REGTECH: ANALYSIS OF THE AGGREGATORS IN THE SWISS STARTUPS' ECOSYSTEM DURING THE PANDEMIC

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Abstract

Following the Great Financial Crisis, the emergence of digital technologies and the end of banking secrecy ("Swiss say goodbye to banking secrecy", 2017), financial technology (FinTech) and regulatory technology (RegTech) startups have been offering products in the financial regulatory sector. This trend has increased since the outbreak of COVID-19. Most of the studies on RegTech have focused on reviewing the literature on the macro context and the issues of vast amount of regulation (Arner et al., 2017). Today the academic literature about case studies in regulatory technology is not proposing any solution of cooperation or aggregation of RegTech's startups in Switzerland. Due to the lack of papers about RegTech in Switzerland, we adopt an approach already used for case studies in the FinTech area (Foster & Heeks, 2013; Burtch et al., 2013) through exploratory investigation through interviews and literature review. The findings of our article have allowed us to analyse the topics and the applications in the RegTech ecosystem provided by startups to Swiss banks. We examine also the aggregations, incubators, and associations active in Switzerland Swisscom, International RegTech Association (IRTA), and F10 (a Swiss FinTech incubator based in Zurich) to examine how they can bring RegTech solutions of the RegTech startups into the banks.

Keywords: FinTech, COVID-19, RegTech, Management, Innovation, Finance

Authors' individual contribution: Conceptualization — L.B. and F.M.; Methodology — L.B.; Investigation — L.B. and F.M.; Resources — L.B.; Project Administration — L.B.

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1. INTRODUCTION

In the aftermath of the financial crisis, firms are facing increased reporting requirements and higher regulatory standards. Technology is transforming the financial industry; it is also transforming how the industry and financial authorities implement and enforce regulation.

The market's response is regulatory technology (RegTech), which helps to enable effective competition, foster innovation, better manage regulatory requirements and reduce compliance costs.

For European banks, the industry average cost of compliance is estimated at 4% of total revenue (McNulty, 2017) but is expected to rise to 10% by 2022, as highlighted in the Cost of Compliance 2018 Report (n.d.), which expects the cost of senior compliance staff to increase.

Thomson Reuters found in its Cost of Compliance 2020 Report (Hammond, 2020) that 70%

of firms reported that computer viruses had increased their reliance on technological solutions, RegTech applications continue to provide a popular, embedded solution for firms in areas such as compliance monitoring, financial crime, anti-money laundering (AML)/countering the financing of terrorism (CTF), sanctions and regulatory reporting. By 2020, more than a third (34%) of firms are considering the use of RegTech, with a further 34% saying that RegTech is already having an impact on compliance management.

The COVID-19 crisis has significantly exacerbated the cost issue.

Consulting firm Bain & Company (Groenfeldt, 2018) already estimated in 2018 that regulatory costs will rise from 4% to 10% of revenues globally by 2021, driven mainly by the huge volume of regulations that reach deep into all levels of compliance, data collection, data processing, data sharing, and data security.

The research motivation is to focus on the perimeter and the applications of RegTech that are not clear despite the consensus on the large impact that regulatory technology has.

The RegTech market, however, is dominated by startups. Globally, there are more than 1,000 active RegTech firms, with an estimated 70% of these firms less than five years old and employing an estimated 44,000 people globally in 2018 (Schizas et al., 2019). For the Financial Conduct Authority (FCA), RegTech lives an opportunity with the actual pandemic (Hopwood Road et al., 2020).

Regarding the legislation and the type of economic contest, Switzerland has proved to be extremely attractive for investment in this area in recent years. Generally, Switzerland is linked with an outstanding innovation potential, resulting from its universities, established enterprises (just to mention the global pharma players), and startup companies (Zaby, 2017). Financial technology (FinTech) and RegTech startups have emerged in the Swiss financial ecosystem after the end of banking secrecy, forcing Switzerland to maintain its competitive advantage in Europe and globally. The same evidence of RegTech startups, which help banks to be competitive, is emerging in the RegTech sector in Italy (Battanta et al., 2020).

Strong was the push of the Swiss authorities, first of all, provided by the Swiss Financial Market Supervisory Authority (FINMA), the regulator of the Swiss stock market, with a sandbox in 2017 (FINMA, 2017). The Swiss supervisor also shows an interest in informal dialogue with technologically advanced financial companies, for example, crypto assets especially in Switzerland based in Zug, as (Opala et al., 2022) reported from a risk management perspective and a theoretical point of view, this new asset class, with its high tail dependence, some historical drawdowns, and a high degree of volatility, aims to develop and use suitable risk measurement methods that anticipate these observations. Finally, it is essential to create efficient and diversified portfolios and to back them up with appropriate risk capital. It is also necessary to consider severe adverse developments in uncertain future volatility due to macroeconomic uncertainty.

Related to the emergence of FinTech and cryptoasset, there is also RegTech, which is the topic of the paper, about updating compliance to innovation. The application of regulation with advanced technology could be applied in the areas of cross-border transactions, Know Your Customer (KYC, which practically means profiling customer information, behavior, and habits), anti-money laundering, and risk management. Switzerland has been able to carve out a prominent place in the world for digital finance while remaining outside the European area from a political point of view, but being part of the European single market.

The literature gaps we try to fill with this paper are several.

Most of the studies on RegTech have focused on reviewing the literature issues of vast amounts of regulation (Arner et al., 2017; Johansson et al., 2019; von Solms, 2021).

Today the academic literature about case studies in RegTech is not proposing any solution of cooperation or aggregation of RegTech's startups in Switzerland.

Due to the lack of papers about RegTech in Switzerland, we adopt an approach already used for case studies in the FinTech area (Foster & Heeks, 2013; Burtch et al., 2013): an exploratory investigation through interviews and literature review (Witz, 2019; Walshe & Cropper, 2018; Anagnostopoulos, 2018).

Our research aim(s), as indicated in the abstract, are to answer the following research questions through exploratory case studies:

RQ1: What are the topics and the applications at the core of the cooperation in the RegTech ecosystem?

RQ2: What is the role in the wide spreading of RegTech solutions provided by aggregations, associations, and incubators like International RegTech Association (IRTA), Swisscom and F10 (a Swiss FinTech incubator based in Zurich, now Tenity[1]), in the Swiss financial market?

The general structure of the paper is composed as follows. Section 2 is a review of the literature and its gaps. Section 3 provides the research methodology. Section 4 presents the results of the RegTech's aggregators in Switzerland. Section 5 discusses the results and comparison between the different aggregators. Section 6 concludes the study.

2. LITERATURE REVIEW

The search for the keywords "RegTech", "incubators", and "aggregators" was carried out systematically by searching the international websites of the main consulting firms' authorities, as well as looking for references in the articles of consultants and academics. We also applied the following restrictions: 1) dated May 2, 2023 (without a lower starting date); 2) available in English.

Once all the articles with the presented methodology were collected, they were analysed for a case study using the following services: Scopus, SSRN, and Google Scholar.

From a qualitative point of view, we found the following interesting articles analysing case studies by Butler and O'Brien (2018): the cited case is managed, but notes the ability to free up regulatory capital due to better oversight, as well as automation that reduces some of the estimated $70 billion that large financial institutions spend on compliance each year (Aziz & Dowling, 2019).

[1] https://www.tenity.com

A major player in RegTech is International Business Machines (IBM), following its acquisition of Promontory (a 600-strong RegTech).

The article by Johansson et al. (2019) aims to show real-life applications of regulatory technologies. The selected case companies show and solve clear and understandable problems. In addition, these companies offer regulatory compliance solutions for audit and assurance purposes. The first company offers a solution that complies with the European General Data Protection Regulation (GDPR) and detects unstructured personal data. The second company uses a software solution that allows the tax implications of investments to be determined directly, without further calculations.

The third company provides an artificial intelligence-based solution for auditing and internal control. Information about the companies and their products has been gathered from company websites, news articles, magazine articles and academic papers.

However, their aim is different from ours and is ultimately to explain the general possibilities that can be explored with RegTech. In fact, their purpose is not to investigate incubators and aggregators in Switzerland (Johansson et al., 2019). Therefore, while the aforementioned paper may be interesting in understanding how to investigate use cases, it is not ideal for the methodology and purpose of our paper.

Continuing the literature review on RegTech case studies around the world, another review article that we find interesting, but with a different scope than our objective is the paper by von Solms (2021). This article writes about the possibility of integrating RegTech into the digital transformation strategy of the treasury function in a financial institution. The result shown by von Solms (2021) RegTech helps to manage regulatory requirements successfully. A recent article related to the application of RegTech is by the authors Grassi and Lanfranchi (2022). The article is interesting in understanding the context in which RegTech is developing because it gives a general view of the application in the financial market (Grassi & Lanfranchi, 2022). It is not focused on a single country but is very useful to understand a general view of the application of RegTech.

In order to examine the contemporary phenomenon of RegTech aggregators, since there are no previous studies, our research should be inspired by the field of FinTech. In the FinTech field, Pan and Tan (2011) and Walsham (1995) propose to adopt a qualitative case study research methodology.

In FinTech and RegTech, we have a very diverse and small number of case differences in the business in the field. Hence, a quantitative case study approach is impossible to apply.

RegTech is also linked to platform theory in some studies. According to Gawer (2009), the theory is related to the topics of business strategy and management; in this field, he used the words "industry platform" and defined it as "building blocks". These building blocks could be products, technologies or services that act as a business ecosystem that can develop complementary products, technologies or services (Gawer, 2009).

In the case of banks, platform theory is related to the management of the regulatory field on transversal business by the sector. The characteristics of platforms are relevant to the issues of collective interaction for firms and customers.

RegTech is also part of a block applied to the financial industry regarding services applied to the regulatory field and compliance.

In our research, following these suggestions, we choose to search for the accelerator, a consulting firm, and events and acquisition with the following keywords "RegTech incubator Switzerland" and "RegTech accelerator Switzerland".

We found an industry (Swisscom), an association (IRTA), and an incubator (F10), which are involved in reducing costs for a bank because the cost of compliance is a significant cost for banks.

According to some scholars, actors in the field of entrepreneurial finance and financial innovation, in addition to venture capitalists and business angels, certainly provide support in the form of access to networks or other value-added services (Alaassar et al., 2020; Block, 2018; Cumming et al., 2019). Previous literature on incubation emphasizes the prominent role of social interaction between financial market actors in promoting successful incubation (Bøllingtoft & Ulhøi, 2005; Díez-Vial & Montoro-Sánchez, 2016; Patton, 1990; Rice, 2002; Rubin et al., 2015; Scillitoe & Chakrabarti, 2010).

In terms of aggregators, the first association we heard from a startup in Zurich was the RegTech association called IRTA. The IRTA is a united community of individuals and organizations with a shared vision to innovate, advance and influence the future of RegTech.

We searched the web for companies dedicated to RegTech but found only F10, now called Tenity, which is precisely the incubator that Apiax[2], a Zurich RegTech startup involved in regulatory mapping for compliance use, pointed us to. Apiax is a Zurich RegTech startup that has partnerships with banks and Swisscom. The startup catalogues the regulations for the certification of compliance operations in financial institutions. It is interesting for our research because it is a successful startup in the RegTech field that fits into the Swiss RegTech ecosystem that we describe in the article.

F10 is the only incubator specialised in RegTech in Switzerland, according to the literature review and we have identified only one Swiss RegTech association, such as IRTA.

We perform exploratory case studies to identify the gaps in the existing RegTech solutions and explore key challenges in the field of RegTech in Switzerland. This is a recurrent methodology to deepen a new research topic by looking at concrete situations and shed empirical light on existing concepts and principles (Brereton et al., 2008).

Our topic, i.e., RegTech and its development ecosystem, is still evolving and, as we will see in the literature review, there are few academic case studies. It is therefore necessary to take an exploratory approach, building on existing theory and adapting it to an area that has not yet been fully explored.

It is not our objective to build an entirely new theory from the ground up but to describe a new phenomenon like the incubators and aggregators of RegTech in Switzerland.

RegTech is a novelty in the market, we do not adopt a full grounded theory approach (Stol et al., 2016), but we use techniques based on grounded theory, such as theoretical sampling, memoing, memo sorting and saturation, to find and order the data.

[2] https://www.apiax.com

As we mentioned at the beginning, the cases presented are those of a telecommunications company active in banking and RegTech (Swisscom), an association of RegTech companies (IRTA), an incubator (F10) where contacts between incumbents and startups in the RegTech sector take place.

3. RESEARCH METHODOLOGY

The research methodology is based on semi-structured interviews, which are the main source of data for this analysis. The data will be triangulated with other resources available within the organisation, company aggregators, incubators and associations. Documentation on the Swisscom, F10 and IRTA websites is used to gain a deeper understanding of the cases and to theorise the collaboration platforms and processes around RegTech mentioned in the interviews. It typically consists of slide decks, short guides, technical documents and web pages. This process allows an understanding of the relevance of the issues and whether the insights from practitioners can be generalized to other areas of the organization (Haakman et al., 2021).

The approach used to collect information from interviews and report data is based on the guidelines proposed by Halcomb and Davidson (2006). It is a reflective, iterative process:

1) audio recordings of the interview and/or concurrent notetaking; only precise notetaking if the recording is not permitted by the interviewee;

2) reflective journaling immediately post-interview;

3) listening to the MP3 and revising memos;

4) triangulation of results;

5) data analysis.

The starting point for finding interviewees was the lead of a preliminary literature review and, particularly for Switzerland, the information about the RegTech environment in Switzerland provided by Dominik Witz and the Swisscom map.

We interviewed three organizations: an aggregator, a telecommunication company, and an incubator.

For the interview design, we conducted the interviews, which took approximately one hour each, with this approach:

- we took notes during the interviews;
- we recorded the interviews if allowed, with the participants' permission. If not allowed by the persons, we take precise notes of the concepts expressed in the interviews.

As interviewers, we started by introducing ourselves and providing a brief description of the purpose of the research and the interview. We asked the interviewees to introduce themselves and describe their main activity within the organization between incubators and accelerators.

Right after each interview, the interviewers got together for a collaborative and deep memoing process also called reflective journaling (Halcomb et al., 2006). "Memoing in detail is the review and formalization of fieldnotes and expansion of initial impressions of the interaction with more considered comments and perceptions" (p. 9). To complete the comprehension in the RegTech field and check the relationship between the notes and the actual responses.

The interviews took around 45 minutes; 2 hours were needed to refine our notes (Birks et al., 2008).

RegTech exploration in Switzerland starts with the definition of the problem that needs to be solved by a RegTech solution.

This approach aims to acquire solutions for improving processes, reducing manual work in compliance, increasing incumbent performance, and creating new business opportunities through cooperation between stakeholders in the Swiss financial market (Ryu, 2018).

To adapt a startup's prototype in the field of RegTech to a financial institution's project-specific needs, the requirements of the prototype are often defined by the product owner together with the new stakeholders, in particular the incumbents who will use the adapted prototype, for example, Swiss banks (Haakman et al., 2021).

This documentation to triangle and for better explains the saturation is available to all employees in the organization and it aims to provide a clear understanding of the processes and resources available. It typically consists of slides, short guides, and web pages (Haakman et al., 2021).

We provide a sample of the questions we ask to incubators and aggregators of RegTech's startup in Switzerland. This was only our starting point for approaching IRTA, F10 and Swisscom (see Appendix for the detailed questions).

In our case, we interviewed three key RegTech people in Switzerland during the pandemic: Ralf Huber, in 2020 President of the association of RegTech startups IRTA CH and co-founder of the RegTech's startup Apiax. The second person is James Sanders who was the deputy head and startup coach for the F10 incubator and accelerator (focused on FinTech and RegTech) in Zurich. He also works as an investment analyst for F10 Investment AG. The third person we interviewed is Dominik Witz, in 2020 head of Banking Compliance & RegTech of the Swiss giant of telecommunication involved in RegTech — Swisscom.

4. RESEARCH RESULTS

To answer the question about aggregators and incubators in Switzerland, we first look at an incubator that is the only one in Switzerland that deals with RegTech. There are many incubation programmes in the FinTech sector. For RegTech, however, there are fewer incubation and acceleration programmes than in the FinTech field, because RegTech itself, like B2B in general, is something that can rarely be sold directly to the end customer. The work of convincing incumbents to buy the product to save costs is more difficult because RegTech does not directly provide new revenues, as FinTech payment services do, but saves costs and time for the incumbent and only indirectly for the customer (through automation of the onboarding and identification processes).

4.1. F10 incubator

RegTech has high initial set-up costs from an information technology (IT) and legal perspective, as well as the need to adapt the reading of data to new IT systems. Anti-money laundering costs are particularly relevant. Translating compliance into machine language is extremely complex and open to interpretation.

F10 is an important incubator in Switzerland. The search for innovation involves collaboration between banks and consultancies and banks. Companies such as PricewaterhouseCoopers (PwC) and Julius Baer were interested in the F10 project from the start. It was born to get startups and banks to collaborate in the world, and it started in 2016 with 10 startups with a kind of degree for startups. A hackathon was organized within F10.

F10 is a global innovation ecosystem with offices in Zurich, but also in Singapore, Madrid, and Barcelona.

F10 believes that the fastest route to innovation is through early collaboration between startups, incumbents and investors. Each stakeholder benefits from shared skills, experience and insights. The F10 incubator's motto is "innovation through collaboration".

Regular startup programmes and industry events connect stakeholders digitally or in person at global hubs.

Tenity, formerly known as F10, has qualified itself as "the home of FinTech" and "where valuable partnerships start". It is also the only specialised RegTech incubator in Switzerland. F10's incubation and acceleration programmes bring innovative startups together with established institutions in finance, banking, insurance, consulting, and digitalization to drive innovation in the financial world. The incubator works with Swisscom, with SIX, a payment and financial player in Switzerland, which we explain in more detail later, and with PostFinance, the financial arm of Swiss Post.

F10 has a different approach to startups, taking into account the development of prototypes. Here are some examples from F10 about their incubation programme. It is necessary to join the F10 incubation programme in order to arrive at the incubator in Zurich with a feasible idea; the result, after consulting with F10, is to reach a validated prototype.

The advantages provided by F10 are:

- connect with F10 investor network;
- gain exclusive access to test data from major banks and insurance companies;
- access the most relevant mentors from a pool of 100+ industry experts;
- benefit from free office space and EUR/CHF15,000/SGD20,000 in expenses, support with incorporation and recruiting;
- receive a pre-seed investment of up to EUR/CHF150,000 from F10 in exchange for equity;
- access senior executives of the F10 corporates;
- pilot products with selected F10 partners;
- meet investors on a 1:1 basis;
- get access to international experts;
- collaboration for innovation;
- an ecosystem of experts from banks, regulators, insurers, government, and academia.

F10's founding sponsor is SIX, a global financial infrastructure provider and operator of the Swiss and Spanish stock exchanges, as well as a leading provider of securities transactions, financial information processing and payment services in Switzerland.

SIX has launched a mobile payment solution called TWINT with millions of users, but has recently opened up to non-fungible tokens (NFTs) as a new potential market (Stimolo, 2021) F10 is joined by global banks, consultancies, insurers and technology companies.

We spoke to one of the managers of the F10 incubator, who explained to us in more detail how innovation through collaboration in the FinTech sector works at F10.

F10 divides the participants who want to join the acceleration program into three groups: the first group was those who had an idea to develop a hackathon. A hackathon is defined as an event where people engage in rapid and collaborative engineering over a relatively short period of time, such as 24 or 48 hours. Hackathons tend to have a specific focus, including the programming language used, the operating system, an application, and an application programming interface (API).

The second group is made up of companies that want to create a series of opportunities to find customers in startups and allow banks to innovate through startups from prototype to product. The third group is concerned with attracting foreign companies to Switzerland. They have grown in a different regulatory environment.

Another type of service provided by F10 is to encourage startups to adapt their products and services so that they can be sold in different sectors of the economy, from pharmaceuticals to finance, for example.

The incubator therefore uses a six-month scouting programme for those who approach it, which also allows for trend analysis, and the type of startup is thoroughly investigated. Specific questions are asked about the type of business they want to develop. The mentors provided by F10 are experts in financial services and how to prepare startups for entry and collaboration. Usually, the entrepreneur has an opportunistic view of the incubator: just try to be introduced through the channels of cooperation with insurance companies, banks and consulting firms. In reality, an incubator could be useful to acquire a new capacity to bring the prototype to the market and to adapt the business model. F10 also knows the importance of contacts and the training process that the incubator allows, what the partners are looking for and what the incubator is also looking for in the RegTech sector to give greater efficiency. F10 has a big problem with making regulatory processes in banks more efficient. The industry partners, e.g., banks, are willing to pay to meet the startups. F10 is also very interesting for FINMA, the Swiss market regulator, as a sandbox to meet startups. F10 helps the company to become successful and the banks to find solutions to their problems and the regulatory issues and opportunities are necessary steps to bring a service to market.

F10 also appreciates the training and cooperation between the incubator partners and the startups.

Another opportunity for cooperation between regulators and new trends that emerged after the pandemic is NFTs have become increasingly popular, both in the scientific field as well as in the industry. The NFT trend did not start until February 2021, and prior to that, there was very low interest, as can be seen from Google Trends[3]. With the help of a blockchain, digital objects can be kept scarce, although they can be copied infinitely (Franceschet et al., 2021).

NFTs are a fast-moving field with new developments and use cases constantly emerging.

[3] https://trends.google.com/trends/explore?date=today%205-y&q=NFT

However, technological progress and its rapid growth are accompanied by increased security risks, including those related to authenticity (Gonserkewitz et al., 2022).

4.2. Swisscom

Let's take a closer look at Swisscom's ecosystem: an aggregator of startups in the RegTech field.

Swisscom is a publicly owned company historically involved in managing telephony but after the financial crisis decided to focus on RegTech and FinTech offering financial services beginning from its customer base. It decided to approach the subject seeing the great potential of FinTech and RegTech.

We interviewed Dominik Witz, head of Banking Compliance & RegTech during the COVID-19 outbreak (Honegger, 2017).

For Swisscom, RegTech services are IT that enable banks and other financial service providers to comply with regulatory requirements more effectively and efficiently than with existing solutions.

Swisscom is a telecoms and IT player in the Swiss market; it's particularly involved in data analytics, artificial intelligence, self-learning software, encryption technologies, blockchain and biometric applications.

The start-ups mapped in the Swiss information technology provider are working and developing their perimeter together with the startup of the Swisscom map created by the telecommunications company. The solutions cover various topics: tax, reporting, cross-border and risk management.

Swisscom decided to look at RegTech and aggregate them to tap into market demand.

With data analytics, customer profiling — KYC — and customer preferences can be analysed to better meet their needs. The same data can also be used to meet compliance requirements. For example, financial institutions can prevent money laundering and fraud by using KYC data for comparison and profiling. RegTech, through the use of technology capabilities such as data analytics and artificial intelligence (AI), contributes to a great improvement in meeting customer needs and combating money laundering.

The strategy is already in place: working with startups, adding managed services and enabling a customer to get everything from a single source.

As a RegTech provider, also for the financial sector, Swisscom offers the possibility of recording customer interactions on all digital channels of a financial or telecommunications company.

The Swiss regulatory model, based on a liberal economy, has been a success in giving banks freedom. However, rule-based regulation, which is the norm abroad, facilitates the automation of compliance processes, which in turn facilitates cost savings.

The digitization of this information and these rules means considerable time savings for the affected banks in their day-to-day business. However, it will only be possible in the long term to automatically recognize new regulations and assign them to the appropriate processes and systems as the Swisscom map (see Figure 1) shows for these sectors:

- authentication;
- AML/KYC;
- crossborder and tax solutions;
- enterprise risk management/fraud detection;
- investment risk management/quantitative analytics;
- regulatory mapping.

Figure 1. Swisscom map

Source: Lugli (2020).

In the future, we notice from the interview, that the work of the bank staff will change, as well as compliance, risk management and reporting due to the emergence of implementing RegTech into financial institutions.

4.3. The International RegTech Association (IRTA)

Let us now look at an association of RegTech companies in Switzerland.

The IRTA is a united community of individuals and organizations, with a shared vision to innovate, advance, and influence the future of RegTech[4].

Through consultation and collaboration, the IRTA is playing a central role in shaping the future of the financial services industry. A not-for-profit association, IRTA brings together the people, tools, and strategies needed to thrive in today's rapidly evolving RegTech landscape.

IRTA's mission is to facilitate and accelerate the development of the RegTech industry by facilitating the integration, collaboration, and innovation of all stakeholders within the financial services sector and to create a taxonomy of RegTech. There are several branches, which in the internal organization of the association are called "chapters" for two different countries in Europe: a Swiss and a German "chapter".

In pursuit of its mission, IRTA:

- promotes "innovation in trust" throughout the RegTech ecosystem, globally;
- works with regulators in key financial markets;
- supports and sponsors RegTech-focused initiatives, research, and accelerators to enable innovation through the use of technology;
- developing and promoting RegTech standards used globally to assess, adopt and update RegTech innovations;
- promotes by-design thinking, digital inclusion and real-time risk resolution.

The scope is to develop RegTech. The Swiss "chapter" ("Official founding", 2017) was founded in November 2017 as a part of the IRTA CH.

IRTA is an open and innovative association in the RegTech ecosystem across industries in Switzerland and abroad, promotes the exchange of views and collaboration between RegTech providers, regulators, industry organizations, science, professional advisors, service providers and consumers, and is open to private persons and legal entities as well as organizations under public law and represents the interests of its members.

The initial contributors have been a significant number of Swiss RegTech industry professionals and companies such as Apiax, Finform[5], Indigita[6], and TaxLevel[7], together with corporate members such as Orbium[8] had joined the IRTA as founding members, strongly believing in the need for industry-wide, global collaboration to foster standardization in the regulatory space.

We spoke to co-founder of Apiax, who explained his plan, which had been conceived three years ago, to formalise what was happening in the world of RegTech. The goal was to develop a common taxonomy for RegTech and create an ecosystem around the association, but the goal was as big as the compliance standards for RegTech companies. It is mainly a question of resources and time. Companies and market players are interested, but large companies have not joined the association.

The CEO of Apiax, the founder of IRTA, points out that it takes a long time to develop a RegTech association, even though the topic is very active. We think that the business idea of IRTA is very interesting, but we think that it needs stronger institutional support to be fully developed.

5. DISCUSSION

In terms of business lessons in Switzerland in the area of digital regulation, we will look at what good practices have been followed. It has been reported that IRTA, after a strong start, is now on standby as the founder has to focus on expanding his business by working with the Swiss financial community as well as with independent consultants, with clients from all over the world. The need for IRTA for RegTech is linked to the time required to recognize the legality and verify the procedures for carrying out a financial transaction, which was a slow and difficult process before the introduction of RegTech solutions. Today, the market is struggling to find aggregation points, with the exception of those around F10, the Zurich incubator, which has enabled many startups to make the big leap to clients in the telecommunications sector and in the field of access to the big banks. Not all the founders of the start-ups involved in the F10 programme came from the financial sector. However, as we have seen in several Swiss RegTechs, many were pure computer scientists.

The experience of IRTA and F10 should remind the startup CEOs that the focalization on the product taken by the startups is important, the technological progress, the opening up of financial markets, trade liberalization, and other structural reforms; these changes make good governance, particularly transparency, important to provide investors with clear, comprehensive financial statements so corporate governance, we also add for the startups that want to aggregates themselves or propose a partnership to a bank, should be a daily concern and not just something to be examined retrospectively when things go wrong (Magli et al., 2014).

In the ecosystem by Swisscom for RegTech, we notice cooperation with a university. In particular, PXL Vision AG is a Swiss high-tech spin-off of the Swiss Federal Institute of Technology (ETH). The collaboration with the ETH Computer Vision Lab (CVL), and the Berner Fachhochschule Computer Perception and Virtual Reality Lab (CPVR) means that technology is constantly developing and improving with an academic partner.

Another startup that cooperates with Swisscom, Apiax, will be offering, also thanks to the cooperation with Futurae[9], was founded by ETH

[4] https://web.archive.org/web/20220927081936/https://regtechassociation.org/about/

[5] Finform is a Swiss startup in the Swisscom map that offers a complete, highly efficient and reliable onboarding solution and temporary support for compliance back-office activities (https://www.finform.ch).

[6] Indigita is a Swiss startup in the Swisscom map that offers services about cross-border compliance (https://www.indigita.ch).

[7] Taxlevel, now named Datalevel, is a Swiss startup in the Swisscom map that offers the service of cleaning and harmonization of the data in the database not only the fiscal compliance field (https://www.datalevel.ch/en).

[8] Orbium is a Swiss RegTech startup co-founder of the IRTA association now acquired by accenture involved in wealth management (https://www.brighttalk.com/webcast/17492/365065).

[9] https://www.futurae.com

Zurich security researchers and offers a strong suite of multi-factor authentication tools.

Futurae is also one of the earliest Swiss RegTech startups. Apiax's platform users an authentication solution that fulfills the highest security requirements while also providing unparalleled user-friendliness. Apiax, for example, was able to take advantage of F10 for the startup of its activity.

In addition, ETH, F10, and IRTA are located in the city centre of Zurich, so they are geographically close to each other.

In Switzerland, thanks to our contacts with FINMA and F10, we have been able to learn some good practices that could be used abroad to improve the attractiveness of the financial sector and financial innovation. This gives us privileged access to the regulator and allows us to start innovating in the field of digital regulation with less uncertainty.

The advantages of aggregators such as Swisscom and F10 also match the technological solution proposed by the startup with the needs of the market in the field of fintech and, in our case, RegTech. The selection process and the scalability of the solutions, thanks to industrial partners such as Swisscom, have enabled many RegTech startups to make a great leap forward in meeting market needs.

6. CONCLUSION

Thanks to this study, we have found that there is space for cooperation in Switzerland; it can facilitate dialogue and the development of regulatory frameworks for the speed at which technological innovation takes place while enforcing consumer protection (Witz, 2019). The incubator is useful for the development of a relationship between market players that keeps the entire financial system competitive.

The latter is also an issue for banks (traditional and non-traditional). Nevertheless, against the backdrop of the coronavirus (COVID-19) pandemic, as reported by the European Central Bank (ECB, 2020), there is an increasing search for the potential of modern technology to meet new customer expectations and regulatory requirements.

The FCA (in the UK) shows that "there is a feeling within the market, both domestically and internationally, that a high proportion of scale-up RegTech firms are at risk of failure as they are embarking on raising funds or have taken on cost burdens associated with growth. This is also problematic for the large segment of startups within the RegTech sector" (Hopwood Road et al., 2020, para. 22). As the FCA findings, in our interviews, we find that in Switzerland, start-ups have cultural reasons, the fear of failure, and the aggregation with a big IT company or a bank could help scale up and improve their AI techniques of data elaboration.

These positive effects are given by a huge quantity of data provided by a partner bank that can be also connected to the prototype speed of development.

The huge quantity of data could be useful to bank regulators to avoid bank failure which is one of the use cases of RegTech and RegTech applied by supervisory authorities such as FINMA and Swiss national bank in the Swiss context. In the USA context, two authors, Mulyadi and Anwar (2023), describe the effectiveness of automated machine learning and the local interpretable model-agnostic explanations method in comprehending complicated accounting datasets. Additionally, the findings underscore the relevance of certain performance ratios, such as the noninterest revenue to average assets, the noninterest expense to average assets, and interest-earning assets (including held-to-maturity securities). The authors of the paper understand that these ratios serve as key indicators of a financial institution's overall performance and stability and should be carefully considered by stakeholders in their decision-making process. The study in the USA offers valuable insights into the accounting features associated with recent bank failures, enabling stakeholders to make more informed decisions when evaluating the performance of financial institutions. Furthermore, the authors argue that their findings contribute to the ongoing debate on the appropriate accounting treatment for held-to-maturity securities, supporting the argument for adopting fair value accounting to enhance transparency and accuracy in financial reporting. From a managerial perspective, their study advocates for a keen focus on the identified top five accounting features when evaluating the performance of a financial institution. It emphasizes the need to have a thorough awareness of these essential qualities, which can serve as an early warning system for future bank problems. Moreover, it calls for a proactive approach to implementing robust internal control measures to manage these identified risks effectively.

In addition, there are signs that the COVID crisis has led to a "de-prioritisation of innovation" in some large organizations, as innovation is an investment and the duration of the pandemic is uncertain. Established financial institutions, e.g., banks, are prioritizing COVID-19-related projects at the expense of 'innovation' work and in particular proof of concepts in areas that do not address an immediate business-critical need, such as RegTech, which is mainly used to improve processes within financial institutions.

This uncertain and extraordinary period could be the occasion (Financial Stability Board [FSB], 2020) for the Financial Stability Board, for example, to improve monitoring and share information with greater precision and speed, useful for assessing and addressing the financial stability risks that COVID-19 has added to the financial world.

The Swiss model could be the way forward globally for the regulatory technology industry to develop and capture market needs more efficiently. Through incubators and aggregators, start-ups can focus on the needs of traditional operators. Traditional operators can seek technology and innovation in FinTech and RegTech because they need to remain competitive.

This paper is important for future research because contribute to explaining how the financial system in Switzerland or other countries could improve including the RegTech solution provided by the startups into consolidated banks through incubators, accelerators and aggregator of RegTech competencies.

Our paper also presents some limitations of the research because is based on exploratory case studies very different from each other: Swisscom, F10 and IRTA which are very different in size and

purpose. What they have in common is that they have been involved in bringing innovative regulatory ideas from start-ups to financial institutions. Given the extreme diversification of the players, it is impossible to have a common development, but it is clear what are the facilitating channels for startups to get in touch with banks to whom they can sell their technologically advanced regulatory solutions. For this reason, this study is not easy to replicate.

It is also difficult to make generalisations and create a robust theory if a phenomenon is still in its infancy, especially if the case study research is carried out during a pandemic, as COVID-19 is, but what came out is a pattern of RegTech startup development that can be generalised to similar economic contexts in the rest of the world.

In Switzerland, in fact, the RegTech ecosystem as reported in the interview is growing also during the pandemic.

The comparison with the literature in our exploration is intended to be supportive in understanding how RegTech was emerging and developing in the rest of the world.

While these may seem consolidated results because they are simply explorations we think could be considered strong from another point of view. We found that aggregators of startups in RegTech to transfer RegTech solutions into the banks field exist and we map what they do. Our evidence is a confirmation that the concept of open banking and platform theory, as we show during the dissertation, also applies to RegTech and its development.

On the other hand, it is already an important step to describe who is taking care of integrating RegTech technology solutions into startups.

The methodology could not be considered already consolidated, but we are facing, for RegTech, a still unexplored terrain of research, especially in Switzerland and in the field of business economics.

We think that this contribution to RegTech about Switzerland incubators and aggregators can be a booster for the study of RegTech and the improvement of compliance through digital technologies in the rest of the world.

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APPENDIX. QUESTIONNAIRE

1. What is your and the company's background? Why did you decide to enter RegTech?
2. How do you and your clients see the multiplication of regulation by the authorities? Is it a business opportunity or a fulfilment that could be too costly and too challenging for the market?
3. What type of customers is addressing your company with RegTech (small or large companies and in which sectors)?
4. Which technologies do you use to provide your RegTech solutions to customers? How much can you reduce the costs related to regulation and with which instruments?
5. Which RegTech applications do you think are the most interesting now and which will be in the future? How would you define the RegTech perimeter?
6. Who as a solution customer feels the need for RegTech and for what reasons? What do you think a customer expects from RegTech?
7. Given the RegTech application you have listed, what are the advantages and disadvantages of developing RegTech?
8. Are you cooperating as a RegTech company with FINMA, the Swiss National Bank or other regulatory authorities in the world?
9. Do you see a link between the rise of FinTech and RegTech or there is a greater transversality of RegTech between sectors?
10. How can your business model help large banks and insurance companies integrate RegTech solutions?
11. What is the customer's feedback on your solutions and which challenges help to solve for them and in the Swiss banking environment?
12. Regarding the collaboration with RegTech and FinTech startups: are you in contact with any incubators?
13. We have seen the Swisscom map of RegTech companies at https://rockondigital.ch/swiscom-regtech-map/. Are you also in contact with other RegTech companies you work with to develop solutions?
14. Switzerland has the peculiarity of multilingualism, in which languages is the developing RegTech and the interfacing with financial actors? Are there now unified terminologies to facilitate the application of RegTech in financial institutions?
15. In light of the complications of regulation in the years after the crisis, do you believe in machine-readable regulation? Do you see a development or is it premature to talk about it?
16. Let's move on to the role of the other actors that are not companies or authorities: do you have relations with universities or research centres?
17. What could you need from universities and what skills could be useful to you?
18. What future do you foresee for RegTech in Switzerland and Europe?

The methodology could not but be considered strong enough to consolidate a theory, but we are faced, for RegTech, with an as yet unexplored field of research, especially in the field of business economics. It is already a success to have succeeded in finding a methodology that we believe is useful in investigating a new phenomenon such as those of entities that help RegTech startups integrate their solutions into banks.