their exponential growth – is to be continually expanded over time. Gibraltar has chosen this approach in order to ensure the security and quality of the financial center and its service providers on a sustainable basis.[302]

3. Switzerland

Switzerland would also like to position itself as a pioneer and recognized the potential of blockchain technology and its applications early on. However, an unregulated financial market carries a high risk of being exposed to abusive activities, which is why many companies have refused to trade through the blockchain.[303] Further dangers result from the anonymity or modification of all transactions, so that a clear identification of the ultimate beneficial owner is significantly more difficult.[304] This can be seen, for example, in the handling of payment requests for Ransomware. Often, crypto currencies are desired as means of payment in such cyberattacks.[305] Due to the fact that crypto currencies and virtual currencies are neither defined as means of payment nor as book money in Switzerland, they are not »money« from a legal perspective.[306] In addition, only traditional financial intermediaries have so far been subject to the Swiss Financial Market Supervisory Authority (FinMA). In the recent past, this has repeatedly led to abusive transactions and money laundering.[307] There have also been repeated cases of misuse of investor funds in connection with ICOs.[308]

In order to be able to develop legal policy solutions, a working group was formed by the Swiss Federal Council in spring 2018 to deal with issues of blockchain and ICO. Their task was to carry out legal clarifications with regard to applicable regulations.[309] From a legal perspective, it was decided that no independent law would be developed as a framework condition, but that individual regulations would be integrated or amended in the already established Swiss laws and regulations.[310] The reason given for this decision is that better conditions would be created by making the current legal basis more flexible so that technological changes can be handled more efficiently in the future.[311] Until further notice, amendments are to be made to the following laws: the Federal Act on Banks and Savings Banks[312], the Federal Act on Financial Market Infrastructures and Market Behavior in Securities and Derivatives Trading[313], and the Federal Act on Collective Investment Schemes[314]. In addition, subject to further changes[315], in particular with regard to money laundering and terrorist financing, further changes could become unavoidable.[316]

298 Bericht und Antrag, 50 et seq.
299 *GFSC,* HM Government of Gibraltar and the Gibraltar Financial Services Commission announce plans for token legislation (12.02.2018).
300 Bericht und Antrag, 51.
301 *GFSC,* Statement on Initial Coin Offerings.
302 *GFSC,* HM Government of Gibraltar and the Gibraltar Financial Services Commission announce plans for token legislation.
303 *Grundlehner,* Der Bundesratsbericht zu Blockchain in der Schweiz ist mutig – aber auch riskant, NZZ.
304 *Swiss Confederation,* Risiko der Geldwäscherei und Terrorismusfinanzierung durch Krypto-Assets und Crowdfunding. Bericht der interdepartementalen Koordinationsgruppe zur Bekämpfung der Geldwäscherei und der Terrorismusfinanzierung (KGGT) (Oktober 2018) 21.
305 *Aurangzeb/Aleem/Iqbal/Islam,* Ransomware, Journal of Information Assurance & Security 2017, 48.
306 *Haeberli/Oesterhelt/Meier,* Schweizer, in *Global Legal Group Ltd.* (Hrsg), Blockchain & Cryptocurrency Regulation 2019 (2019) 443 et seq.
307 *Müller/Reutlinger/Kaiser,* Entwicklungen in der Regulierung von virtuellen Währungen in der Schweiz und der Europäischen Union, EuZ: Zeitschrift für Europarecht 2018, 80 (80 f).
308 *Swiss Confederation,* Risiko der Geldwäscherei und Terrorismusfinanzierung durch Krypto-Assets und Crowdfunding 47.
309 *Grundlehner,* NZZ.
310 *Federal Council,* Rechtliche Grundlagen für Distributed Ledger-Technologie und Blockchain in der Schweiz. Eine Auslegeordnung mit Fokus auf dem Finanzsektor (14.12.2018) 8 et seq.
311 *Horch,* Bitcoin in der Schweiz, BTC ECHO.
312 Federal Act on Banks and Savings Banks (Banking Act, Banking Act).
313 Federal Act on Financial Market Infrastructures and Market Behaviour in Securities and Derivatives Trading (Financial Market Infrastructure Act, FinfraG).
314 Federal Act on Collective Investment Schemes (Collective Investment Schemes Act, CISA).
315 Depending on the FATF.
316 *Federal Council,* Rechtliche Grundlagen für Distributed Ledger-Technologie und Blockchain in der Schweiz 10.

4. Compromise

It is clear that the Maltese approach, which also has the longest history, is the broadest of all the jurisdictions considered. With its three different laws building on each other and their high degree of detail, Malta is positioning itself extremely transparently.

Gibraltar has adopted a similar approach but is more reactive compared to Malta. The Government of Gibraltar clearly presents itself as an observer, with the aim of continuously developing and optimizing its legal basis.

Switzerland has again opted for a completely opposite approach in comparison. In contrast to Malta, Gibraltar and Liechtenstein, the Swiss Federal Council has decided against the creation of a »blockchain law« in Switzerland. Instead, adjustments will be made to existing regulations for the time being.

In view of the definition of money, Liechtenstein, as well as Switzerland, see the term »money« not only as a means of payment, but also as book money. However, crypto currencies are not covered by this definition in both jurisdictions.[317] In Malta, virtual currencies are regulated by law.[318] In Gibraltar it is only the handling of these, in the form of the DLT framework, defined.[319] However, crypto currencies per se are not legal tender[320]either, except that in certain circumstances they may fall under the definition of »e-money«.[321]

All in all, however, all the jurisdictions under consideration have the intention of strengthening national legal security, combating money laundering and terrorist financing and establishing themselves as attractive locations for services on the blockchain.

V. Empirical Analysis and Results

The following chapter divides two main subchapters. The first section of the subchapters mentioned above is dedicated to the statements, arguments and opinions of the subjects who have participated in this research project. At the beginning, a summary of the interview data collected through the data collection provides an initial overview. Other subchapters also contain the results of the individual discussions with representatives of the chosen business models in order to maintain a clear and concise structure. In particular, (1) the blockchain technology in Liechtenstein, (2) the potential changes brought about by the TVTG, and (3) advantages, limitations, and risks will be discussed. The classification (4) of potential TT Service Provider roles for classical business models within the framework of the TVTG and (5) a comparison with other European jurisdictions form the conclusion of the first part.

The second part of this main chapter presents a synthesis of the discussion results, which are intended to provide an overview of the primary results of the research topic. Here an overall picture of all the business areas included is generated in order to be able to represent an overall result. The resulting findings form a basis which is discussed and processed in the subsequent conclusion.[322]

A. Results of Data Recording

In the following, individual partial aspects of the data recorded will be examined. In chapter III.D the process of IP selection has been described before the individual IPs have been introduced in chapter III.E. It should be noted that the test persons are regarded as representatives of a classical business area in which the respective person is active in the financial industry in the Principality of Liechtenstein. Despite this, the individual opinions and views of the IP are perceived as individual and discussed as such. In the following, the results of the individual data collections are presented and compared and summarized as a conclusion in Chapter B.

1. Blockchain Technology in Liechtenstein

According to IP2, Liechtenstein recognized the great potential of various blockchain applications in good time and was thus able to position the location at an early stage. IP1 and IP3 are convinced that the blockchain technology and its higher-level DLT will change the way business is conducted in a wide variety of areas in the long term. In the near future, this could mainly concern payment services, fundraising[323], or even registers. In the medium term, this will affect all intermediary financial activities. According to IP3, the increasing transparency and traceability of many transactions are essential aspects per blockchain. However, this is by no

317 *Wanger/Johann* in *Global Legal Group Ltd.* 373.

318 VFAA; *Borg/Schembri,* The regulation of blockchain technology, in *Global Legal Group Ltd.* (Hrsg), Blockchain & Cryptocurrency Regulation 2019 (2019) 188 (189 f).

319 *Gibraltar Financial Services Commission,* Distributed Ledger Technology Regulatory Framework (DLT framework), <www.gfsc.gi/dlt>.

320 *Blemus,* Law and Blockchain: A Legal Perspective on Current Regulatory Trends Worldwide, SSRN Journal 2018 (4).

321 *Joey Garcia/Jonathan Garcia,* Gibraltar, in *Global Legal Group Ltd.* (Hrsg), Blockchain & Cryptocurrency Regulation 2019 (2019) 305.

322 In the following, it should be noted that the interviews took place before the date of publication of the report and application by the government. For this reason, the status of the evaluated data lies with the treatises of the Vernehmlassungsbericht of 28 August 2018.

323 See e.g. ICOs and STOs (see chapter II.D).

means limited to the financial sector alone, but, according to IP1, is likely to extend unrestrictedly to all areas of daily life. The profession of the lawyer is included here, since new legal questions are always to be asked in the context of further developments in this area. It is not yet possible to assess the extent to which this activity will change. However, it is clear that the technology must be dealt with in order to be able to deal with emerging legal issues in a sound manner.

After IP4, it is clear that the term »blockchain« per se – possibly derived from too little experience – was much too short in the past and the constant development of this, more and more and new application areas opens. Since the time when Liechtenstein positioned itself as a blockchain-friendly country, inquiries from foreign interested parties have increased rapidly. The possibilities of proactively using the location have come to the fore. As a result, the FMA has also recorded a rapid increase in inquiries in this regard.[324] In the fiduciary area, it was observed that potential clients proactively visited the Liechtenstein location. The reason for this is precisely the regulatory framework in the country. The interested parties emphasize that these are neither too detailed nor too abstract, which enables them to imagine a business relationship in Liechtenstein. Increasing interest has also been observed in fund management. Nevertheless, according to IP4, isolated applications are still in their infancy and are therefore only relevant for experts in these fields and are being withheld from the general public for the time being.

With the help of the blockchain, a much more fragmented added value can be achieved with regard to the management of securities than would be classically possible at all. This has an impact not only on the costs incurred, but also on the efficiency of asset management. According to IP3, the topic of »value rights« plays an important role in this. Banks in particular are likely to be significantly affected by technological developments. Classically offered services, such as payment transactions, or various transactions are exposed to the »dangers« of current blockchain developments. Therefore, according to IP5, sustainable considerations and measures must be taken in order to remain competitive. However, the establishment of new lines of business in banks is due to the blockchain. However, as the experience values of IP2 show, many of them are still in an observer role and are only gradually developing blockchain-relevant applications.

For the fund management, the revenue has shown itself through the increasing interest of various investors. A special fund has therefore been set up to deal with these issues. However, the fund managers have paid attention to a relatively risk-averse structure for the time being. In the eye of enterprise 4, the inexperience has outweighed thereby regarding a pure Blockchain fund. In addition, investors, possibly out of fear, had a precise idea of the distribution of assets. For this reason, the crypto currencies included in the fund have so far been settled via certificates and account for only one fifth of the total share.

With regard to trusteeship, IP5 highlights different possible future developments. On the one hand, blockchain applications in the form of Liechtenstein structures could be operated or established for clients. On the other hand, holding structures for foreign organizations could also be set up. Especially in the second case, the domestic trustee is an essential player. This assumption can be derived from the experience gained so far and from the increasing demand in this respect.

2. Actual state and possible changes by the TVTG in practice

The topic blockchain and especially crypto currencies and ICOs have received a lot of attention in recent years.[325] Application areas of various kinds have established themselves in different business models, have been newly created, or have even replaced others.[326] This development has also made itself felt in the Principality of Liechtenstein and is observed by the regulators.[327] The country positioned itself as a crypto country at an early stage, alongside the Crypto Valley in Switzerland.[328] This is one of the reasons why more and more companies, especially FinTechs, have settled in the Principality. This has led to the[329] question of the regulation of these companies in order not only to guarantee legal certainty for customers and providers, but also to ensure the stability of the financial center.[330] With the creation of a »regulatory laboratory« of the FMA and consequently the formation of a working group, technological and legal issues were discussed, and solutions developed.[331] Consequently, the Government has decided in favor of the creation of an entire law instead of integrating subareas – as can be seen from the Swiss decision[332] – into currently applicable regulations in the Liechtenstein legal system.[333]

324 *FMA,* Zahlen und Fakten zu den Finanzintermediären 15.

325 *Müller/Reutlinger/Kaiser,* EuZ: Zeitschrift für Europarecht 2018, 80 et seq.

326 Volksblatt, 17.

327 *Bont,* Volksblatt.

328 Vgl. Crypto Valley, <www.cryptovalley.swiss/>; vgl. Crypto Country, <www.cryptocountry.li/>.

329 *FMA,* Zahlen und Fakten zu den Finanzintermediären 15.

330 *Bont,* Volksblatt.

331 Bericht und Antrag, 10 et seq.

332 See chapter IV.D.3.

333 Bericht und Antrag, 53.

Banks are considered directly affected in this context, since the basic idea, especially of crypto currencies, was to make this financial intermediary »superfluous«.[334] According to IP5, banks in particular must therefore consider how their own services, such as payment transactions, can be adapted to technological developments in the future. It may also be necessary to create new services in this context. After IP2, this process also opens up opportunities for new branches of business, which can be used profitably.

Through a transparent solution, Liechtenstein could take on a pioneering role, which could be valuable internationally as a model for further national framework conditions.[335] After IP5, Germany is already considering how such a blockchain law can be implemented there as quickly as possible. IP2 adds that the longer-term establishment of the TVTG may depend on the plans of larger and more complex jurisdictions as to how regulation will prevail on a large scale in the future.

In German-speaking countries, Liechtenstein is the first jurisdiction to have developed its own template for the regulation of blockchain technology.[336] IP2 therefore assumes that the focus on blockchain-relevant topics will be further strengthened by the enactment of the law. It is also likely, according to IP5, that the Liechtenstein bill will be used to develop its own variant in German case law. However, IP5 estimates that this will probably not happen so quickly, as the German case is a much more complex legal construct.[337]

European jurisdictions, such as Malta or Gibraltar, have a strong focus on ICOs.[338] Liechtenstein, on the other hand, deliberately decided against this approach and placed the Token-Economy at the center of attention. According to IP4, this was also the right way to go. In view of the high number of abuse and fraud cases involving ICOs, IP4 welcomes the dwindling popularity of ICOs.[339] IP1 also shows a clear transition from ICOs to STOs.

Since the time when Liechtenstein expressed its interest in the blockchain and the topic »token«, an increase in customer inquiries could be recorded in all surveyed business areas. This has been explicitly observed especially in the legal profession, as well as in banking and fiduciary services. IP1, IP2 and IP5 describe this development as a kind of »marketing effect« for the location and the financial center. The country's attitude towards blockchain technology thus seems to have come to the fore.

According to IP5, the newly created target for abuses should not be underestimated in view of the newly established areas of application on the blockchain. This must be contained as far as possible in connection with legal measures. In the overall context, however, business models and activities are developing that can generate new sources of income for the country's economic situation. This includes, among other things, tax revenues. From the trustee's point of view, the focus is on the commitment to establish structures in connection with blockchain applications.

3. Advantages, Limitations and Risks

The Principality has established itself in a niche position with the creation of a law that can create a positive location factor. According to IP1, the present legislative proposal clearly covers all points of interest. IP3 agrees, but emphasizes that, even for future revisions, the regulatory framework for the users of the technology should not be too narrow. This is so that a certain flexibility can still be maintained. In addition, IP3 considers the high number of TT Service Provider roles to be too flooded. Combining individual roles would increase efficiency.

Basically, a created legal system helps to ensure sustainable legal security on the one hand, and to anchor principles for the users of the blockchain on the other. This allows you to present yourself to the outside world as particularly »blockchain-affine«. It is also clear from the surveys that regulation of individual areas of the blockchain, such as ICOs or crypto currencies per se, would not have made much sense. This argumentation is based on empirical values that have already been observed, e.g. from Malta.[340] According to IP5, there are already legal-political limits there, which means that parts of the regulations are already considered »outdated«.

According to IP2, from a banking perspective there would be no significant changes from a regulatory point of view. Banks are already strictly regulated today, and their business affairs would therefore go beyond the planned framework from the outset. In view of traditional intermediary activities, IP5 emphasizes the risk that these could be bypassed by the blockchain and thus potentially eliminate a banking business. In the fiduciary area, on the other hand, the discontinuation of a business division is unlikely to pose any risk, as the op-

334 *Nakamoto,* Bitcoin, <www.bitcoin.org/bitcoin.pdf>.
335 *Salzgeber,* Warum das liechtensteinische Blockchain-Gesetz revolutionäres Potenzial haben könnte, <www.ico.li/de/blockchain-gesetz-mit-revolutionaerem-potenzial/>.
336 Cf. Bericht und Antrag, 50 et seq.
337 Cf. *Holtermann,* Krypto-Lobby legt Forderungen vor, Handelsblatt.
338 *ICO Launch Malta,* Malta ICO Regulation, <www.icomalta.com/ico-regulation/>.*Gibraltar Financial Services Commission,* Distributed Ledger Technology Regulatory Framework (DLT framework), <www.gfsc.gi/dlt>.
339 *Chohan,* SSRN Journal 2017, 2.
340 Cf. chapter IV.D.1.

portunities for expanding the range of services on offer outweigh the opportunities here. After IP1 and IP4, the TVTG will certainly have an impact on a number of areas beyond the financial industry across all business models.

By creating a law on the Token-Economy, Liechtenstein can establish itself as a pioneer for international regulations and other national regulations. In addition, the opinion of IP3 is that the Liechtenstein financial center can be strengthened by attracting investors, companies or clients from various sectors and nations. IP1 and IP5 share this opinion and reaffirm the fact that Liechtenstein, compared to other European countries, would have a clear »first mover« advantage with the TVTG. Instead of imposing reprisals and taking indemnity, it creates a basis for further business with blockchain applications, which IP4 sees as a real opportunity for the financial center.

The small size of the financial center, the short distances and the manageability of the industry help to expand Liechtenstein's competitive advantage. In addition, the willingness and commitment of the government and the regulators serve as accelerators of this. Already today, the Liechtenstein FMA, liberal company law and the financial services center are essential subareas of the project and its success. Compared to other jurisdictions, according to IP2, the legislative proposal has a clearer depth and structure than other European solutions.

The law covers important points, such as the classification of the token in the legal system and the introduction of book-entry securities for the securitization and digital transfer of rights. As a result, some issues were uncovered and solved on a broad scale. The value rights mentioned are an important innovation in the legal order, given the fact that technology per se is evolving rapidly.[341] Considering the dangers and risks that blockchain technology could entail, IP5 feels it is good to focus on the legal figure of rights. The attempt to integrate such aspects reasonably into the existing legal system is considered to be positive. However, IP2 emphasizes that, in the long term, some aspects of the proposal have been dealt with only superficially, which may result in the TVTG not being able to withstand developments and practical experience in the long term.

With regard to the regulatory approach, which has already been discussed in Chapter IV.C.3, IP1 adds the proposal to oblige the registration of tokenization for users. Therefore, a register could be created with constitutive effect – in the best case on the blockchain itself – in which this mentioned tokenization would have to be entered. However, this has not yet been taken into account in the consultation report.[342] However, the report and application insist on strict requirements for service providers and entrust the FMA with continuous prudential supervision so that developments can also be reacted to quickly.[343]

However, one important point must not be overlooked. IP1, as well as IP5, highlight the potential loss of reputation of the financial center. However, this would only occur if the area of blockchain technology and its protagonists were not placed under sufficient capital market protection and supervision. Such steps are necessary so that technology can fertilize the financial market and not damage the excellent reputation of the Liechtenstein financial center. With regard to the planned legal security, IP4 is still cautious and believes that as soon as the law comes into force, various applications (including the tokenization of certificates) would be directly implemented. It is likely that an observer role will initially be assumed here in order to be able to assess developments in the practical implementation of the law.

4. Classic Business Models and their Potential TT Service Provider Roles

The following business models of the Liechtenstein financial industry were surveyed as part of the present work: the legal profession, banking, asset management, fund management and administration, and trusteeship. The respondent represents his own industry. The possible roles, and their distribution, of the TT Service Provider have already been examined in detail in Chapter 4.3.2. These are now to be integrated into practice.

Initially, according to IP1, none of the predefined roles from the proposed legislation[344] would apply to the lawyer's business model, or none of the roles described are proactively pursued. None of the defined roles for the area of activity is currently conceivable for fund management either. However, IP4 has pointed out that the novelty of a topic or thing often leads to uncertainty or catchy ambiguity. The new legal situation has been compared with the emergence of mobile phones. At the beginning of this era, the number of people who owned a mobile phone was extremely small. This has changed significantly over the years. This could be similar, according to IP4, with the application of the Blockchain Act and the development of new business issues. Sooner, or later, these could be used, provided that the creation and management of funds can be done in a simple and user-friendly way through a blockchain application. To

341 Bericht und Antrag, 52.

342 Vernehmlassungsbericht, 73 et seq.

343 Bericht und Antrag, 84 et seq.

344 Cf. Art. 5 Para. 1 No. 8–16 VTG.

date and in the near future, however, this is not planned in this division.

According to IP5, the activities of a trustee could be assigned roles such as the TT depositary, the TT Protector, as well as the Token Generator and Token Issuer. What is already part of the business area in company 5 today is services as a Token Issuer. Such structures and the trustee's external appearance in this role must already be approved by the FMA today. After IP5, another possible practical application would be the transfer of tokens and their private keys to the foundation capital. For example, in a foundation structure, tokens can be stored directly by the trustee. This possibility arises if the trustee himself is part of the board of trustees and the other boards of trustees agree to this token custody.[345]

In banking, all roles could be aspired to or assumed in one form. The only thing that needs to be weighed here is which ones can be used sensibly for the core business of the respective bank. Among the most important roles that a bank can play are the TT custodian and the TT Protector, similar to the trustee. According to IP3, the TT Price Service Provider is necessary because this role ensures objectivity and transparency in the market. However, in connection with the definition of this, an ambiguity is discernible, which could lead to confusion, or uncertainty.

The most discussed function among the TT Service Provider roles is the Physical Validator. IP1 and IP2 emphasize the meaningfulness and importance of the role of the Physical Validator. According to IP1, the Physical Validator could be assigned to the trust area. However, IP5 does not share this view and estimates that this task would not be meaningful for trustees. According to the respondents, this role definitely leads to a stronger trust in an actually »trustless« system. However, according to IP3, the term confuses or unsettles. To date, it is not clear how this human component can create absolute security. IP2 complements the question of how it can be clearly ascertained whether a good, which is tested and confirmed by a validator, is not already found on the blockchain. These considerations come from the fact that not all goods have a serial number and therefore doubts can arise. It can therefore never be fully assured that a physical object is an original. In order to solve this problem, a common database may have to be set up in which all official titles are registered. New questions arise again and again, which need to be discussed in the course of time and with increasing experience. Nevertheless, the Physical Validator, according to IP2, can play an extremely important role, especially in connection with security tokens or tokens which have a real value. The latter is responsible for tasks which have not been taken into account in other regulatory frameworks.

Opinions differ on the question of which provider or which business model could assume this role. In principle, banks could take over the role of the bank. However, the individual facts of the case must be clarified as to whether this service is relevant or attractive for the core business of the respective bank, as mentioned above. If, for example, IP2, identity tokens were to be introduced, this would probably be a sensible branch for banks. IP3 sees no necessity for the TT inspection agency and proposes a merger with the TT Identity Service Provider. The respondent justifies the proposal with the high degree of abstraction of both rolls.

In the consultation report, IP2 and IP3, among others, share the same opinion that a profound design of the individual TT Service Provider roles was sometimes too brief. This applies to more complex roles, such as the Physical Validator or the TT Depositary. This makes it difficult to classify individual services appropriately, although it is assumed that the individual areas of responsibility can be well combined. These may include some sub-areas within the distribution which could be used as substitutes. On the whole, according to IP2, the roles which classical business areas would assume should be carefully and individually selected. A so-called »one fits all« variant would be neither meaningful nor beneficial.

5. The Blockchain-Act in International Comparison

In addition to Liechtenstein, other European legal systems are naturally also interested in regulating blockchain technology – in each case at national level. Therefore, IP3 sees the urgency to adopt the proposal. This is in order to take on a pioneering role for further developments and thus also strengthen the competitive advantage of the Liechtenstein financial center. IP2 adds that Liechtenstein did not recognize the potential of blockchain technology and its application possibilities early on but did so in good time. With the bill, the country has taken a first well-founded step in international comparison. Thus, a niche position is taken, which could turn out to be profitable in the long run.

Particularly emphasized, especially by IP1, is the fact that Liechtenstein is the first jurisdiction to adopt a law of this kind to regulate the Token-Economy. For the first time the token is examined by a legal side and its possession, property and transfer are regulated. In other European jurisdictions, which were examined and compared in Chapter IV.D. focus is on ICOs contrary to the Liechtenstein proposal.

Malta is considered to be a very blockchain-affine country. The island state was the first jurisdiction in the world to create regulations regarding blockchain

345 Cf. §24 para. 1 No. 1–2 PGR.

technology. The aim is to play a pioneering role and at the same time increase legal certainty for users.[346] Its financial center is confronted with problems to the extent that some of the technology has already been regulated in too much detail and tailored to individual sub-areas. With[347] regard to the Maltese rationale, IP5 argues that the approach is already reaching its limits. With its three laws, Malta has created a basis that is too detailed for some. From an economic perspective, this basis already significantly restricts a flexible business activity today. According to IP5, even Gibraltar has created only a very thin legal ceiling, in the form of the »DLT Framework«[348]. This is not sufficient for the required and necessary legal certainty.

Compared to Switzerland, Liechtenstein has an essential competitive advantage: through its membership in the European Economic Area (EEA), the Principality enjoys full recognition of its societies in Europe. IP4 also adds that Switzerland's approach entails the risk that a large number of laws and regulations will have to be continually revised. This may be related to keeping pace with technological development and digitization. The solution to develop a separate law for this legal sub-area and to create the Token-Economy, on the other hand, is a more sensible solution for IP.

According to IP1, the Liechtenstein proposal delves much deeper into the matter of the token and the blockchain than any other law either announced or already in force. The topic of »tokens« hardly finds any points of contact in the legal affairs of other nations, but the ICO topic is mainly the focus of attention. According to IP1, this is the wrong approach, since in practice a change from ICOs to STOs is already emerging.[349]

The European Union (EU) has drawn up the fifth Money Laundering Directive[350] on the basis of the recorded cases of misuse and the increased risk of crypto currencies. For the first time, the topics »virtual currencies and crypto currencies« were dealt with in this report.[351] This directive must be implemented by 01 January 2020.[352] Thus, this development could be seen as the first step of the EU towards »blockchain regulation«. The probability that, for example, the EU, or other international meetings, could adopt a regulatory framework for blockchain activities, is currently regarded by all test persons as extremely low. Due to the high complexity of the EU and the numerous acute issues it is currently dealing with, respondents assume that more far-reaching regulation is unlikely to materialize for the time being. This is argued, for various reasons, as follows: e.g. IP4 emphasizes that various concerns from the individual Member States must first be understood and their concerns taken into account before a comprehensive solution can be worked on. Nor is it assumed that the EU would introduce clear regulation. Perhaps this would not specialize in the field of Token-Economy, but rather focus on other sub-areas, or even choose a more abstract solution.

Nor is it clear to the respondents whether the EU understands the power and potential behind the blockchain and its applications. However, as soon as an EU-wide regulation comes into force, Liechtenstein, as a member of the EEA, must take measures at national level. At best, according to IP1, such framework conditions could override parts of the Blockchain Act. IP1 emphasizes, however, that Liechtenstein law would certainly not become completely superfluous. This, because of the consideration that a potential EU regulation would not go into as much depth as the present draft does. To this end, the interviewee again incorporates the topic of tokens into the argumentation by assuming that on an international basis a superficial regulation would rather take place than a focus on the area of the Token-Economy. IP2 shares this argumentation and suggests that the Liechtenstein proposal could possibly be used as inspiration, provided that the topic is discussed more intensively at the international level.

B. Synthesis

Blockchain technology in Liechtenstein is a key driver in the financial sector. All respondents are aware of this development. It will be emphasized how widely the technology can already be used today and how it will establish itself in all areas of life in the future. The transparency and traceability which blockchain networks guarantee are rated as particularly positive. The country positioned itself early on and, in the opinion of the test persons, transformed itself into a competitive location. However, in order to be able to fully assess the full potential and also the risks associated with blockchain technology, there is still a lack of well-founded empirical values from the individual business areas. Especially the topics crypto currencies and ICOs have shaped the economy in the recent past. However, there is a clear shift towards STOs. As a result, more and more young companies with innovative business models have settled in

346 *Wolfson,* Forbes.
347 See chapter IV.D.
348 *Gibraltar Financial Services Commission,* Distributed Ledger Technology Regulatory Framework (DLT framework), <www.gfsc.gi/dlt>.
349 See chapter II.D.
350 DIRECTIVE (EU) 2018/843 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 May 2018 amending Directive (EU) 2015/849 on the prevention of the use of the financial system for the purpose of money laundering and terrorist financing and amending Directives 2009/138/EC and 2013/36/EU L 156/43, 1.
351 *Müller/Reutlinger/Kaiser,* EuZ: Zeitschrift für Europarecht 2018, 80.
352 Art. 4 Directive 2018/843/EU.

the Principality. With the creation of a law to regulate the Token-Economy, Liechtenstein is taking on a pioneering role. The individual test persons emphasize that the right balance between definition and abstraction was basically struck in the present bill. However, there was a significant increase in enquiries from some of the companies surveyed even before the publication of the project to create a blockchain law. The test persons attribute this to a possible »marketing effect«, which could have its roots in the country's pro-blockchain attitude.

The assessments and opinions, with regard to the present draft law per se, partly diverge strictly. While IP1, among others, is fully convinced that the step to develop a law was a well-chosen starting point for a strong positioning of Liechtenstein, IP4 takes a different view. Here the opinion is represented that the Blockchain topic would be still and also in the near future still further pure expert thing. For IP4 it is clear that for the time being the law cannot be applied to the broad masses. At the beginning it is assumed that the fields of application will only be relevant for experts until first developments and empirical values can be observed and recorded. This could take several years before the technology reaches the masses and is also used in everyday life.

The creation of a legal system to regulate the Token-Economy is viewed positively by the IPs throughout, although some aspects should not be overlooked, according to their statements. With the help of legal framework conditions, a legal certainty is created, especially for blockchain protagonists, which should ultimately help to achieve a competitive advantage. However, the risk of a loss of reputation of the financial center, and also the risk of abuse[353], according to IP1 and IP5, clearly must not be underestimated. Experience, especially from the young history of ICOs, shows that the expansion of technology opens up new areas in which regulatory gaps or grey areas can emerge.[354] In view of this and the associated risk of a loss of image, IP5 stipulates that risks must be weighed up and correctly dosed in order to ensure sustainable security at the financial center. The TT Service Provider roles presented represent an important part of a stable development.

Two clear points can be deduced from the data that comprise the TT Service Provider roles. On the one hand, some roles cannot be directly assigned to any of the business models surveyed. These roles include: the (1) Physical Validator, the (2) TT Exchange Service Provider, the (3) TT Verifying Authority, the (4) TT Price Service Provider and the (5) TT Identity Service Provider. According to IP2, IP4 and IP5, other service providers are required for this, or the tasks of these fall rather into other areas of application than those of the respondents. On the other hand, there is still great uncertainty regarding the Physical Validator. Some questions were raised which still have to be answered.

Compared to other European legal systems, respondents see clear differences between the different approaches. The Liechtenstein focus on tokens is consistently assessed as positive, while opinions differ regarding detail. On the one hand, IP3 and IP5 see an excess in the division of TT Service Provider roles and underline the possibility of combining several fields of activity with each other. On the other hand, individual legal articles are perceived by practitioners as too abstract. Regarding an EU-wide regulation, respondents agree that it is highly likely (1) that it will not be discussed in the near future and (2) that it would not significantly derogate this Act, if at all. The question of the meaningfulness of a national regulation nevertheless arises, provided that it can be assumed that, for example, the EU prescribes nationwide regulation. However, due to the fact that all test persons agree that this is unlikely to happen in the near future, this fundamental question can be rejected.

VI. Conclusion

In order to fully answer the research question posed at the beginning, it is necessary to discuss the results from the findings of literature research and qualitative data collection. This chapter includes and is divided into subchapters, which further contain potential theoretical and practical implications, challenges and limitations of the work and a concluding conclusion.

A. Discussion of Findings

The opinions of the individual IPs differ widely in individual sub-areas of the topic. In the following discussion of the empirical results, statements and argumentations of the individual test persons are compared with regard to the consulted subject areas. These are then discussed with the findings from the existing literature.

In drafting the law, the government of the Principality deliberately opted for a solution approach that only decided on parts of the technology, such as ICOs or crypto currencies, and demanded a comprehensive solution. The argument was that such an approach does not have to create a new regulation for every potentially newly constructed or created field of activity within the Token-Economy. Legal certainty can therefore be ensured for all parties concerned.[355] The interviewees in

353 Cf. cases of fraud in connection with ICOs.
354 *Chohan,* SSRN Journal 2017.
355 Volksblatt, 17.

the qualitative survey also agreed with this argumentation. IP4 made comments on this point by arguing that it is likely that the practical side will initially take an observer role in order to be able to identify possible developments. The »renaming« of the law has not resulted in any significant changes to the proposal in the Vernehmlassungsbericht.

With the help of the created legal certainty, blockchain companies as well as classic business models can offer their customers sustainable solutions and positively influence the further development of the technology itself. The Principality thus holds a first mover advantage, as emphasized by IP1 and IP5, whereby interested parties explicitly opt for Liechtenstein as a location. Compared to other jurisdictions in Europe, the country has the superiority that neither existing laws are extended, nor are too detailed individual areas of application or fields of activity dealt with. Through the abstract legal definition of the Token-Economy, users thus have the freedom to largely design their applications themselves.

After IP2 and IP5, Liechtenstein is clearly an international pioneer with its TVTG. The legal systems mentioned above[356], which have made further progress with their regulatory approaches or have already put framework conditions into effect, are all small states. It can be assumed that larger and more complex jurisdictions, such as Germany, will take some time before sound solutions can be presented.

Of course, there are challenges and difficulties with such legislation. The question arises as to whether the present proposal will remain valid in a few years' time or whether it is already completely out of date. As already discussed in Chapter IV.D development of regulations – especially in relation to fast-moving technologies – can be extremely complex and risky.[357] This is due to two important aspects: (1) The uncertainty of the long-term validity of a regulatory framework, and (2) the attempt to prevent recurrent revision loops using abstract descriptions. Due to these uncertainties and risks, a newly created legal system should be well considered. In the case of the TVTG, this seems to have been successful. If future developments take place, the framework per se should not be ignored. Above all and IP1 and IP3 insist on sufficient freedom within the legal conditions.

As already mentioned in Chapter II.D ICO projects were affected by fraudulent activities. Because of this, extreme caution and precision are required when dealing with them. Due to the clear shift in the use of ICOs towards STOs[358], Liechtenstein has a clear advantage over other nations with its regulation. The regulations from Malta and Gibraltar, which mainly specialize in the regulation of the ICO financing[359] method, therefore already have »catching up to do« in the eyes of IP5.

The fact is that two of the five business models surveyed could not imagine that one of the TT Service Provider roles applied to their offering and activities. This suggests that this area of the TVTG may not yet be mature or may have to develop in a practical environment. However, in the report and request, the role of the TT depositary has been split into that of the TT key depositary and that of the TT token depositary. This innovation may lead to a more uniform understanding of the tasks.

The registration process of TT Service Providers in the TT Service Provider register by the FMA raises another point for discussion. The speed of these registrations must be high so as not to unnecessarily restrict the business activities of suppliers. Pursuant to Art. 19 para. 2 TVTG, the FMA is granted a time frame of three months to review the applicants with regard to the requirements pursuant to Art. 13 para. 1 TVTG. In addition, the authority may request officially confirmed or apostilled original documents, which may induce additional time expenditure.[360] Because the applicant may only commence his activities as a TT Service Provider once the FMA has approved this[361], there is a risk of losing business.

The concept of the token is a widely discussed topic, in connection with the categorization of it as a technology-neutral legal concept, as well as in the blockchain technology itself. It would be advisable to advocate an internationally uniform equality of the token or an extension of the concept itself. Further, the concept of the token has been discussed in more detail.

In summary, it can be said that becoming public of the proposed law, shows different effects. The one that has prevailed so far is the »marketing effect«, which makes all eyes turn to the country and casually formulates »makes a lot of wind«. Looking deeper, the project shows a first well-founded solution proposal regarding the blockchain-relevant topics. However, individual points of discussion within the proposal must not be disregarded. This has to be monitored and, if necessary, adapted via any ordinances, as provided for in the current draft law. The TVTG should therefore be given the

356 See chapter IV.D.

357 *Salzgeber,* Liechtenstein verabschiedet Blockchain-Gesetz zur Schaffung einer regulierten Tokenökonomie, <www.ico.li/de/liechtenstein-verabschiedet-blockchain-gesetz/>.

358 *BTC ECHO,* Was ist ein STO (Security Token Offering)? <www.btc-echo.de/tutorial/security-token-offering-definition-was-sind-stos/>.

359 *Gibraltar Financial Services Commission,* Distributed Ledger Technology Regulatory Framework (DLT framework), <www.gfsc.gi/dlt; *ICO Launch Malta,* Malta ICO Regulation, <www.icomalta.com/ico-regulation/>.

360 Cf. Art. 18 para. 2 TVTG.

361 Cf. Art. 19 para. 5 TVTG.

opportunity to create a new source of income for the financial industry in Liechtenstein for the time being.[362]

B. Practical Applications and Theoretical Implications

In practice, some implications can be given, consisting of the available results of the empirical data collection and analysis, in combination with the relevant literature search. The abstract description and definition of the contents of the TVTG should aim to include the development of potential practical fields of application, in regulatory terms, as far as possible from the outset, without making further special regulations necessary. However, if, despite this, this should become necessary, the government reserves the right to make adjustments.[363] Chapter IV.C.3 discussed the registration of TT Service Providers with the FMA. As discussed at the beginning, the time factor is an essential key figure here. In practice, it must be weighed up how quickly the registration of TT Service Providers must take place in order not to unnecessarily restrict business activity. The aim is to find out how the applicant and the FMA can work together as efficiently as possible.

IP5 points out that private keys from a foundation structure – in which the trustee is also a member of the board of trustees – can be stored directly at the trustee's premises as a practical case of application that would be of particular relevance for the trust business. The trustee would act as TT Key Depositary. In order to be able to guarantee the security of custody even further, an asset protection service provider could also be called in for physical custody as a third party.

A significant increase in efficiency is expected in the issue, clearing and settlement of securities on TT systems by asset managers. An exciting development for practice is therefore the application of uncertificated securities in this context. These are also important developments in Switzerland and Germany and are therefore of international importance in practice.[364]

From a theoretical point of view, the following findings are also made, which may lead to corresponding implications. With regard to the TT Service Provider roles, five of the ten in the present data collection and evaluation could not be assigned to any business model. This suggests that it might be helpful to combine individual roles in order to limit the complexity of the tasks. Consequently, it will be possible to observe in the future how role behavior will establish itself in practice. The role of the Physical Validator deserves special mention. Possibly an asset protection service provider or specially trained experts – for various specialist areas such as art, gemstones, etc. – could take on this task. However, this needs to be assessed on a relevant and individual basis.

All in all, some areas of application and activities of the blockchain should (still) be accessible only to experts in this field, practically speaking and as highlighted by IP4. This will probably level off in the course of time, on the other hand, with specialized providers gradually establishing themselves in the financial center. In the eyes of IP1, Liechtenstein already has a great deal of legal certainty in advance in view of the current legal system and its system. This can be extended by the TVTG on the Token-Economy theoretically, as well as practically, still further. In this way, the excellent status of the Principality in international comparison is to be maintained.

C. Challenges, Risks and Limitations

Due to the novelty of this research topic not only the access to relevant, scientifically founded, and theoretical literature is restricted, but also the access to empirical values. The absence of these theoretical foundations, in the area of blockchain technology in combination with legal framework conditions, consequently, leads to the fact that no generally valid statement can be made. In addition, the subject area and the technology behind it are very fast-moving and therefore no theoretically valid solution to the existing knowledge gap can be presented over a longer period of time. In addition, the research area of this master's thesis is geographically restricted to the Principality of Liechtenstein.

Furthermore, due to the fact that a limited number of databases have become accessible and searched, potentially relevant articles or other references cannot be found. This means that not all published sources can be taken into account. With regard to the limited number of qualitative data surveys, no general statement can be made, but a purely legal policy recommendation can be made.

In addition, a further limitation concerns this master's thesis to the extent that a qualitative approach was applied, by which a generalization of the results is theoretically not possible, if one considers the dimension of such a large field of research. Only isolated subjective opinions can be obtained through the chosen qualitative research method. This is not sufficient for a concrete verification or falsification of a thesis. In the empirical data collection, one respondent per business model was interviewed in this study, who is seen as the representative for the entire industry. Furthermore, only five different business areas from the financial industry were considered, whereby individual aspects were ne-

362 *Wanger,* Liechtensteiner Monat, 27.
363 Volksblatt, 17.
364 Bericht und Antrag, 109 et seq.

glected. Therefore, as a result, either only an estimate can be given, or a hypothesis can be made. However, there is no possibility to prove it theoretically.

In addition, there was a challenge with regard to the interview guide. The awareness of not leaving the central theme while conducting the interviews had to be created. In addition, the results, in the worst case, should have been judged invalid and showed that none of the respondents was aware of the government's plan to create a new law. At the same time, if the IP had been negative or biased, the results could have been different.

Finally, the evaluation process can be challenging as a result of the data collection. Due to the fact that the different conversations could have led in different directions. If this had been done, the results from the individual case studies would not be comparable. This, in turn, would mean that no conclusion could be drawn. When using semi-structured interviews as a method for qualitative analysis, this can be a serious obstacle to the empirical part of the research. As only a small number of IPs could be consulted for this work, the results and statements cannot be generalized due to the limited number of participants and the geographical limitation.

D. Outcome and Recommendation for the Future

The following conclusion can be drawn with regard to the literature research and the qualitative surveys in the present study: The creation of a law for tokens and TT Service Providers is seen as extremely positive. This for different reasons. On the one hand, a regulatory framework strengthens the activities of the users of blockchain technology in Liechtenstein, while on the other hand a kind of »marketing effect« is held responsible for the increased demand.

One issue, however, which, from a legal perspective, still does not seem to have been clarified, is the classification of the token into the entire legal system. On the one hand it is tried to classify the token in the property right, on the other hand it can be asserted sui generis also as a simple demand. With the concretization of the legal classification in the report and application, ergo with the allocation by one or more TT-identifiers[365], more clarity has been created. Due to the same abstract definition, however, the above question remains unanswered. Some inequalities can still be observed at international level. Therefore, a common definition is needed to define key concepts and to be able to operate across borders.

The blockchain, the entire Token-Economy and the associated regulatory developments are fast-moving topics that will require recurring revisions and adjustments. In today's world, it is impossible to estimate how the TVTG and the technologies themselves will change, even revolutionize, or even destroy classic business models in the future.

The cooperation of the FMA and the existing company law in Liechtenstein contribute to creating a suitable basis for regulatory developments with regard to a theoretical Token-Economy. How one will really deal with the innovations in practice, after the entry into force of the TVTG, remains unclear at the present time. Some of the respondents to the survey who have adopted classic business models in the country recognize great potential for further economic activity and assume that in future applications can be applied to all areas of everyday life. Regulatory questions must nevertheless be asked as to which approach to take in the event of changes in technology that point the way ahead. Nevertheless, it can be assumed that there will be an upheaval in the entire financial sector of the Principality.

The following hypotheses can be derived in order to answer the research question[366] posed at the beginning to what extent the present legislative proposal is applicable to different business models in the Principality of Liechtenstein:

1. There is a great need for a universal classification of tokens so that service providers in the financial center can clearly integrate them into their activities.
2. Value Rights form a significant sub-area for practical applications in the Liechtenstein financial industry and lead to an increase in the efficiency of asset management.
3. The time factor, especially in the registration process of TT Service Providers, is an essential key figure in order not to impair business activities within the framework of the Token-Economy.

Finally, it can be confirmed that the topic of blockchain and Token-Economy is an extremely complex undertaking. The TVTG represents a first step towards the regulation of this blockchain and Token-Economy, in which childhood diseases cannot be ruled out. Probably the law will also not be applicable to the broad mass from the time of its entry into force. What technological development will bring remains to be seen. However, it is safe to assume that some revision and adaptation loops will have to be made in order not to lose touch with the progress of digitization. At the beginning it would be useful for inexperienced providers to take on an observer role in order to gather initial experience and consequently to initiate well-founded steps and considerations.

365 Cf. Art. 2 para. 1 lit. c Z 2 TVTG.

366 See chapter I.B.

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VIII. List of Figures

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X. List of Abbreviations

COO	Chief Operations Officer
DLT	Distributed Ledger Technology
EEA	European Economic Area
ESMA	European Securities and Markets Authority
FATF	Financial Action Task Force
FIAT	currencies or means of payment – artificially created by a constitutional state
FinMA	Financial Market Supervision Switzerland
FMA	Financial Market Authority Liechtenstein
GFSC	Gibraltar Financial Services Commission
HMGoG	Government of Gibraltar
ICO	Initial Coin Offering
IP	Interview Partners
IPO	Initial Public Offering
IS	Information Systems
ITASA	Innovative Technological Arrangement and Services Act
ITO	Initial Token Offering
MDIA	Malta Digital Innovation Authority
MDIAA	Malta Digital Innovation Authority Act
MiFID II	Markets in Financial Instruments Directive II
PGR	personal and corporate law
SPG	S Care Obligation Act
STO	Security Token Offering
TGE	Token Generation Event
TrHG	Trustee Act
TT	Trusted Technologies
TVTG	Token and TT Service Provider Act
VFA	Virtual Financial Asset
VFAA	Virtual Financial Assets Act
VTG	Act on Transaction Systems Based on Trusted Technologies
VTG	draft law on trusted technology-based transactional systems
VVG	Asset Management Act

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