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Impact of DigTech, FinTech, and RegTech on the Banking Industry

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ABSTRACT

This research work aims to examine the influence of financial technology (FinTech) companies over the traditional banking sector. FinTech is a digital financial solution offered to small businesses and individuals to meet their banking needs. FinTech companies are expected to be able to offer the same banking products as existing banks, but it is believed that FinTech company growth will accelerate faster in countries where digital technology is available. There were mentions that FinTech companies have had a financial impact on traditional banks' results. This research paper aims to determine whether there is enough empirical evidence to support these hypotheses. A study model was designed that identified the dependent and independent variables for each hypothesis. The research carried out to confirm this theory is drawn from the previous literature by academic authors. The research shows that FinTech startups will grow fastest in an environment where digital technology is available and mobile penetration is widespread. The results show that the profitability of traditional banks changes when FinTech companies are present in a country and when banks incorporate their financial technology into their business model. The results of the statistical analysis show that the influence of FinTech on the profitability of the banking sector is not statistically significant.

KEYWORDS

FinTech, RegTech, Digital, Technology, Startups, Financial Institutions

INTRODUCTION

This article analyzes the state of the new era of financial technology "FinTech" in banking from an international perspective. The 2008 global financial crisis was a turning point that separated the early stages of financial technology development; and the current model of regulatory technology "RegTech" (Arner et al., 2017). The current global situation represents a new world of emerging financial technology institutions, as evidenced by the growing number of startups. These new startups are mostly IT and e-commerce companies that have entered the financial services market. Regulators face new challenges related to the development of the FinTech sector. We see a similar analogy with the rise of technology regulation firms.

Literature Review

FinTech is an abbreviation of the word Financial Technology. FinTech provides a digital system and process for traditional banking needs. Before the advent of FinTech, entrepreneurs and individuals turned to the bank for lines of credit for small businesses, finance leases, mortgages, loans, credit cards, and general banking. The emergence of FinTech companies has transformed people's lives. People don't have to go to the bank to get a mortgage or a loan. Applications for these products can be made online through FinTech companies (Robinson & Verhage, 2018). FinTech companies provide a platform that connects corporate or personal borrowers with financial institutions for commercial transactions (Varga, 2017). David Varga argues that FinTech is the new era of financial services (Varga, 2017). FinTech is a new buzzword to describe the disruptive challenges financial sectors face as new startups introduce new innovative solutions for faster and cheaper financial services. Arner, Berberis, and Buckley have identified three phases of FinTech (Arner et al., 2017). FinTech's first phase began with the laying of the first transatlantic telegraph cable to launch the global telex network. The second phase came with the introduction of ATMs and electronic banks. The third phase of FinTech followed the global financial crisis with the emergence of new IT start-ups focused on providing financial services. Various business models have emerged under the FinTech banner. Business models include crowd funding, payments, wealth management, lending, capital markets, and insurance services. Each business model is unique but relies on a digital platform to reduce operational costs (Lee & Shin, 2017).

RegTech is an acronym for Regulatory Technology. RegTech quickly gained prominence in 2015 due to the emergence and growth of FinTech companies (Comply Advantage, 2017). The growth of FinTech companies has caught the attention of the banking industry, regulators, and consumers. Regulatory technology companies aim to provide secure, convenient, and reliable regulatory solutions by leveraging the latest digital technologies. Comply Advantage illustrates the market map for regulatory technology companies as shown in Figure 1 (Comply Advantage, 2017).

Figure 1. *RegTech Market Map*

Impact of FinTech Companies on the Banking Industry

The growth in FinTech companies since the global financial crisis is present in all areas of the international financial system. Estimates put forth by Finances Online indicate that there are over 12,000 FinTech companies globally (refer to Figure 2) (FinancesOnline, 2019).

Figure 2. *FinTech Startups by Region*

FinTech companies are now categorized into five key areas covering all finance and financial services. The five key sectors include finance and investment services, security and monetization of data, payments, risk management, and customer interfaces (Arner, et al., 2017). Varga identifies that there are three layers of FinTech (Varga, 2017). The three layers of FinTech comprise those companies that are (i) human-centered design, (ii) offering pioneering services, and (iii) ecosystem development. Each layer has its key value drivers that determine the growth and scalability of the FinTech companies as shown in Figure 2 opposite.

Key value drivers behind fintechs

Layer	Key value drivers
1st Layer (Top layer) — Human-centered design	— State-of-the-art customer and data analytics — Superior user experience — Experimenting, design-thinking approach
2nd Layer (Middle layer) — Pioneering services	— Rapidly scalable services — Open innovation approach — Disruptive business models
3rd Layer (Bottom layer) — Ecosystem developments	— Cheap mobile phones and internet access — Cheap IT hardware and software — Global telecommunication infrastructure

Figure 1. *Key Value Drivers for FinTech*

China has the greatest impact on the growth of FinTech companies. Authors Arner, Berberis, and Buckley argue that while China's banking structure is inefficient, technology penetration is high. As a result, Alibaba, Baidu, and Tencent have gained popularity in China. These three companies are technology companies that have impacted the delivery of financial services (Arner et al., 2017). This can be seen in the Chinese group Alibaba Group Holding Ltd. The Chinese group Alibaba Group Holding Ltd. circumvents the traditional banking system by developing large payment companies (Marsh, 2018). The traditional bank had complete control over cash management and wholesale payments. They begin to take market share through FinTech companies like Transfer Wise Ltd. and Revolut Ltd. to lose. (Mary, 2018). Ernst & Young's 2019 Global FinTech Adoption Index report found that traditional banks are beginning to acquire FinTech companies diversified in the provision of digital financial products (Ernst & Young, 2019). Core business, the question arises as to the competitive advantage of FinTech companies. According to Ernst & According to Young's 2019 Global FinTech Adoption Index, 64% of consumers worldwide have adopted one or more FinTech platforms. That number is up from 33% in 2017. 25% of SMEs worldwide have used some form of FinTech financial services such as banking or financial management (Ernst & Young, 2019). The country with the lowest FinTech adoption is Japan at 34%, while China has the highest consumer adoption of FinTech at 87% (Ernst & Young, 2019).

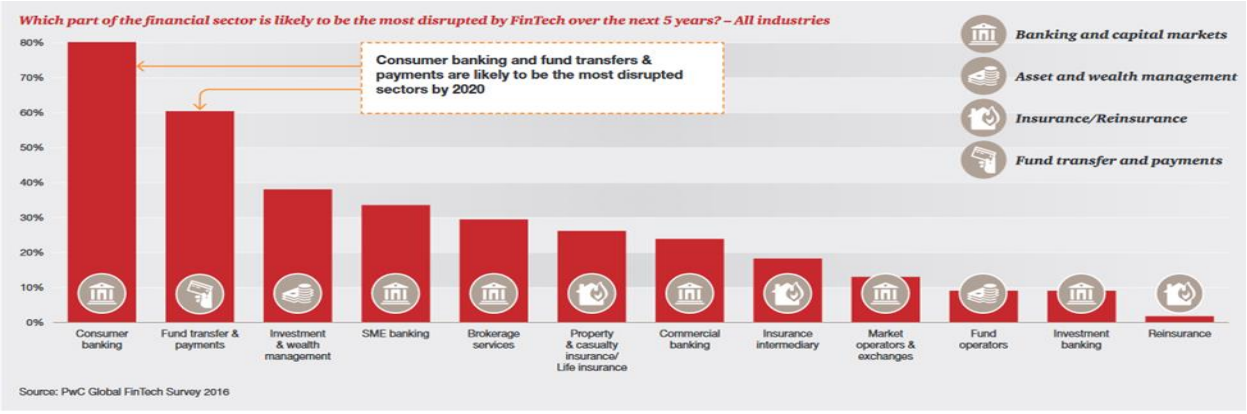

Figure 2. *Major Areas of Disruption within the Finance Sector*

In the 2016 PwC Global FinTech report, Blurred Lines: How FinTech is shaping financial Services, respondents indicated that the two industries set to experience disruption are consumer banking and the funds and payments industry (PwC, 2016), as shown in Figure 4 PwC argues that the emergence of online platforms has created a digital environment in which transactions can take place between financial institutions, companies, and individuals. FinTech companies have developed their lending business models that use artificial intelligence and data analytics to manage risk. Their lending business model reduces operating costs and streamlines customer-centric lending processes. Similarly, in recent years there has been an increase in the number of FinTech companies solely focused on the payments industry. New companies offer faster payment solutions through their digital apps, which can be easily managed via smartphones and company websites (PwC, 2016).

Key Differences between FinTech Companies and the Traditional Bank

Main Differences Between FinTech Companies and Traditional Banks This section of the report focuses on the three main differences between FinTech companies and traditional banks. Many differences would take a long time to list in this research paper. FinTech companies can use a range of lenders to offer the borrowers the best lending solution for their needs, while traditional banks can only offer their financial products, including acquired financial institutions. It is known that FinTech companies develop their financial products based on a gap in the market. The new financial products are mainly aimed at a narrower market. Banks will focus on financial products aimed at a broader audience (Martin, 2018). FinTech companies focus on making customer service more enjoyable and friendly than traditional banks that focus on risk management (Martin, 2018).

Industry size

Market Screener predicts that the global financial services market will reach nearly $26.5 trillion by 2022 (Market Screener, 2019), including traditional banks and FinTech companies. This projected valuation means the sector is growing at almost 6% annually. Growth will be driven by growing demand for consumer investment, credit, and insurance products. Risks that complicate pricing include government regulations and safety considerations. PwC predicts that the vast majority of global banks and financial institutions (82%) will establish collaborations with existing FinTech companies over the next five years (PwC, 2017). The same report indicates that banks participating in this partnership agreement expect a 20% return on investment. According to a survey by PwC, 88% of all respondents from banks and financial institutions fear that FinTech companies will lose revenue. Respondents reported revenue losses for FinTech companies, mainly in personal loans (64%) and personal finance (50%). (PwC, 2017). Industry Arc predicts that FinTech companies will benefit between 25% and 30 GR between 2015 and 2025. One of the main drivers of the CAGR is the e-commerce boom (Industry Arc, 2019). Payment transactions and asset management are other growth segments in this market. Key Players in the FinTech Industry. The Key Players in this Industry are: (Finances Online, 2019) Most of the players listed below are related to online payments. Ant Financial, Transferwise, Paypal, Alibaba, Venmo. Stripe Alibaba, Alipay. Chinapay, and Tenpay.

Objectives

The objective of this study is to determine whether FinTech companies are revolutionizing the banking sector by offering digital technology solutions. The proposed model aims to determine the magnitude of the disruptions that have occurred in the banking sector as a result of the growth of FinTech startups. To achieve the main objective, the paper answered the following questions by conducting desk research conducted by the previous authors.

Hypotheses

H1: Do (independent) FinTech start-ups develop in an environment where (independent) digital is easily accessible. The purpose of this hypothesis is to test whether the number of FinTech company formations increases where the country environment supports a strong digital presence compared to countries with a weak digital presence. If the assumption is correct, it will increase pressure on the banking industry to become more competitive and offer similar delivery methods to its customers.

H2: As a consequence of the development of FinTech and/or FinTech companies, have these (independent) FinTech and/or FinTech companies disrupted the profitability of the (employee) banking sector from a global perspective? If the hypothesis is correct, it is important to understand the magnitude of the disruption and the financial impact this disruption has had on the banking sector. There is a connection between the two hypotheses. The key link is that in a country with a high proportion of FinTech, the rise of FinTech companies is likely to have a greater impact on banks' outcomes. In countries with lower digital penetration, the number of FinTech is expected to be small, so the impact of financial results on banks will be smaller. Banks' financial performance is expected to improve as banks use FinTech to their advantage. KPIs are used to measure this impact.

METHODS

The process used in this research methodology is to review the work of previous academic authors and professional publications that have determined whether FinTech companies are successful with available digital technology and see if "it adversely affects B. the financial results of traditional banks. Examination of possible adverse financial outcomes is based on a review of previous authors' work on Kenya and Lithuania.

Population and Study Sample

A population is defined as a group of people, events, or other factors such as weight or size (Banerjee and Chaudhury, 2010). The population should be clearly defined in terms of inclusion and exclusion criteria. Two population groups have been previously studied and it is these two groups that are used for this research report. The first population group is the Kenyan banking sector, and the second (Kemboi, 2018). The second population group is the Lithuanian banking sector, according to a study by the authors (Keliuotyte & Smolskyte, 2019).

Research Model

The research model proposed in this article is based on the study of the dependent and independent variables applicable to the research problem. The research model consists of two elements that have a relationship between the two hypotheses.

Element 1: Digital Technology

Dependent Variable		Independent Variables
Size of country's digital technology availability and mobile phone penetration	⟷	The amount of newly formed FinTech companies. If availability and penetration are high, then, it is expected that the number of FinTech will be high.

There are control variables that can affect the dependent variable, including bank size and equity. Other control variables are whether banks use FinTech and whether there is competition or collaboration between FinTech companies and traditional banks.

RESULTS AND DISCUSSION

Hypothesis 1: Availability of digital technology

Research 1: Point 1 of the research model shows that the dependent variable will be the availability of digital technology and the penetration of mobile telephony by country. The independent variable of the number of FinTech companies depends on whether the dependent variable is high or low. The first investigation was carried out by Hornuf and Haddad (2016) on the emergence of the global FinTech market to understand its technical and economic conditions (Hornuf and Haddad, 2016). They have aligned their research to the highest level and look at FinTech companies as a whole and not segments within FinTech. The authors examined the determinants that drove entrepreneurs to engage in FinTech. The study used two determinants: (i) Technology and (ii) economics.

The study conducted was intended to examine different hypotheses in 69 countries from a holistic perspective and not to be identified based on five different business models. A strong and mature capital market will encourage the creation of new FinTech companies due to the size of the financial market and allow these new companies to revolutionize the financial sector through innovation. The country's small financial market does not provide such an opportunity to introduce new innovative solutions (Hornuf and Haddad, 2016). The data they collected for their research is based on 2,849 FinTech from the Crunch database over the period 2005 to 2014. The authors drew a sample of 690 observations. They worked with 5 dependent variables and estimated the Binomial Negative Random Effects (NBER) model, which allowed them to remove some elements from the observations. The author's research showed that countries that had the latest and most comprehensive digital technology showed an increase in the creation of FinTech companies. Similarly, the penetration of mobile phone availability in the countries has been a major factor in the growth of FinTech offerings. The null hypothesis can be accepted.

Research 2: To show the results of the increase in the number of start-ups of FinTech companies, Russia was selected as the target country for this study. Figure 6 – Russia with 70% penetration Kolesova and Girzheva's study focused on the number of FinTech companies established in Russia (Kolesova and Girzheva, 2018). Her research was not directly related to the two hypotheses but highlights the answers to these hypotheses. The authors note that Russia has seen an increase in the number of FinTech companies, mainly due to a significant improvement in financial and technological innovation in the country. The resulting FinTech companies are mainly crowd funding sites, online banking services, lending sites, mobile wallets, and digital data exchange platforms.

The authors mention that in September 2017 there were 250 registered FinTech companies with investments totaling 2.3 billion rubles (Kolesova and Girzheva, 2018). The penetration rate of financial services in megacities was 43% compared to a global average of 33%. If banks do not use the latest technologies, more FinTech will enter the market. If banks are to remain competitive, they must change their existing business models, which takes time and can result in costly litigation. The authors' research is supported by the Ernst & Young (EY). The EY report (p. 14) mentions that technology is one of the most important factors driving the growth of FinTech companies by creating innovative solutions and empowering Russia as a competitive advantage on a global scale (Ernst & Young, 2017).

Hypothesis 2: Financial performance of banks

The second hypothesis examines the financial performance of traditional banks since the advent of FinTech. Three dependent variables can affect banks' financial performance, as the research model shows: (a) net profit, (b) return on equity, and (c) return on assets. The dependent variables can be influenced by various independent variables, such as B. different services and products, technology, platform deployment, customer convenience, and lower operating costs. The dependent variable can be modeled by the size of the bank and its capital structure (variable control).

Research 3: According to Tracxn (Tracxn, 2019) there are 189 FinTech startups in Kenya. The author Kemboi examined FinTech disruptions at commercial banks in Kenya. The purpose of the research paper was to determine if there is a link between FinTech and financial performance. The study relied on 43 commercial banks in Kenya, which used descriptive statistics and multiple regression analysis to reach its conclusions (Kemboi, 2018). The author focused on examining a key performance indicator: wealth development. The use of this performance indicator stems from the bank's investment in digitization. His results, based on the analysis of the mean and standard deviation of the population size of 39 banks, and are presented in Figure 7 (Kemboi, 2018).

Year	N	Mean %	Std Dev.
2013	39	3.1179	1.8948
2014	39	3.2480	1.8922
2015	39	3.0380	2.0558
2016	39	3.2574	1.8462
2017	39	3.9080	2.0206

Figure 7. *Financial Performance*

Regression analysis using the normality test shows that the variables are normal as the results fell within -3 to +3 (Kemboi, 2018). The normality test was applied to the entire financial performance of the bank. The coefficient of determination was used to predict changes that can occur to the dependent variable as illustrated in Figure 8 below. The concluding result shows that the model can predict 51.9% of the dependent variable (R Square).

Model	R	R square	Adjusted R square	Std. Error of the estimate	Durbin Watson
	0.72	.519	.504	1.9248577	1.662

Figure 3. *Normality Test*

The findings from her research paper identified that the independent variables (mobile banking, online banking, and other variables) had a favorable impact on the financial performance of banks. The authors recommended that banks should continue to invest in more technology.

Research 4: A paper written by Keliuotye and Smolskyte examines the effect of financial technology (FinTech) in terms of profitability on the banking sector in Lithuania (Keliuotyte & Smolskyte, 2019). By 2017, the number of FinTech companies had grown to 117 (Keliuotyte & Smolskyte, 2019).

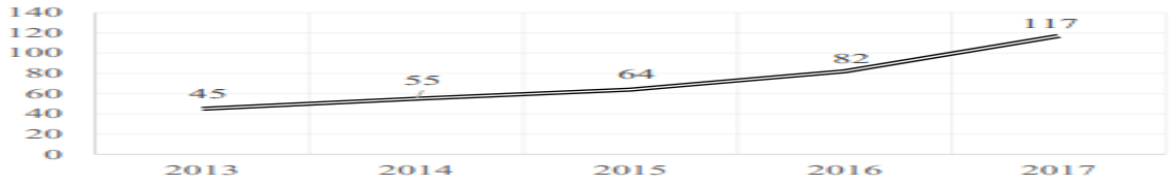

Figure 4. *Number of FinTech companies*

The purpose of their paper was to examine financial technology development opportunities that are available in Lithuania and to examine the impact on the banking sector's profitability. The growth of FinTech companies was seen as a boost to the economy as it created new jobs and attracted foreign investment whilst existing banks feared for loss of market share. The research was conducted through the use of statistical data, expert evaluation questionnaires, and the analysis of academic literature.

Lithuania is showing a different perspective on FinTech companies in the respect that these companies are more aligned with working with traditional banks rather than competing with the banks. However, challenges arise when FinTech companies are cooperating with traditional banks because of different models (Keliuotyte & Smolskyte, 2019).

Figure 5. *Cooperation level between FinTech companies and traditional banks*

The findings from their report based upon correlation-regression analysis state that financial technology does affect the profitability of the banking sector, but the profitability changes are not significant. Statistical analysis was conducted based upon the linkage between the indicators of FinTech and the key performance indicators for the banking sector profitability (net interest margin, return on equity, and return on assets). The results are shown in Figure 11.

p<0.05	ROA	ROE	NIM		p<0,1	ROA	ROE	NIM
FINTECH	s.n.	s.n.	s.n.		FINTECH	s.n.	s.n.	s.n.
TUI	s.n.	s.n.	s.n.		TUI	s.n.	s.n.	r.n.
INNOV	s.n.	s.n.	s.n.		INNOV	s.n.	s.n.	s.n.
NONPMNT	r.n.	s.n.	s.n.		NONPMNT	r.n.	r.n.	s.n.
INTBANK	s.n.	s.n.	r.t.		INTBANK	s.n.	s.n.	r.t.
MOBBANK	s.n.	s.n.	r.t.		MOBBANK	r.t.	s.n.	r.t.
CARD	s.n.	s.n.	s.n.		CARD	s.n.	r.n.	r.n.
POST	s.n.	s.n.	r.t.		POST	s.n.	s.n.	r.t.
s.n. – statistically insignificant, r.n. – significant negative, r.t. – significant positive								

Figure 61. *Statistical Analysis*

Upon review of the ROA ratio, all results except NONPMNT (non-cash money) showed that the results were statistically insignificant. When the probability is set to less than 0.05. The NONPMNT identified a negative significance. The same statistically insignificant results appeared for the ROE ratio. The results for NIM varied across the different indicators. However, a statistically significant correlation between NIM and Internet banking, mobile banking, and the number of bank card readers was observed. It can be seen from Figure 12 below that the ratios are more significant across the three profitability indicators.

	ROA model	ROE model	NIM model
Determination coefficient	0.896	0.843	0.775
Adj. determination coefficient	0.803	0.711	0.600
Durbin-Watson coefficient	2.430	2.415	2.194
Sig.	0.068	0.141	0.256

Figure 7. *Regression Analysis Results*

The authors believe that the Lithuanian finance market is enjoying favorable conditions for new FinTech companies to enter and this sector will continue to grow mostly in the changes in the business models of banks and mostly in the payment segment. The empirical data reviewed provides sufficient evidence that FinTech startups will grow fastest in an environment with a high availability of mobile phones and digital technology. The study concludes that the decrease in operating costs may be due to the use of digitalization to provide financial services in these countries, rather than the non-tech financial services offered by traditional banks. The impact of the growing number of FinTech startups in countries with high digital technology and mobile phone subscriptions allows for more competition between FinTech and traditional banks. Competition in these countries will increase. The customer would be the winner with improved financial products, faster delivery methods, and lower prices. The results show that the profitability of traditional banks changes when FinTech companies are present in the country and when banks incorporate their financial

technology into their business model. The results of the statistical analysis show that the influence of FinTech on the profitability of the banking sector is not statistically significant.

Recommendation

Based on the international empirical evidence presented in this research, recommendations for potential academic authors have been made. This research article is dedicated to proving the validity of two hypotheses that FinTech have been successful due to the increase in the number of startups in countries with the latest digital technologies and the presence of mobile phones, and the financial performance of banks has seen a slight decrease in the change in financial results The first recommendation for future researchers would be to provide a more sophisticated framework for FinTech in emerging markets under different scenarios.

The first recommended scenario is to examine the success of FinTech companies with retail and corporate borrowers in developed countries and how this success can be translated to emerging markets. The research question could be, are companies and individual borrowers making full use of the ideal FinTech theory? If they don't see all the benefits, what needs to be done to improve this area so that emerging markets can improve in early 1?

The second recommended scenario would be to see if FinTech companies follow the same pattern across all continents of the world. Are there different trends in emerging and established markets? The second recommendation is to further examine the FinTech sector globally and to examine whether FinTech has had a disruptive impact on the traditional banking system on all continents and whether there are similarities between the results from one continent to another.

The third recommendation is that futurists study the future of FinTech companies to fully explore their profitability and the scalability of their business model. The study aims to determine the future competitiveness of FinTech compared to the traditional banking sector. How will FinTech companies look in five to ten years compared to today?

Conclusion

FinTech companies around the world are revolutionizing the banking sector by offering digital financial products and services on platforms that are easily accessible to consumers and financial institutions. FinTech companies are divided into many segments such as crowd funding, insurance, payments, data exchange, and digital wallets. Although the disruptions are minor, the banking sector is experiencing changes and disruptions. The banking sector must convert its business models to digital technologies, otherwise it could lose its competitive advantage.

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