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Impact of the new digital competitors on Swiss banking business models

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ABSTRACT

This study examines the impact of new digital-only competitors on the Swiss banking business models and value chain. Despite various studies and articles available in the literature about the impact of new digital competitors on the banking industry, there is little research focusing on the Swiss market. The comprehensive research conducted in this study and the data collected through the survey provides a foundation to gauge the impact of the new digital competitors' pressure on business models and value chain in the Swiss banking industry. The design of the research instrument employed for collecting the primary data has been achieved through a survey shared with 75 managers and experts working in the Swiss banking industry including Swiss banks, FinTechs, BigTechs, and other financial services and consultancy firms. One sample z-test and descriptive statistics have been applied to the survey results to gain a deeper understanding. The outcome of the analysis suggests that the competitive pressure of BigTechs and FinTechs is expected to have a significant impact on the Swiss banking industry, and mainly BigTechs are anticipated to be significantly dominant with disruptive impact. The obtained results also strongly indicate that the cross-industry ecosystems and close partnerships with the new digital competitors are the potential key strategies to be pursued as the future Swiss banking business models. Besides, the disruptive new market entrants are anticipated to be highly likely to gain significant market share in certain market segments of the banking industry and also to create an "ecosystem" accordingly. The area of Personal and Corporate Banking is found out to be more vulnerable to digital disruption in comparison with the other banking areas.

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Introduction

Over the last years, the banking sector has been globally going through a fast-based transformation thanks to the technological advancements and competitive pressure of new digital-only market entrants, ranging from small FinTech companies to BigTech firms. Entrance of these new digital competitors has the potential of either enhanced products and services offering by the existing banks or disruption to the status quo of the current banking ecosystem. Such newly emerging digital competitors put increasingly pressure on the banks by fostering innovation in the traditionally slow-paced banking industry.

Following the developments in the global banking industry and being one of the major financial services hubs round the globe, Swiss banking industry has also started undergoing a radical transformation as a consequence of the highlighted digital revolution in financial services industry. The rapidly growing competitive pressure of the new digital market entrants on the incumbents has been observed and considered to be the key driver to the digital transformation in banking industry both globally and also locally in Switzerland.

In the context of the digital transformation and advancements in financial services industry, through the conducted research along with the literature review of this subject, this study aims to explore and assess the extent of impact of competitive pressure of new digital competitors per category (FinTechs, BigTechs and other digital-only bank competitors) on business models and business value chain in the Swiss banking industry in the foreseeable future. The analysis conducted in this study further focuses on various areas of banking industry services in Switzerland (Personal and Corporate Banking, Wealth Management, Asset Management and

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Investment Banking) for the purpose of drawing more meaningful and specific conclusions. The research has been conducted with the survey information from seventy-five experts and managers working in the Swiss banking industry. One sample z-test and descriptive statistics have been used to gain a deeper understanding of the survey results. Based on the information gathered and analysis of the survey results, the null hypothesis, H_0 : “The competitive pressure of new digital bank competitors does not have significant impact on business models and business value chain in the Swiss banking industry” has been rejected for the category “BigTechs” and “FinTechs” and the corresponding H_a hypothesis has been accepted.

According to the outcome of this study, the competitive pressure of BigTechs and FinTechs is expected to have a significant impact on the Swiss banking industry, and mainly BigTechs are anticipated to be significantly dominant with disruptive impact. As further detailed in the analysis and conclusions sections, the obtained results also strongly indicate the cross-industry ecosystems and close partnerships with the new digital competitors in the Swiss banking business models and value chain as the potential key strategies to be pursued for the future. Besides, the disruptive new market entrants are anticipated to be highly likely to gain significant market share in certain market segments of the banking industry and to create an “ecosystem” accordingly. The area of Personal and Corporate Banking is found out to be more vulnerable to digital disruption, as per the conducted research. Lastly, it is worth noting also that the penetration of both BigTechs and FinTechs into the banking industry introduces various opportunities as well as potential risks and challenges. Regulators and authorities are facing the challenge of defining and setting the appropriate rules and policies to frame these developments in order to avoid negative effects on the market. Furthermore, there is still the challenge of potential market entry barriers for these new digital transformation technology-enabled market players, considering the banking industry overall being comprehensively regulated by both the local and global authorities. That said, it is already being observed that some of the regulators, like in Switzerland, have been working on reducing such barriers through eligibility for obtaining a “fintech license” and less comprehensive regulation being applied to these new market entrants.

Swiss banking industry has recently been undergoing a radical transformation as a consequence of the recent globally prominent digital revolution being observed in financial services industry. The competitive pressure of the new digital market entrants in banking industry on the incumbents has been rapidly growing. In the context of the digital transformation and advancements in financial services industry, this study aims to explore and provide the answer the main research question: Has the competitive pressure from the new players and digital competitors reached a significant extent in the Swiss banking industry? The answer to this research question is crucial particularly for the purpose of understanding the potential next wave of transformations in business models and business value chain in the industry.

This study further analyzes the degree of impact of these new market players on different areas and divisions (Personal and Corporate Banking, Wealth Management, Asset Management and Investment Banking) of Swiss banks, and provides the list of technologies found to be “game changer” for the banking industry.

Literature Review

Theoretical Background

One of the most notable developments in recent years has been technological advancements and consequentially digital transformation reshaping a broad range of industries, including also the financial services industry. The banking industry has also been undergoing significant digital disruption as the non-bank originated innovators in this area have started offering globally both financial technology products and services. These new market entrants including FinTechs, BigTechs and other digital-only bank competitors have been widely believed to be posing a threat for traditional banks, specifically considering the growth of the FinTech industry driven by the increasing penetration of start-up’s and BigTechs entering into financial services industry by offering some of the banking services and products. These new digital competitors exploit the competitive advantages such as data, technological sophistication, innovation capability and agility. Such newly emerging competitors and market entrants mostly employ technology driven innovation, and they tend to be more agile in terms of developing and scaling businesses compared with the traditional banks.

The banking industry overall has been faced with increased and further tightened regulation since the major financial crisis back in 2008, which has resulted in tighter capital requirements, hence higher compliance costs, for the financial institutions. As the banks have been burdened with legacy infrastructure and regulation requirements at the same time, this has created a niche opportunity for the less regulated and technology enabled non-banking originated institutes due to the fact these new market entrants can offer financial services at lower cost and more efficiently than the incumbents. Furthermore, digital transformation in other industries has led to increased customer demands and expectations in terms of immediacy and customized products and services (Saal, Starnes, & Rehmann, 2017). These advancements through digital transformation overall have made customers potentially more trusting of and comfortable with technology-based solutions including also digital banking services.

New “FinTech” and “Digital-only Bank” entrants (i.e. Neobanks) offer services and solutions in various areas, such as payments, lending, savings and investments, and personal financial management. While offering the listed services and solutions, these innovative entrants have the opportunity and ability to optimize a single link of the banking business value chain in order to provide a solution connecting to the rest of the ecosystem. These new competitors in banking industry can deliver services through internet and mobile devices instead of having to use bank branches; hence, they can avoid the cost of data centers by utilizing opportunities with cloud computing (Saal, Starnes, & Rehmann, 2017). As stated in (Bank for International Settlements, 2019), BigTech entrants

have already started offering financial services as part of a much wider set of activities, where FinTech entrants operate primarily in financial services area. Financial activities of the BigTechs are expected and observed mainly in the areas of payments, credit, money market funds and insurance areas.

With the recent global digital revolution leading to fundamental changes in financial services industry, the number of new digital market entrants has been increasing with a fast pace. The competitive pressure of these new market entrants has also implied an increasing impact on the business models of the incumbents and the business value chain in the banking industry. The digital competitors have started transforming the financial intermediation by innovating new business models leveraging advanced technologies with radically transformative potential, such as big data and analytics, cloud computing, distributed ledger technology, digital currencies, robotics, artificial intelligence and machine learning.

Conceptual Background and Hypotheses Development

Corporate and Competitive Strategy in the Literature

In the last two decades, the business model concept has become widespread in literature and industry particularly triggered with the growing interest in the scientific research on business models (Chesbrough & Rosenbloom, 2002), (Osterwalder, Pigneur, & Tucci, Clarifying Business Models: Origins, Present, and Future of the Concept, 2005), (Chesbrough H. , 2009), (Doganova & Eyquem, 2009), (Osterwalder & Pigneur, Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers., 2010), (Baden-Fuller & Haeffliger, 2013), (Boons & Lüdeke-Freund, 2013).

Osterwalder and Pigneur (Osterwalder & Pigneur, An eBusiness Model Ontology for Modeling eBusiness, 2002) define the business model as the link between strategy and business processes. Later in 2010, (Osterwalder & Pigneur, Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers., 2010) have provided the following description for the business model as a concept: “a business model describes the rationale of how an organization creates, delivers and captures value”. In line with this definition, business model is described through nine building blocks by leveraging the tool “Business Model Canvas” (**Error! Reference source not found.**)

Figure 1: Business Model Canvas; *Source:* Osterwalder & Pigneur, 2010: 18-19

As a complementary approach to what is discussed above on business model concept, (Baden-Fuller & Haeffliger, 2013) have explained that business models are fundamentally linked also with technological innovation, and the connection between business model choice and use of technology is a two-way relationship and complex in nature.

Banking Industry in Switzerland

According to the Swiss National Bank (SNB) report (Swiss National Bank, 2018), there exist in total 248 banks in Switzerland as of 31.12.2019 with the key highlights and figures denoted below in **Table 1**.

Table 1: Key figures for Swiss Banking industry (Swiss National Bank, 2018. pg. 6)

Key Figures	2018	2017 ¹	Year-on-year change
Number of banks	248	253	-5
Balance sheet total (in CHF millions)	3,225,000	3,249,443	-0.8%
Operating result (in CHF millions)	12,781	11,323	12.9%
Result of the period ² (Profit/loss, in CHF millions)	11,514	9,767	17.9%
Fiduciary transactions (in CHF millions)	160,039	138,248	15.8%

¹ Figures may have been revised since their inclusion.

² Individual banks' profits and losses are offset against each other.

Securities holdings in bank custody accounts ³ (in CHF millions)	5,849,280	6,255,518	-6.5%
Number of staff (in full-time equivalents)	107,388	108,935	-1,547

The leading financial institutes in Switzerland are UBS Group, Credit Suisse Group AG, Raiffeisen Switzerland Cooperative and Zürcher Kantonalbank (MarketLine Industry Profile, 2019). According to **Table 2** (MarketLine Industry Profile, 2019), the market value of the banking industry in Switzerland amounts to a value of CHF 3,399 billion in 2018 with a growth rate of 4.7%. The compound annual growth rate of the industry between 2014 and 2018 was 2.8%. Considering this average growth rate for the future projection, the Swiss banking industry is expected to have a forecasted value of CHF 4,054.7 billion in 2023 and the compound annual growth rate for the period of 2018-2023 is predicted to be 3.6%.

Table 2: Swiss banking industry value 2014-2018 (MarketLine Industry Profile, 2019, pg. 9)

Switzerland banks industry value: \$ billion, 2014-18				
Year	\$ billion	CHF billion	€ billion	% Growth
2014	3,108.30	3,041.70	2,633.40	
2015	3,092.40	3,026.10	2,619.90	-0.50%
2016	3,165.20	3,097.40	2,681.60	2.40%
2017	3,317.70	3,246.60	2,810.80	4.80%
2018	3,473.40	3,399.00	2,942.70	4.70%
CAGR: 2014-18				2.80%

Digital Competitors in the Banking Industry

According to analysis by (Swiss National Bank, 2019), the Swiss banks target and move towards a strong level of digitalization strategy regarding this as an opportunity in terms of costs cutting and service quality improvements. Investing in digitalization in banking industry introduces also increased competition both with other banks and with new market participants, such as FinTechs, BigTechs and digital-only banks.

FinTech Companies

The term FinTech is used to describe “the start-up innovative companies operating in the financial sector and providing modern technology solutions to financial services companies” (Statista, 2016). The value of global venture capital investment in Fintech organizations has a drastic increase from 1.89 billion U.S. dollars in 2010 to 55.33 billion U.S. dollars in 2018 (Statista, 2019a). Even for the period of 2017 to 2018, the global venture capital investments show a notable increase (26.68 billion U.S. dollars in 2017). In Switzerland, similar rapid growth of venture capital investments in Swiss FinTech start-ups has also been observed. In 2018, the total venture capital investment was CHF 321 million over 67 investment rounds, where in 2017; CHF 151 million was invested in 48 investment rounds (Swisscom, 2019). In 2018, the highest amount of investment was received by the crypto area with about 73 percent of the total investments allocated to this area.

FinTech innovations leverage new technologies in order to lower financial intermediation costs in payment systems, lending (P2P, peer-to-peer lending) and financial advising (robo-advisors) as well as offer enhanced products and services to the consumers. As an example, P2P lending platforms enable the credit provision for individuals and small businesses with no need of any bank intermediation. These platforms can match borrowers and lenders and provide risk rankings of the business to borrowers based on algorithms using big data. There are a number of P2P lending platforms available in Switzerland, such as *cashsare.ch*, *creditgate24.ch*, *crowd4cash.ch* and *lend.ch*.

There is still the challenge of potential market entry barriers for these new digital transformation technology-enabled market players, considering the banking industry overall being comprehensively regulated by both the local and global authorities. It is already being observed that some of the governments and regulators, like in Switzerland, have been working on reducing such barriers through eligibility for obtaining a “fintech license” (FINMA, 2019) and less comprehensive regulation being applied to these new market entrants.

BigTech Companies

The term BigTech refers to the major technology companies, such as Google, Apple, Facebook and Amazon. These four most powerful technology companies in the US are also known as “GAFA”, and “GAFAM” is yet another common terminology including Microsoft.

The big technology companies, such as Amazon, Google, Alibaba and Facebook, have recently started entering into global financial services industry in terms of offerings for payments, money market funds, insurance and lending after having established a strong

³ At offices in Switzerland. Securities held by branches abroad are not included.

customer base and brand recognition. The financial services currently constitute only a small portion of their global business (11.3%) as seen in *Figure 1* from 2019 Annual Economic Report published by BIS (Bank for International Settlements, 2019).

Figure 1: BigTechs revenues by sector of activity and regional distribution of BigTechs' subsidiaries; *Source:* Bank for International Settlements, 2019: 56

Financial services and activities offered by the BigTechs can be categorized as “payments”, “money market funds (MMF)” and “credit provision”. Considering “GAFAM”, all of these five technology companies offer worldwide payments services, while only two of them, Google and Amazon, are presently in a position to offer credit services. The very first financial service offered by the BigTechs was the payments service. The main motivation of providing payments service was to overcome the lack of trust between buyers and sellers on e-commerce platforms by guaranteeing settlement at delivery (Bank for International Settlements, 2019). In Europe, Amazon, Google and Apple are expanding with their innovative payment services, however with a limited number of users compared to U.S. Examples include Google’s Google Wallet and Google Pay, Amazon’s Amazon Pay and Apple’s Apple Pay. With their own payment services, BigTechs reduce the transaction costs of payments, gain a deeper interaction between their platforms and customers, and more importantly gather data on customer spending patterns and financial conditions, which gives them a key competitive advantage (Bilotta & Romano, 2019).

The second category of financial services offered by BigTechs is credit provision, meaning that BigTechs started offering loans (credit lines, or small loans with short maturity up to one year) to SMEs (small and medium sized enterprises) and consumers. Examples include Amazon lending to SME marketplace sellers, Facebook’s partnership with Clear Bank on a product called Charged (financing for advertising), Google Store Financing and Apple’s credit card. Amazon launched its lending service to SMEs on its online shop in 2011. In the first four years, Amazon Lending provided 3 billion US dollars to 20’000 sellers, with 1 billion worth of sales in 2016 alone (Bilotta & Romano, 2019). In 2018, total loans amount to marketplace sellers through Amazon Lending was more than \$1 billion. Economic growth coupled with financial market structure has an impact on the FinTech credit activity in a certain country: That is, “*The higher a country’s per capita income and the less competitive its banking system, the larger total fintech credit activity*” (Bank for International Settlements, 2019). Furthermore, the credit component of BigTechs financial services offerings has been observed to expand more in those jurisdictions and markets with less competitive banking sectors and less stringent financial regulation (Frost, Gambacorta, Huang, Shin, & Zbinden, 2019). The third and last category “money market funds” (MMF) are offered at present by the big tech firms in Asia, such as Alibaba and Baidu in China, Grab in Southeast Asia, KT in Korea and Line, Rakuten in Japan. MMFs are managed either by companies affiliated with the BigTechs or by third parties. BigTechs offer MMFs to their clients as service for short-term investments aiming to maintain a balance in their financial accounts.

Figure 2: Market capitalization of GAFAM at the beginning of 2010 and at the end of 2019; *Source:* (Statista, 2019b)

Figure 2 shows the market capitalization of the U.S. tech giants (GAFAM) at the beginning of 2010 and at the end of 2019 (Statista, 2019b). Apple has a market growth of more than 500 percent over the past ten years and it is currently the most valuable company

in the world, with a market capitalization of \$1.22 trillion. Amazon is the growth champion with a growth rate of more than 1'300 percent since the beginning of 2010. In the recent years, market capitalization of tech giants from U.S. (GAFAM) and China (Alibaba, Tencent) has been growing to the levels far greater than the major banks worldwide (Biondo & Menegon, 2019).

BigTechs have become major players in the banking industry of Asia. As mentioned in (Bilotta & Romano, 2019), examples of competitive actors in Asian markets include Chinese Ant Financial and Japanese Rakuten. As of 2017, the Chinese Ant Financial has accounted for almost 54 percent of the mobile payment market. The tech giant owns MYbank, which is a fully licensed bank and Yu'e Bao, which is the largest money-market fund in the world. Similarly, in 2009, the Japanese giant Rakuten has launched a fully licensed bank in Japan, which is now the country's lead card issuer in terms of purchasing volume, and in 2017 Rakuten has also opened a subsidiary bank in Luxembourg.

In US and Europe, even though this phenomenon of BigTechs becoming notably active in the banking industry has not reached yet the extent of that observed in Asia, mainly owing to tighter regulations and a tougher competition landscape, the Tech giants, like Google, Amazon, Apple and Facebook, are entering the banking market at various speeds and to differing extent. With their presence in the market, these Tech giants do not only offer their own-branded banking services and products, such as mobile payment applications, but also tend to become the main providers of essential technology-driven services enabling the Tech giants increasingly to partner with the well-established organizations for new banking ventures.

Digital-Only (Challenger) Banks

A digital-only bank is positioned to offer banking services exclusively through digital platforms, such as the Internet, mobile devices and tablets. The fundamental strategy of a digital-only bank is to reduce costs by eliminating the brick-and-mortar channel. The low operating costs low and the elimination of burden of old legacy IT systems along with costly branch networks enable stronger and more competitive pricing for the digital-only banks (MarketLine Case Study, 2019).

Digital-only banks allow users to make transfers and account deposits remotely and provide them with the opportunity to more easily apply for loans and access personalized financial management services. These banks mostly appeal to the tech-savvy consumers, particularly the millennial and Gen Z populations. Few examples of publicly launched digital-only banks include Credit Suisse CSX, Starling Bank, Revolut, N26, Bank Cler Zak and Monzo Bank Ltd.

Credit Suisse recently launched a new digital offering, CSX, where clients are able to onboard online and maintain Swiss franc accounts, a debt-card without foreign exchange fees, and other self-service functions via an app.

Starling Bank is a digital, mobile-only licensed and regulated bank based in the UK and has been founded in 2014 (Pilcher, Jeffry, 2018). The digital platform of this bank offers services including a mobile-only bank account and a contactless debit MasterCard. Other features of the platform include real-time notifications of transactions, real-time spending intelligence (saving goals), same-day payment service that transform electronic money enabling depositors to transact in a paperless and branchless manner, robust security tools including TouchID and in-app chat with customer service representatives.

Revolut is another UK based financial technology company launched in 2014. The company offers banking services including a prepaid debit card (Mastercard or Visa) with fee-free transactions globally in 130 countries. The services include fee-free currency exchange, P2P payments, commission-free stock trading and cryptocurrency exchange. The mobile-app of Revolut supports real-time blocking/unblocking of the credit card with one-click. As of December 2019, Revolut is seen to have almost 250'00 clients in Switzerland.

N26 is a German based direct (digital) bank launched in 2013, and it is one of the most well valued fintech start-ups in the world reaching a total valuation of \$3.5 billion as of July 2019. The company offers its services throughout most of the Eurozone, UK, Switzerland and USA. N26 provides its clients with a free basic current account with debit MasterCard card and a Maestro card in certain markets. The account opening process is entirely digital and can be completed through a video chat with its identity verification partner IDnow. N26 supports Google Pay and Apple Pay. Current offering for the Swiss market designed for the Swiss customers, who regularly travel for business and leisure into the Eurozone and have a strong interest to avoid incurring high fees for a Euro account. N26 have launched its services in Switzerland in September 2019, but the current offering does not support CHF as the currency.

Zak has been launched by Bank Cler in February 2018 as the first smartphone bank in Switzerland. Zak provides financial services, such as free bank account, cash card and credit card and the mobile app including basic banking features like transfer, invoice scanning, standing orders, list of all account activity, total balance, card lock in case of loss, etc. Additional features cover saving and expense management. The users of this digital platform can define personalized saving goals, see who owes whom and how much at a glance and settle the debts within a click.

Monzo Bank Ltd. is a mobile app-based bank, which was founded in 2015 in UK. The company has a valuation of approximately \$2.7 billion. The company offers loans, current account, overdrafts, business account, joint accounts through online and mobile banking and prepaid and debit MasterCard. It is popular among young millennial customers (with age between 20 and 35), potentially as it is possible to track what money is spent on and split bills with friends.

The thesis in this research work attempts to reject the main null hypothesis H_0 . If the main null hypothesis below cannot be supported by the primary research, it will be rejected, and the main alternative hypothesis H_a will be accepted.

H₀ Statement

The competitive pressure of new digital bank competitors (FinTechs, BigTechs and other digital-only bank competitors) does not have a significant impact on business models and business value chain in the Swiss banking industry.

H_a Statement

The competitive pressure of new digital bank competitors (FinTechs, BigTechs and other digital-only bank competitors) does have a significant impact on business models and business value chain in the Swiss banking industry.

In order to support the granular and aggregate analysis on the basis of the primary research with the survey outcome, the null hypothesis (H_0 statement) of this study has been broken down into the below two sub-hypotheses:

H_0 (1): The competitive pressure of new digital competitors does not have / does have significant impact on business models in the Swiss banking industry.

- i. Dependent variable: business models in the Swiss banking industry
- ii. Independent variable: the competitive pressure of new digital bank competitors

H_0 (1) has been further analyzed for each category of digital competitors separately:

- i. FinTech companies
- ii. BigTech companies (GAFAM)
- iii. Other digital-only bank competitors

H_0 (2): The competitive pressure of new digital competitors does not have / does have significant impact on business value chain in the Swiss banking industry.

- i. Dependent variable: business value chain in Swiss banking industry
- ii. Independent variable: the competitive pressure of new digital-only competitors

H_0 (2) has been further analyzed for five potential scenarios related to business value chain in the Swiss banking industry.

Quantitative data has been collected through a survey distributed to seventy-five experts and managers working in the Swiss banking industry. The respondents have been asked:

- i. *about their opinion regarding the impact of competitive pressure of new digital market entrants (FinTechs, BigTechs and other digital-only competitors) on the overall strategy and business model changes for the Swiss banks within the next five years*
- ii. *to what extent they agree to five different potential scenarios related to the business value chain in Swiss banking industry within the next five years:*
 - Scenario 1 – No significant change.*
 - Scenario 2 – Banking will be reinvented.*
 - Scenario 3 - Cross-industry eco systems will appear.*
 - Scenario 4 - Partnerships with Fintech companies, Big Techs and other digital bank competitors will be dominant.*
 - Scenario 5 - Banks will become an ICT company with a banking license.*

Research and Methodology

Research Data and Design

The secondary research presented in the literature survey has provided a foundation of the main aspects, like Swiss banking industry, the new digital market entrants as well as technological trends, as the key drivers of the recent changes in banking industry. In order to further evaluate the impact of new digital market entrants on the business models and business value chain in the Swiss banking industry, the methodology of expert opinion has been applied for gathering primary research data. In order to collect the primary research data, a survey has been prepared and shared with overall 75 executives, managers and experts working in the Swiss banking industry. The survey questions have been designed to gather information on respondents' experience and their knowledge of working in the Swiss banking industry.

The quantitative data collected constitutes the type of the research designed to include descriptive statistics, such as the mean, standard deviation, and percentile ranks. One-sample z-test is employed to further analyze the hypothesis statements.

The design of the research instrument used for collecting the primary data is a survey that has been shared with 75 managers and experts working in the Swiss banking industry including Swiss banks, FinTechs, BigTechs and other financial services and consultancy firms. The survey has been created by using an online management software system called Qualtrics. The tool Qualtrics specializes in market research that helps to gather respondents' profiles and opinion over a specific subject. The survey has been designed to gather information on the business model changes being implemented or planned to be implemented by Swiss banks and the impact of digital competitors on these decisions. The tool also requests feedback regarding the respondent's view on the future business value chain in Swiss banking industry considering the impact of new digital market entrants. The survey questions refer to a 5-year timeframe for the requested inputs and the respondents are also asked to provide additional free-text feedback for a longer term (10-year period). The questionnaire consists of 29 questions with a mix of the following:

- i. Multiple choice questions
- ii. Likert scale questions
- iii. Free text questions

The survey is initiated with questions on demographics and job-related information of the respondents. The second group of questions ask the respondents about the business model changes planned by their organizations. The third group of questions ask the respondents about their view on the level of impact of the new digital competitors on Swiss banks' business models and the consequent level of risk for Swiss banks based on respondents' experience and judgement. The final group of survey questions ask the respondents about their view on the future business value chain of Swiss banking industry considering the impact of the competitive pressure.

With an option for answer as "do not know" the questionnaire has been structured in a way allowing the respondents to skip questions not pertinent to them and to avoid forced responses for the respondents lacking the necessary knowledge.

Sample Selection

The sampling unit has been determined as executives, managers and experts working in the Swiss banking industry. The sample has been chosen diversifying the following aspects in order to avoid biased responses to the results:

- i. demographics, such as gender (both female and male) and age (different age groups)
- ii. job-related, such as job role and work experience
- iii. organization-related, such as organization type, organization size and business area

The survey participants have been provided with an anonymous link of the survey from the Qualtrics survey platform.

Empirical Data and Analysis

Impact on Business Models in the Swiss Banking Industry

The quantitative data about the overall impact of competitive pressure of FinTechs, BigTechs and other digital-only bank competitors on the decision of overall strategy and business model changes of Swiss banks has been collected on a 5-point Likert scale. The weights from 1 to 5 are used to calculate the mean, standard deviation and variance (1 = "No Impact", 2 = "Low Impact", 3 = "Moderate Impact", 4 = "High Impact", 5 = "Very High Impact").

The null hypothesis ($\mu \leq \mu_0$) is defined as "The competitive pressure of new digital competitors does not have significant impact on the business models in the Swiss banking industry.", considering the definition of "significant impact" as beyond "moderate" level as per the scale followed in research survey questions. With this definition, the null hypothesis can also be stated as "The competitive pressure of new digital competitors does have at most moderate impact on the business models in the Swiss banking industry."

Test statistics z is calculated with the following formula:

$z = (x - \mu_0) / [\sigma / \sqrt{n}]$ where x is the observed sample mean, μ_0 is the hypothesized population mean (from the null hypothesis), n is the sample size and σ is the standard deviation of the population. The critical value at 0.05 significance level: 1.6449.

Table 3: Analysis of z-test results to assess the impact on business models in the Swiss Banking industry

Category	True population mean	Hypothesized mean value	Standard deviation	Sample size	z-value
FinTechs	3.48	3	0.75	75	5.54
BigTechs	3.77	3	0.78	75	8.55
Other	3.07	3	1.01	75	0.6

Considering that sample size (n) is 75, the z-values are calculated per each category as shown in Table 3. The null hypothesis that the mean of the sample is at most “3” (Moderate Impact) can be rejected for “FinTechs” and “BigTechs”. However, the null hypothesis cannot be rejected for “other digital-only bank competitors” as z-value is smaller than the critical value 1.6449.

In order to verify whether the respondents are biased depending on the organization category (bank or non-bank organizations) they are working in, the mean of the responses are analyzed for each category, in terms of further grouping by the organization type of the respondents. All respondents agree that BigTechs will have significant impact on the Swiss banking business models within the next 5 years with the exception of one outlier.

Similarly, z-test is used to analyze to address the following questions:

- i. To what extent will the new digital participants become dominant in the Swiss market within the next 5 years?
- ii. What is the level of risk that the new digital participants will be disrupting business models of the Swiss banks within the next 5 years.

The results strongly indicate the conclusion that BigTechs will become significantly dominant in the Swiss banking industry and pose a significant risk of disruption of Swiss banking business models.

It is further analyzed which of the divisions (segments) and business areas are vulnerable to digital disruption. The results show that Personal & Corporate Banking as well as Asset Management and Wealth Management are significantly vulnerable to disruption.

Table 4: Analysis of z-test results to assess to what extent various banking divisions (segments) and business areas are vulnerable to digital disruption

Category	True population mean	Hypothesized mean value	Standard deviation	Sample size	z-value
Personal & Corporate Banking	4.23	3	0.72	75	14.75
Asset Management	3.49	3	1.08	74	3.9
Wealth Management	3.34	3	1.06	74	2.76
Investment Banking	2.95	3	1.04	74	-0.41

Impact on Business Value Chain in the Swiss Banking Industry

The quantitative data about the future potential scenarios for the business value chain in Swiss banking industry has been collected. The respondents have been asked to consider the next 5 years period and provide their opinion about the below scenarios based on a 5-point Likert scale (1 = “Strongly Disagree”, 2 = “Disagree”, 3 = “Neither Agree or Disagree”, 4 = “Agree”, 5 = “Strongly Agree”):

The weights from 1 to 5 are used to calculate the mean, standard deviation and variance. Similar to the previous section, and using the upper tail test of population mean, z-test is used to reject the null hypothesis. Test statistics z is calculated for each specific scenario with the following formula

- $z = (x - \mu_0) / [\sigma / \sqrt{n}]$ where x is the observed sample mean, μ_0 is the hypothesized population mean (from the null hypothesis), n is the sample size and σ is the standard deviation of the population. The critical value at 0.05 significance level: 1.6449.

Table 5: Analysis of z-test results to assess the impact on Swiss banking business value chain

Category	True population mean	Hypothesized mean value	Standard deviation	Sample size	z-value
Scenario 1 – No significant change.	2.84	3	1.1	73	-1.24
Scenario 2 – Banking will be reinvented.	2.78	3	1.01	73	-1.86
Scenario 3 – Cross-industry eco systems will appear.	3.73	3	0.86	73	7.25
Scenario 4 – Partnerships with these digital competitors will be dominant.	3.72	3	0.77	72	7.93
Scenario 5 – Banks will become an ICT company with a banking license.	2.73	3	1.01	73	-2.28

The z-values are calculated as shown in Table 5. Both 7.25 and 7.93 are larger than the critical value 1.6449, therefore, the null hypothesis that the mean of the sample is at most 3 (“Strongly Disagree”, “Disagree” or “Neither Agree nor Disagree”) can be rejected for “Scenario 3” and “Scenario 4”. This means that Scenario 3 and Scenario 4 are statistically significant. However, the null

hypothesis cannot be rejected for “Scenario 1”, “Scenario 2” and “Scenario 5” as the corresponding z-values are smaller than the critical value 1.6449.

Technological Trends in Swiss Banking Industry

Several key trends and developments in technology play a significant role in potential digital disruption in the banking industry and also reshaping the banking business models. The following technological trends have been considered in this research:

- i. *Process Digitalization and Automation*
- ii. *Data Analytics*
- iii. *Mobile Banking and Apps*
- iv. *Cloud Computing*
- v. *Open Banking*
- vi. *Artificial Intelligence (AI) / Machine Learning*
- vii. *Big Data*
- viii. *Robotics*
- ix. *Blockchain and Distributed Ledger Technology*
- x. *Biometrics*
- xi. *Internet of Things*
- xii. *Virtual and Augmented Reality*
- xiii. *Quantum Computing*

According to the results of the survey process digitization and automation, data analytics and mobile banking and apps, cloud computing and artificial intelligence (AI) are the top technological trends for Swiss banking industry.

Results and Discussions

The following key results can be listed based on the assessments by the experts and managers in the Swiss banking industry through the conducted survey combined with the secondary research:

- i. *Significant impact of competitive pressure of BigTechs and FinTechs on the business models of Swiss banks is expected. Null hypothesis cannot be rejected for other digital-only competitors, but only for BigTechs and FinTechs.*
- ii. *BigTechs are expected to become the most dominant players among different categories of new digital market entrants and pose a significant risk of disruption of traditional Swiss banking business models, where FinTechs are considered rather as an opportunity than posing risk of disruption.*
- iii. *Among the four main banking segments (Personal & Corporate Banking, Wealth Management, Investment Banking and Asset Management), Personal and Corporate Banking will be the most impacted division by the digital disruption. Overall, there will be moderate-to-high impact on all banking segments.*
- iv. *New digital market entrants are expected to gain significant market share in some market segments of banking industry and create an “ecosystem” accordingly.*
- v. *Co-operations and partnerships with FinTech start-ups and technology providers as well as cross-industry ecosystems are expected to be an essential part of the Swiss banking business value chain.*

The data collected for the primary research indicates that Swiss banks are investing mainly in digitalization through integrating digital channels, improving digital solutions and the overall experience, while retaining the existing business models. Incremental changes to fulfill the new regulatory, market and internal requirements as well as automation and process improvements are main focus, however they started looking into re-imagining their business models through innovation, which is still to a moderate extent. On the business model innovation, the main immediate approach is in-house developed own innovation initiatives and the next common approach is partnerships with FinTechs. Venture capital and acquisition of FinTechs are rather preferred approaches by big banks.

In order to remain competitive, Swiss banks need to identify, develop and launch new digital business models and clearly define their strategic choices (own innovative solutions, acquisitions, partnerships, venture capital investments) for business model innovation. It is crucial to focus on inventing in new products and new markets, while digitizing their businesses, in order to produce real growth other than revenue replacement of the current non-digital channels. For “digital reinvention”, self-cannibalization and innovation are a necessity. In order to achieve this goal, they need to adjust their operation model to keep pace with breakthrough innovation driven from new businesses and to keep supporting daily activities. Operating models must support ecosystem partnerships.

Considering that “brand”, “customer base”, “data” and “regulatory limitations” are main competitive advantages of Swiss banks, they further need to focus on understanding the client needs and motivation through a customer-centric approach for strategy decisions. In order to overcome the disadvantage of FinTechs and BigTechs being strong in “agility”, “technological sophistication and expertise”, “ability and capacity to innovate” and “scalable business model and data”, another important aspect for Swiss banks is leveraging the technological advancements, such as big data and data analytics to analyze customer data, artificial intelligence and machine learning, in order to better leverage the massive volume of data they are holding. As time-to-market is crucial, Swiss banks

need to improve their ability to quickly develop and scale businesses (“Agile”). This can be achieved by bringing together the IT Operations and Product Development teams using DevOps in order to enable faster and better collaboration between IT and business departments.

This study focusses mainly on the competitive pressure of the new digital bank competitors on the business models and business value chain in the Swiss banking industry, therefore further research is required to be done to have a comprehensive map of banking in the future and other factors impacting the Swiss banking industry. Other important factors, which will play an important role in the strategy decisions and future of Swiss banking industry, include COVID-19 crisis, regulatory developments, the next generation clients and social factors.

Conclusions

The rivalry in the Swiss banking industry is taking a new shape with the recent technological advancements and digitalization also combined with the consequences of the 2008 financial crisis, such as increased regulatory compliance costs. Financial technology companies (FinTechs), technology giants (BigTechs) as well as new digital-only bank competitors are reshaping the business value chain of the industry. Disruptive innovations have been causing disintegration in the banking industry through a break-up of the value chain, which creates opportunities for the specialist companies.

Until recently, the biggest threat to traditional banking has been considered to originate from financial technology companies. However, the competition in the banking industry is not driven only by the FinTech start-ups but also by some of the most prominent and powerful businesses in other industries (Diamond, et al., 2019). Whether the competitive pressure of FinTechs will be a threat or opportunity depends entirely on the banks’ approach, strategy and desire for cooperation with these newly emerging competitors (Temelkov, 2018). Banks have different options to keep pace with the competition. According to the results of this study, the most commonly anticipated strategy is that Swiss banks try to keep their market share by adapting their business models through in-house developed own digitalization and innovation initiatives. The other potential strategy options are fostering business model innovation through FinTech partnerships, venture capital and acquisition of start-ups and FinTechs. Switzerland is well-positioned for FinTech companies considering its proximity to research and innovation, educational institutions and an entrepreneurial environment with business-friendly framework conditions (Swiss Bankers Association, 2019). The country is one of the leading global financial and technology centers for FinTech in the area of Distributed Ledger Technology with 356 FinTech companies at the end of 2018, where 136 of them were established in 2018. Since 1st of Jan 2019, the FinTech companies in Switzerland are eligible to obtain a “fintech license” and a significantly less comprehensive regulation is applied to these companies. This reduces the barriers to entry and fosters innovation.

Recently, big technology companies, also called GAFAM (Google, Amazon, Facebook, Apple and Microsoft), have started to cause a significant impact globally on the banking industry in areas, such as payments, lending, savings and investment products. BigTechs’ entrance in the banking industry is driven by factors on both the demand and the supply side. On the demand side, consumer preferences play a significant role, particularly considering the Millennials, as they are more likely to use the offerings of BigTechs given that they are more comfortable with the new technologies. On the supply side, competitive advantages of BigTechs, such as data, technological sophistication, access to funding (market capitalization), lack of regulation and competition, are the main factors to be considered. BigTechs are entering into financial services as complementary to their core businesses, using the associated economies of scope and scale. For instance, Amazon is launching banking products and services, and building a “bank for Amazon”, focused on payments, cash deposits and lending, in order to increase the number of customers in its non-banking ecosystem. Although none of these BigTechs has currently been able to offer a complete financial ecosystem, considering their competitive advantages as well as disruptive impact of the technological advancements, this may quickly change and BigTechs can likely further expand their operations.

One of the main areas, where BigTechs are providing banking services, is the lending business. In the aftermath of the 2008 financial crisis, traditional banks have avoided small business lending due to the fact that such small businesses are categorized as riskier borrowers (World Economic Forum, 2015) and this new situation has allowed marketplace lenders, such as Amazon and other alternative finance companies, to enter the SME (small and mid-sized enterprises) credit industry. For instance, Amazon Lending offers credit services to merchants selling on its platform and using their sales data, inventory levels, and other data on the marketplace to measure the credit risk and creditworthiness. In case a merchant is defaulting, they may choose to withhold sales on its platform. The default rate is considerably lower compared to most banks. In 2018, the total amount of loans to marketplace sellers through Amazon Lending was more than \$1 billion. Lending business is an important pillar for Switzerland’s economic development. In 2018, the total domestic credit volume was CHF 1’714.7 billion, where CHF 164.6 billion originated from secured and unsecured customer loans and CHF 1’010.2 billion was attributable to mortgage loans (Swiss Bankers Association, 2019). The volume of corporate loans was CHF 530.8 billion, where 83.2% is attributable to small and medium-sized enterprises (SMEs). This makes Switzerland very attractive for tech giants with their offering of lending services.

The entry of these new market players can introduce opportunities for the banking industry, such as enhanced competition and financial inclusion, putting pressure on traditional banks to innovate and overall increased efficiency of financial services. Many regulators are encouraging active disruption to foster necessary technological innovation. Open banking mandate driven by regulators

in EU is an example of this trend (Diamond, et al., 2019). On the other side, these new market entrants may bring new risks to the banking industry (Biondo & Menegon, 2019). For instance, new entrants may risk the profitability of incumbent banks through increased competition and the existing banks may lose part of their market share or profit margin. The new technologies create further opportunities for bank customers, which may affect customer loyalty and increase the volatility of banks deposits, leading to higher liquidity risk for banks. The banks need to keep pace with these developments and adapt their business models to remain competitive. The new entrants may also bring compliance risk related to data security, privacy, money laundering and customer protection, which can be potentially mitigated by RegTech.

The research has been combined with the survey information from seventy-five experts and managers working in the Swiss banking industry. One sample z-test and descriptive statistics have been used to gain a deeper understanding of the results. Based on the information gathered and analysis of the survey results, the null hypothesis, Ho: "The competitive pressure of new digital bank competitors does not have significant impact on business models and business value chain in the Swiss banking industry" has been rejected for BigTechs and FinTechs, and the Ha hypothesis has been accepted.

To summarize, the outcome and results of this study and survey demonstrate that the competitive pressure of BigTechs and FinTechs is expected to have a significant impact on the Swiss banking industry. Considering the existing research papers, this trend is completely in line with the global point of view. The results also indicate that BigTechs will be significantly dominant and will have significantly disruptive impact. The obtained results strongly indicate the cross-industry ecosystems and partnerships with the new digital competitors in the Swiss banking business value chain as the potential key strategies to be pursued for the future. Disruptive market entrants will most likely gain significant market share in some market segments of banking industry and create an "ecosystem" accordingly. According to the results, personal and corporate banking is seen to be more vulnerable to digital disruption.

Finally, the COVID-19 crisis also creates an opportunity to accelerate digital transformation of the Swiss banking industry besides the challenges associated with this recent pandemic and its impacts. There is certainly a breakthrough for digital channels as the clients are looking for fewer physical interactions and cashless services, which supports the thesis of this research even stronger.

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