

# InsurTech in CEE Region—Where Are We?



Jacek Lisowski and Anna Chojan

**Abstract** The impact of information technology innovation on development of financial markets is one of the most important trends observed in recent years. Enterprises offering such innovative solutions in finances are called FinTech (financial technology), and the branch of FinTech which focuses on insurance only is called InsurTech. Some of the most important activities that InsurTech try to improve are risk detection and risk prevention, insurance distribution or claims management process, personalization and development of on-demand insurance. The largest investments in InsurTechs are borne by countries like the USA, China, the United Kingdom or Germany, but we can observe activity in this field on smaller insurance markets too, especially in Central and Eastern European (CEE Region) countries such as Poland. The aim of this article is to review InsurTechs observed on the Polish insurance market and indicate the areas in which new technologies affect the shape of this market. The paper describes what Polish InsurTech market looks like in comparison to worldwide tendencies in this field. The conditions for InsurTech development in Poland in the face of the legal framework and act of the supervisor authority are presented. The paper describes the most important characteristics of Polish insurance markets, level of its digitization and outlines how insurance companies deal with new technologies, what solutions they introduce in their own structures and how the cooperation between InsurTech and insurance companies looks. The observed applications of new technologies on the Polish insurance market are described and the chosen InsurTech companies are briefly characterized. In the summary, the main trends in new technologies used by InsurTech are presented. The authors portray the potential future of InsurTech in Poland and compare it to technological development levels observed in other markets. The research methods adopted in the article include literature studies, analysis of information from online sources and inference.

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## 1 Introduction

One of the most important trends observed on financial markets is intensive development in the use of information technologies. Enterprises offering such solutions are called FinTechs (financial technology), and the branch of FinTech which focuses on insurance is called InsurTech. Big data, cyber security, Artificial Intelligence, blockchain and Internet of Things are top InsurTech trends and some of the most important issues that InsurTech tackles are risk detection and risk prevention, improving insurance distribution or claims management and processing, personalization and on-demand insurance.

Taking into account the relatively short duration of the InsurTech companies' operation, there is not many scientific publications on their functioning. Previous work, especially carried out by consulting firms or financial institutions, has only focused on the phenomenon of InsurTech, possibility of the industry's growth and possible attitude of predominantly conservative insurance markets to new technologies in the future. The most comprehensive work on the subject of InsurTech seems to be "The InsurTech book" that is a collection of dozens of short articles written mainly by startup and technology visionaries or insurance companies managers (Vanderlinden et al. 2018). None of the researches show the level of use of new technologies by Polish insurance companies and changes in this field. An interesting image of Polish insurance companies' attitude to new information technologies is given in a report published in 2018 by Accenture and Polish Insurance Association. The report "Digitization of insurance sector in Poland" presents the answers of insurance companies to key questions regarding the directions of further development in the field of digitalization (Accenture and Polska Izba Ubezpieczeń 2018). Nevertheless, the level of development of the Polish InsurTech market and the conditions of development are still not fully investigated.

The aim of this article is to indicate conditions for development of InsurTech on the Polish insurance market, especially in cooperation with insurance companies. The additional aims are to find how open insurance companies in Poland are to the use of new technologies in their structures and what Polish InsurTech industry looks like compared to worldwide leaders in this field.

The research methods adopted in the article include literature studies, analysis of information from online sources and inference.

## 2 Short History of Insurtech

The impact of information technology innovation on development of financial markets is one of the most important trends observed in recent years. This

phenomenon was initially called “financial technology” and then was reduced to the simpler form FinTech. It reflects the use of technological changes in the financial industry such as computer programs and other technology used to support or enable banking and financial services. The term “FinTech” was first used in 1993 by the president of Citicorp in the context of the research project initiated by this company (Kutler 1993). Since then, companies operating in the area of new technologies used for the development of the financial industry have gained the status of FinTechs, but there is no consensus among researchers about the unambiguous definition of this term. Worth noting is the definition proposed by Patrick Schueffel as a result of this research, namely: “*FinTech is a new financial company that applies technology to improve its operations*” (Puschmann 2017).

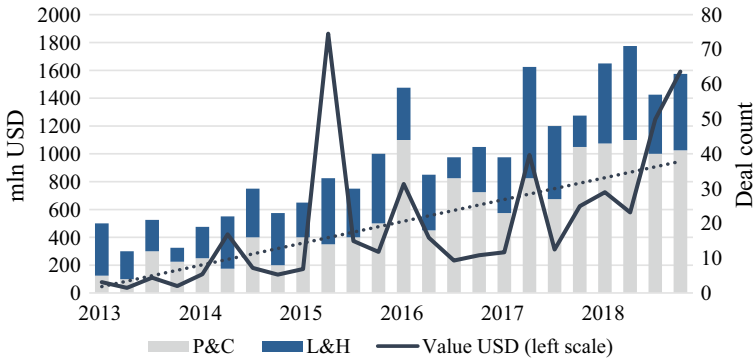
The technology-driven change in insurance industry could be observed from 1960 and 1970s when it was one of the first industries that used new technologies and faced the third industrial revolution, as coined by Jeremy Rifkin (Warburton 2018). Now we can see growing interest in the use of new information technologies in finances. FinTech in insurance industry, because of its common use, gained the name InsurTech. Some of the most important activities that InsurTech try to improve are risk detection and risk prevention, insurance distribution or claims management process, personalization and development of on-demand insurance.

Taking the increasing prevalence of InsurTech into account, it is already possible to observe the main trends of its development. There is a possibility to divide these companies according to the technology or concept behind it, for example: sharing economy, blockchain, cyber security, big data, Internet of Things or Artificial Intelligence. Researchers at the Stockholm School of Economics have attempted to systematize InsurTechs by areas where they innovate, as follows: distribution, personalization, risk detection and prevention, on-demand insurance, Peer-to-peer solutions, underwriting, reinsurance and claim settlement and management process (Puertas et al. 2017).

According to a survey conducted by PwC, the most important trends in the development of the insurance industry using InsurTech are (PricewaterhouseCoopers 2017):

- Including more data and the complexity of models to better identify and assess risks,
- Creating products tailored to the individual needs of clients,
- Comparing products and services of various insurers,
- Outsourcing,
- Motor insurance (connected car apps, autonomous vehicles).

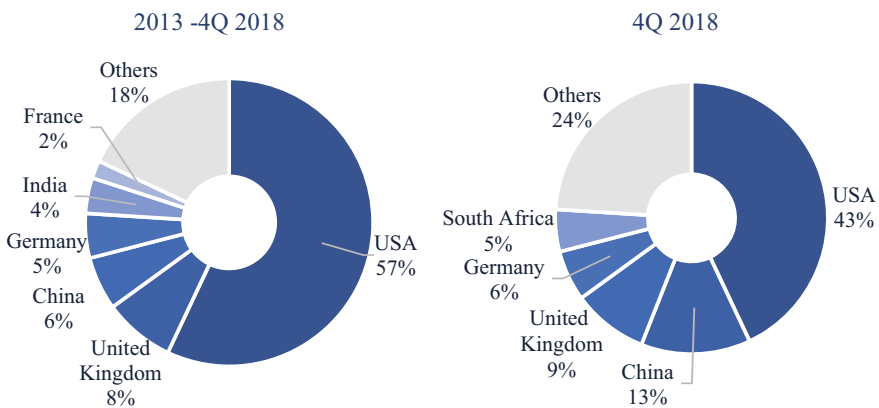
High expenditures incurred in the development of InsurTech are an important indicator of high interest in use of new technologies in insurance. Over the last years on the insurance market there has been a continuous increase in the number of functioning enterprises referred to as InsurTechs and an increase in investments in such enterprises. The scale of investment in InsurTech from the first quarter of 2013 to the fourth quarter of 2018, broken down into property (P & C) and life and health (L & H) insurance, is presented in Chart 1.



**Chart 1** InsurTech funding volume—all stages (million USD), 2013—4Q 2018. *Source* Willis Towers Watson (2018), Quarterly InsurTech Briefing Q4 2018

As presented in Chart 2, it can be seen that over the last five years leaders of InsurTech transactions (measured by value) are countries such as the USA, the United Kingdom, China, Germany, India and France. In the last quarter of 2018, the US domination over other countries was not so great as prior, whereas China’s or South Africa’s activity increased noticeably.

Confirmation of such a distribution can be found on the list of the top 100 InsurTech firms 2018 prepared by Post in association with Tällt Ventures. The methodology of assessment is based on three components: people (founding team and key principals), product (examination of core technologies, need of customers and users experience) and potential (market size, opportunities, company’s traction) (Carke 2018). 43 companies on the list come from the USA, 18 of them from Asia and 25 from Europe (12 from the United Kingdom), none of them from Central or Eastern



**Chart 2** Quarterly InsurTech transactions by target country. *Source* Willis Towers Watson (2018), Quarterly InsurTech Briefing Q4 2018

Europe. Despite this, InsurTechs also exist on such markets, in particular on the Polish market, which is described in Deloitte’s report “FinTech in CEE Region” as a market with “competitive prices, management, sales and consumer serving processes revamp” (Deloitte 2016).

The potential of CEE Region was noticed e.g. by Massachusetts Institute of Technology (MIT), which conducted 5 editions of MIT Enterprise Forum Poland, a program giving FinTech companies the support from leading Polish and international companies, possibility of presenting technologies to investors and gaining money for development. In the 5th edition there was a special path designed only for InsurTech companies—for the very first time (Fundacja na rzecz Nauki Polskiej 2018). In 2019 MIT decided to expand its action and in January 2019 started recruitment for the first edition of MIT Enterprise Forum CEE addressed to 15 countries in Central and Eastern Europe (CEO Magazyn Polska 2019b).

### 3 Polish Insurance Market

#### 3.1 Comparison with Other European Insurance Markets

Table 1 presents a few economic and development indicators in selected European countries. The volume of Polish economy measured by GDP per capita is less than half of the whole European Union. The greatest European InsurTech players belong to Best-developed European countries. GDP per capita in the United Kingdom, Germany

**Table 1** Economics and technology development indicators in selected countries in 2017

	Population (million)	GDP per capita	Smartphone penetration (%)	Internet access (%)	ICT development index
European Union	512.6	\$33,728	65	87	n.d
United Kingdom	66.04	\$39,720	71	94	8.65
Germany	82.79	\$44,470	71	93	8.39
France	67.19	\$38,477	68	86	8.24
Poland	38.4	\$15,751	67	82	6.89
Czech Republic	10.58	\$22,779	65	83	7.16
Slovakia	5.44	\$19,897	n.d	81	7.06
Hungary	9.8	\$15,648	n.d	82	6.93

Source Google Public Data Explorer, Newzoo’s Global Mobile Market Report 2018, ICT Development Index 2017, Smartphone penetration per capita in western Europe since 2000

or France is about twice as high as GDP per capita in countries in Central Europe (Poland, Czech Republic, Slovakia and Hungary).

When it comes to smartphone penetration indicator (percentage of the population owning a smartphone), Poland is on 20th place in the world (The United Arab Emirates have the best result with 82% penetration). Smartphone penetration level in Poland is higher than the score for the whole European Union and almost as high as in Western Europe countries. In 2017 82% of Poles had accessed the Internet from any device at least once, including mobile phones (the mean in developed countries is 81%). The ICT development index, based on internationally agreed information and communication technologies (ICT) indicators is published by the United Nations International Telecommunication Union and allows to compare the levels of network infrastructure and access to ICTs, use of ICTs in society and outcomes of effective ICT use among countries. The ICT development index is one benchmark measure based on 11 indicators, grouped in three clusters: access, use and skills (International Telecommunication Union 2017a). The maximum value of ICT index is 10 points and in 2017 Iceland got the highest score with 8.98 points. The values of ICT development index in selected CEE countries are at similar levels, but their values are lower than in Western Europe (International Telecommunication Union 2017b).

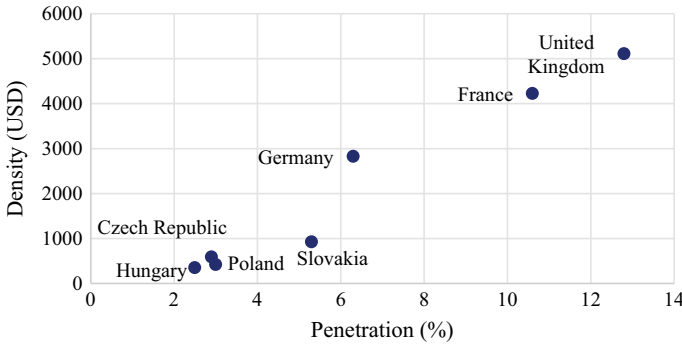
The European leaders of InsurTech development comprise the Best-developed insurance markets in the world. The analysis of insurance sector metrics in Table 2 shows that the United Kingdom, Germany and France gained in 2017 from about 19 to 24 times more total gross premium than Poland. From Table 2 and Chart 3 it can be concluded that insurance markets in Central Europe are characterized by similar levels of density and penetration.

Observations of Polish insurance markets indicate that InsurTech are a chance and a threat to insurers. On the one hand, they give an opportunity to create new insurance products, acquire new clients and develop the economy in general. On the other hand, insurance companies may fear stronger competition and market share loss (Zięba-Szklarska 2018). According to research carried out in 2016 by PwC, “Insurance’s new normal. Driving innovation with InsurTech”, almost 90% of insurance companies

**Table 2** Insurance sector metrics in chosen countries in 2017

	Penetration %	Density	Total gross premium	Market concentration of 5 top companies (2016)
United Kingdom	12.8	\$5112	\$394,100	n.d
Germany	6.3	\$2829	\$310,439	43%
France	10.6	\$4225	\$313,543	46%
Poland	3.0	\$420	\$16,499	67%
Czech Republic	2.9	\$590	\$6402	85%
Slovakia	5.3	\$925	\$5035	67%
Hungary	2.5	\$350	\$3484	58%

Source OECD Database (penetration, density, total gross premium), OECD Insurance Statistics, 2010–2017 (market concentration)



**Chart 3** Penetration and density in chosen European countries in 2017. *Source* Own study on the basis of OECD Database

believed that new technologies companies can be a threat to their income. Over half of them perceived innovations as a priority area of strategy (Digital&More 2017). Another research from 2016 carried out by Deloitte is summed up with the following statement: “*The Polish insurance sector is unlikely to completely reinvent itself and transform into a technology-driven, top-tier digital environment*” (Deloitte 2016). However, researchers expected incremental changes especially related to the improvement of legacy IT systems, back office, use of big data and offering insurance by mobile channels.

The studies on InsurTech in Poland carried out by HRK in 2018 found that 86% of the surveyed insurance companies see InsurTech as inspiration for organizations with established position on the market and create the possibility of synergy between innovative companies and traditional insurance companies (HRK 2018). Deloitte, in the report “A catalyst for change: How FinTech has sparked a revolution in insurance”, indicates that cooperation of InsurTech with insurers is necessary for the insurance industry to grow. The report shows four possible future scenarios of development: different sales channels, technology-based risk assessment, more flexible products and simple life insurance (Deloitte 2018).

### 3.2 Legal Framework for InsurTech Companies

On the European market there are many current regulations governing financial companies. Among the most important regulations concerning InsurTech sector and future directions of European authorities there are the following acts of law:

- The Payment Accounts Directive,
- The Payment Services Directive 1 and 2,
- General Data Protection Regulation,
- The Electronic Money Directive,

- Markets in Financial Instruments Directive.

In Poland, however, it can be observed that legal solutions are created to facilitate the functioning of new technologies on the financial market e.g. Regulatory sandbox KNF, Program Innovation Hub or new legal form of business.

In 2018, the Office of the Polish Financial Supervision Authority (UKNF), as part of the task of the Polish Financial Supervision Authority (in Polish “Komisja Nadzoru Finansowego”—KNF) which consists of undertaking activities aimed at supporting the development of innovation in the financial market, introduced a development program for the financial market under the name KNF regulatory sandbox. Recipients of this program are entities planning to start functioning on the financial market, which have an untested, innovative product or financial service based on modern information technologies (Komisja Nadzoru Finansowego 2018a). The conditions for participation in the project are as follows: the company’s headquarters must be placed in Poland, products or services must meet the requirements of financial institutions supervised by KNF or must be designed directly to support the activities of supervised entities, the proposed solution must have an innovative character, the company must have a real need to participate in the sandbox and must be willing to test the solution. The term of applications for admission to the sandbox expired in November 2018 and the effects of this initiative are still unknown, but the KNF already announced the next edition (Komisja Nadzoru Finansowego 2018c).

Another project proposed by KNF in 2018 is Program Innovation Hub dedicated to entities operating in the area of financial innovations. The aim of this program is to help entities, whose main barriers to business development are complex legal, regulatory requirements and ambiguity of their application in relation to innovative products or financial services (Komisja Nadzoru Finansowego 2018b). Companies can gain support from the Office of the Polish Financial Supervision Authority (UKNF) in identifying the applicable laws, regulations and supervisory recommendations applicable to a given entity, offered product or services. UKNF gives the entity information on the principles of supervision, the procedure for obtaining a permit to conduct a particular type of activity and documents and guidelines. In order to receive help an entity needs to fulfill contract forms available on the supervisor’s website.

Polish government, encouraged by Slovenian success (Leontiev 2019), decided to create a new legal form for commercial companies dedicated especially to FinTech, a simple joint-stock company (in Polish: “prosta spółka akcyjna”). The project of changes in the Commercial Companies Code was accepted on 5th February 2019 (Ministerstwo Przedsiębiorczości i Technologii 2018) and the first simple joint-stock company should emerge in the first quarter of 2020. The aim of arranging simple stock companies is to simplify the process of formation of companies and adjusting the legal form to the specifics of technology companies. According to the project, the most important changes are: minimum share capital is reduced to 1 PLN, possibility of flexible shaping of the company’s asset structure (including shares with no value), at the start-up stage: bringing know-how, work and service without complicated valuation, freedom in relation to the company’s bodies—introducing an alternative management and supervisor model, providing the founders with a greater impact



on the shape of relations with investors, electronic registration in 24 h, quick and uncomplicated liquidation of the company in case of failure or transformation into another capital company (Ministerstwo Przedsiębiorczości i Technologii 2018).

### 3.3 New Technologies on Polish Insurance Market

From the report of Polish Insurance Association in the topic of digitization of insurance in Poland we know that there is no fully omni-channel insurer, which means that none of the insurers could infiltrate the distribution channels and interaction with the customer, offering access to the same range of products and services using various channels (e.g. online, mobile, tablet, ATM, branch, telephone) but with the possibility of switching between channels during the sales and service process. The main reason for that is agents’ reluctance to share their customers’ contact data in fear of losing them for other distribution channels (Accenture and Polska Izba Ubezpieczeń 2018). Despite this, insurers place increasing emphasis on the use of the mobile channel and invest in customizing forms and websites to make their version responsive (Accenture and Polska Izba Ubezpieczeń 2018).

Taking great numbers of customers with internet connection and mobile phone users into account (look Table 1), the level of digitization on the Polish insurance sector is not high. As shown in Table 3, the possibility of buying insurance online directly on the insurer’s website is rather limited. Only 59% of Polish non-life insurance companies offer some of their products online, but they are mainly just the simplest travel, motor third party liability, motor own damage and property insurance with no or limited additional options.

Only 12% of Polish life insurance companies offer the possibility of buying their products directly on their websites. Insurers sell online only the simplest life insurance—short-term, with low limits (maximum liability is 100,000 PLN) and not many additional options. The future may bring an increase in buying life insurance online as a result of cooperation of Vienna Life with InsurTech Autenti. The solution developed by these companies is going to give customers a possibility of authorization of the transactions by using an advanced electronic signature via the Internet, but at this moment this solution is unobtainable (CEO Magazyn Polska 2019a).

**Table 3** Possibilities of buying insurance and making claim notification online in Poland in March 2019

	Number of companies	Buying insurance online		Online claim notification	
		Count	Percentage	Count	Percentage
Domestic non-life companies	33	20	59%	26	76%
Domestic life companies	26	3	12%	21	81%

Source Own study on the basis of Polish insurer’s websites and Google Play

About 80% of insurers give their customers possibility of notification claims online by using special form. Some of Polish insurers use mobile applications but they are dedicated to insurance agents and their aim it to simplify agents' work. In the non-life sector mobile applications for customers are offered by 14 companies (42%), but their usage is varied. Some of them can be only be used in case of damage liquidation (e.g. AXA in cooperation with Auto Online Inspection, Generali, Warta S.A. with application Warta Mobile), others allow to use telemetric (PZU S.A. with application PZU GO, Link4), some allow to make an appointment with a doctor (Zdrowie S.A., PZU S.A.) or manage policies. Good example of a user-friendly application is the one offered by Generali, which allows buying car insurance by using QR codes imprinted in a vehicle's registration documentation (Deloitte 2016). The dominant view among insurance companies is that the creation of large mobile applications, similar to the customer portal created by banks, is unprofitable, and a better solution is dedicated applications for individual process steps e.g. applications used solely to report damage or manage policies (Accenture and Polska Izba Ubezpieczeń 2018).

The observed way of policy management simplification and reporting damages is the use of chatbots. The first chatbot on the Polish insurance market was launched by Warta S.A. in second half of 2017 and gives the customers the possibility of reporting damage by Messenger (Dziubak 2017). Allianz enables buying motor third party liability insurance and motor own damage insurance by chatbot at Messenger (Allianz 2017).

The most popular insurance in Poland is motor third party liability insurance (MTPL) and the premium in this insurance is 40% of gross premium written in non-life insurance (Polska Izba Ubezpieczeń 2018). A lot of InsurTech observed on the Polish insurance market creates solutions dedicated to market insurance sector. Online price comparison engines (e.g. Rankomat, mfind and Comperia) gain increasing popularity among customers. One of the reasons for the growing interest of online searching for insurance was a significant increase in premiums for motor insurance, especially in 2016. Another trend observed on this market is use of telemetric in order to offer Usage Based Insurance (pay as you drive) to customers. This concept is based on assessing risk and adjusting costs based on the vehicle usage pattern, measured against time, distance, behavior and place. This possibility is offered by two polish companies: Link4 (Link4 2019) and Ergo Hestia (under brand YU in cooperation with Yanosik (Nicz 2018) but there are other insurers who plan to offer telematics applications in the nearest future (e.g. in cooperation with FinTech Bacca). Ergo Hestia, selling telemetric insurance for a year, is optimistic about the future, because usage of YU's application allows to reduce damages by about 20%. The next step of YU on the Polish market is going to be pay-per-mile insurance (Uryniuk 2018).

Another problem of compulsory third party motor insurance in Poland is up-front payment of premium, which is frequently problematic to customers. Some of insurance companies offer installment payment, but usually these are much more expensive solutions. There are a few InsurTechs which allow to pay premium in installments and the loan is financed not by the insurer, but by the bank (Dziubak 2019). Cooperation of two Polish InsurTech companies: hiPRO and Braintri lead to

the creation of Connector platform, which is now tested by some of Allianz's agents. The platform allows to connect the agent with one of the banks taking part in this project (Alior and Inbank) and chosen bank carries customer's credit risk assessment (Dziubak 2018). This platform is going to expand on market, as customers already have the possibility of buying motor insurance with instalment payment in application Benefia24, offered by insurance broker Benefia Ubezpieczenia (Dziubak 2019).

An interesting trend observed on the Polish insurance market is cooperation of insurers and telecommunications companies. Play, the leader of Polish telecommunication market with 15 million active SIM cards, offers insurance by application Play Ubezpieczenia (Połowianiuk 2017). The offer includes simple products, such as health insurance, motor insurance, pet or electronic device (smartphone, laptop) insurance, that you can buy for any period. The offer is addressed to subscription customers and premium is added to the bill.

## 4 Conclusions

The past few years have been the time of fast development of new information technologies use on financial markets and in insurance industry. The USA, China, the United Kingdom, Germany and South Africa are the major players in InsurTech industry, but other countries with less developed insurance markets also try to introduce new technologies. Despite the fact that the insurance industry in Poland is smaller than in Western Europe countries, in recent years the increase in the use of modern technologies has been observed on the Polish market. Good conditions for development give relatively high results of indicators such as smartphone penetration and Internet access. These indicators show that Poland has potential for development in this field, especially in the face of the results of the analysis of Polish insurers' websites, which leads to conclusion that only part of them gives the customers an opportunity to buy insurance online, especially in life insurance sector (only 12%). Insurance offered online is usually of the simplest construction and with low limits of liability. Most of the insurance companies enable reporting damages online, but only some of them use not only an online form, but also mobile applications (usually in case of motor third party liability insurance) and chatbots, usually on Messenger.

A good factor supporting development of InsurTech in Poland are programs such as MIT Enterprise Forum Poland and MIT Enterprise Forum CEE, which gives InsurTech companies an opportunity to find investors and gain money for activity. Another factor facilitating InsurTech in the complicated law framework are initiatives by the Polish Financial Supervision Authority, e.g. regulatory sandbox and Program Innovation Hub. The new legal framework of running business (simple joint-stock company) may be a step in a right direction—simple joint-stock company, but the effects of the change will become obvious only in the future.

From the research carried out by Polish Insurance Association it could be concluded that the managing staff in insurance companies is aware of the importance of new technologies. Fear of losing clients and awareness of the possibilities

given by cooperation with InsurTech companies help the increasing popularity of new technologies use by insurance companies in Poland. Analysis of the cases of Polish insurance companies' cooperation with InsurTech companies show that Polish insurance market is changing and tries to go follow the biggest trends in the insurance industry. Taking successes of new initiatives such as YU or online price comparison engines into account, it can be assumed insurance companies will follow these trends.

The important thing is that Polish insurance market can be the beneficiary of solutions developed by international corporations which also run business in Poland. A good indication is Euler Hermes, a company owned by Allianz and specialized in trade credit insurance only. Euler Hermes appointed Euler Hermes Digital Agency (EHDA) whose aim is to reinvent trade finance and to allow all kinds of companies to manage their credit risk in the best possible way (Euler Hermes Digital Agency). EHDA test new solutions (such as single invoice cover) on more stable markets and in case of success and after some amendments expand with the solution to other countries. As a result, changes in trade credit insurance sector in Poland caused by insurance corporates worldwide are only a matter of time.

The Polish insurance market is facing a big challenge now. The insurance companies have a lot to improve in terms of providing clients with solutions based on modern technologies, but they have good insiders in the form of InsurTech companies. Considering the current speed of changes taking place on the insurance market, the high awareness of insurance managers and customers' expectations, it can be expected that modern technologies will become an indispensable element of the Polish insurance market.

## References

- Accenture, & Polska Izba Ubezpieczeń. (2018). *Cyfryzacja sektora ubezpieczeń w Polsce*. [https://piu.org.pl/wp-content/uploads/2018/11/ACC\\_PIU\\_Raport-Cyfryzacja-Ubezpieczen-w-Polsce.pdf](https://piu.org.pl/wp-content/uploads/2018/11/ACC_PIU_Raport-Cyfryzacja-Ubezpieczen-w-Polsce.pdf). 10.02.2019.
- Allianz. (2017). *Allianz udostępnia Chat Bot Messenger do zakupu polis OC i AC*. <https://www.allianz.pl/korporacyjna/news/06122017>. 20.03.2019.
- Carke, H. (2018). *Top 100 insurtech firms 2018*. <https://www.postonline.co.uk/asia/3494476/top-100-InsurTech-firms-2018>. 20.03.2019.
- CEO Magazyn Polska. (2019a). *Vienna Life stawia krok w przyszłość w sektorze ubezpieczeń życiowych*. <https://ceo.com.pl/vienna-life-stawia-krok-w-przyszlosc-w-sektorze-ubezpieczen-zyciowych-12235>. 01.04.2019.
- CEO Magazyn Polska. (2019b). *Rekrutacja do pierwszej edycji akceleratora MIT Enterprise Forum CEE otwarta*. <https://ceo.com.pl/rekrutacja-do-pierwszej-edycji-akceleratora-mit-enterprise-forum-cee-otwarta-58247>. 18.03.2019.
- Deloitte. (2016). *FinTech in CEE Region. Charting the course for innovation in financial services technology*.
- Deloitte. (2018). *Współpraca firm ubezpieczeniowych ze spółkami z sektora InsurTech jest nieunikniona*. <https://www2.deloitte.com/pl/pl/pages/press-releases/articles/wspolpraca-firm-ubezpieczeniowych-ze-spolkami-z-sektora-insurtech.html>. 10.03.2019.
- Digital&More. (2017). *Ubezpieczyciele boją się utraty zysków na rzecz InsurTech-ów*. <https://digitalandmore.pl/ubezpieczyciele-boj-sie-utracy-zyskow-na-rzecz-insurtech-ow>. 13.03.2019.

- Dziubak, P. (2017). *Pierwszy chatbot ubezpieczeniowy w Polsce. Warta uruchomiła go na Messengerze*. <https://www.cashless.pl/3037-pierwszy-chatbot-ubezpieczeniowy-w-polsce-warta-uruchomila-go-na-messengerze>. 28.03.2019.
- Dziubak, P. (2018). *hiPRO chce namieszać na rynku ubezpieczeń. Razem z Braintri stworzyło platformę sprzedaży polis na raty*. <https://www.cashless.pl/4041-hipro-chce-namieszac-na-rynku-ubezpieczen-razem-z-braintri-stworzylo-platforme-sprzedazy-polis-na-raty>. 20.03.2019.
- Dziubak, P. (2019). *Polisy na raty teraz także w Benefii. Braintri wdraża nowe rozwiązanie u kolejnego ubezpieczyciela*. <https://www.cashless.pl/5216-Benefia-polisy-na-raty>. 22.03.2019.
- Euler Hermes Digital Agency. (2019). *Reinventing Trade Finance*. <https://www.ehda.co>. 23.03.2019.
- Fundacja na rzecz Nauki Polskiej. (2018). *Nabór do 5. edycji programu MIT Enterprise Forum Poland*. <https://www.fnp.org.pl/nabor-do-5-edycji-programu-mit-enterprise-forum-poland>. 15.03.2019.
- Google Public Data Explorer.
- HRK. (2018). *InsurTech - wyzwanie dla branży ubezpieczeń?* <https://hrk.pl/pl/insurtech-wyzwanie-dla-branzy-ubezpieczen>.
- International Telecommunication Union. (2017a). *The ICT Development Index (IDI): Conceptual framework and methodology*. <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2017/methodology.aspx>. 16.03.2019.
- International Telecommunication Union. (2017b). *The ICT Development Index 2017*. <https://www.itu.int/net4/itu-d/idi/2017/index.html>. 16.03.2019.
- Komisja Nadzoru Finansowego. (2018a). *Piaskownica regulacyjna KNF*. [https://www.knf.gov.pl/dla\\_ryнку/fin\\_tech/Piaskownica\\_regulacyjna\\_KNF](https://www.knf.gov.pl/dla_ryнку/fin_tech/Piaskownica_regulacyjna_KNF). 26.02.2019.
- Komisja Nadzoru Finansowego. (2018b). *Program Innovation Hub na rzecz wspierania rozwoju innowacji finansowych (FinTech)*. [https://www.knf.gov.pl/dla\\_ryнку/fin\\_tech/Innovation\\_Hub](https://www.knf.gov.pl/dla_ryнку/fin_tech/Innovation_Hub). 25.02.2019.
- Komisja Nadzoru Finansowego. (2018c). *Rules governing the 'Regulatory Sandbox at the Polish Financial Supervision Authority' programme*. [https://www.knf.gov.pl/knf/en/komponenty/img/Rules\\_Regulatory%20Sandbox\\_63545.pdf](https://www.knf.gov.pl/knf/en/komponenty/img/Rules_Regulatory%20Sandbox_63545.pdf). 26.02.2019.
- Kutler, J. (1993). *Citibank is shedding individualistic image*. Am Bank. <https://www.americanbanker.com/opinion/friday-flashback-did-citi-coin-the-term-fintech>. 05.01.2019.
- Leontiev, A. (2019). *Prosta spółka akcyjna – sukces na Słowacji, szansa w Polsce*. <https://www.rp.pl/Firma/303299988-Prosta-spolka-akcyjna--sukces-naSłowacji-szansa-w-Polsce.html>. 29.03.2019.
- Link4. (2019). *Zasady promocji LINK4 Kasa Wraca*. <https://www.link4.pl/naviexpert/zasady-promocji>. 23.03.2019.
- Ministerstwo Przedsiębiorczości i Technologii. (2018). *Projekt ustawy o zmianie ustawy – Kodeks spółek handlowych oraz niektórych innych ustaw*. <https://bip.kprm.gov.pl/kpr/wykaz/r62060497313,Projekt-ustawy-o-zmianie-ustawy-Kodeks-spolek-handlowych-oraz-niektorych-innych-.html>. 20.03.2019.
- Newzoo. (2018). *Newzoo's Global Mobile Market Report 2018*.
- Nicz, A. (2018). *Jesteś dobrym kierowcą i chcesz płacić mniej za OC? Ta oferta jest dla ciebie*. <https://www.spidersweb.pl/2018/09/ubezpieczenie-oc-yu-ergo-hestia-yanosik.html>. 23.03.2019.
- Połowianuk, M. (2017). *Play wchodzi na rynek ubezpieczeń. Polisé kupimy w aplikacji*. <https://www.spidersweb.pl/2017/12/play-ubezpieczenia.html>. 20.03.2019.
- Polska Izba Ubezpieczeń. (2018). *Raport roczny 2017*. Warszawa: Polska Izba Ubezpieczeń.
- PricewaterhouseCoopers. (2017). *Insurance's new normal Driving innovation with InsurTech* (p. 7). Global InsurTech Report—2017.
- Puertas, A., O'Driscoll, C., Krusberg, M., Gromek, M., Popovics, P., Teigland, R., et al. (2017). *The next wave of FinTech* (p. 5). Stockholm.
- Puschmann, T. (2017). *FinTech* (pp. 69–70). Springer Fachmedien Wiesbaden.

- Uryniuk, J. (2018). *Yanosik Ubezpieczenia po roku od startu: kierowcy z YU powodują o jedną piątą mniej szkód*. <https://www.cashless.pl/4739-Yanosik-Ubezpieczenia-platne-za-kilometr>. 22.03.2019.
- Vanderlinden, S., Millie, S., Anderson, N., & Chishti, S. (Eds.). (2018). *The InsurTech book*. Chichester: Wiley.
- Warburton, J. (2018). Where does InsurTech leave the people who work in insurance? In S. Vanderlinden, S. Millie, N. Anderson, & S. Chishti (Eds.), *The Insurtech book* (pp. 35–39). Hoboken: Wiley.
- Willis Towers Watson. (2018). *Quarterly InsurTech Briefing Q4 2018*.
- Zięba-Szklarska, M. (2018). *FinTech i InsurTech! Szansa czy zagrożenie dla pośredników i doradców finansowych?* <https://franczyzabanku.pl/FinTech-insurtech>. 29.03.2019.