

“Transformation of insurance technologies in the context of a pandemic”

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TRANSFORMATION OF INSURANCE TECHNOLOGIES IN THE CONTEXT OF A PANDEMIC

Abstract

The COVID-19 pandemic has affected different sectors of the economy, including insurance, and has become a problem and a clear catalyst for innovation. The pandemic has highlighted some inefficiencies of the traditional model of interaction between insurers and their customers and focused on insurance companies' efforts on innovations and investments in the digital future. That is why the article aims to generalize the transformations of the institutional environment in the InsurTech ecosystem in the context of the COVID-19 pandemic and identify prospects for its development in the post-pandemic period.

The analysis of the functioning of InsurTech as an ecosystem necessitated the identification of challenges for the insurance market in the context of COVID-19. The peculiarities of the insurance market development have been identified: the blurring of boundaries between insurers, BigTech firms, and technological partners; expanding interaction with policyholders based on the principle of support and the use of social networks; changes in the structure of the implemented insurance services; an increase in insurance fraud cases; the growing demand for parametric insurance products; introduction of a digital approach to the interaction with customers and employees, modernization of technological infrastructure and expansion of data processing capabilities; remote risk identification; acceleration in the use of financial technologies by insurance market participants. There is a transformation of the insurance market under the influence of business processes digitalization because insurers are aware of the importance of InsurTech in the formation of competitive advantages.

For many companies, the crisis has strengthened their innovative development strategies and accelerated the implementation of financial technology tools in their business processes against the background of modernization of technological infrastructure. Chatbots, telematics, the Internet of Things, machine learning, artificial intelligence, predictive analytics, etc., are widely used. In the future, InsurTech will also play an important role in introducing digital innovations in the insurance market.

Keywords

insurance companies, crisis management, ecosystem,
InsurTech, COVID-19, innovation, digitalization

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G22, H12

INTRODUCTION

The international insurance market is actively developing. Therefore, in 2017, global insurance premiums exceeded USD 4,9 trillion (Businesswire, 2020b). In 2018, for the first time, they exceeded the mark of USD 5 trillion, which is equivalent to more than 6% of the world gross domestic product. The overall growth was based mainly on sustained growth in the non-life insurance sector (Forinsurer, 2019). Global insurance premiums grew by 2.9%, and in 2019, adjusted for inflation; they reached the level of USD 6.3 trillion. Risk insurance premiums increased by 3.5% when adjusted for inflation, slightly exceeding the growth rate from 2009 to 2018. Life insurance premiums increased by 2.2% in 2019, faster than 1.5% in 2009–2018, adjusted for inflation (Insurance Information Institute, 2020).

The world insurance market entered 2020 in good condition because, in 2019, the overall growth of premiums was the biggest in the last four years. One hopes that the insurance industry will be able to quickly overcome the global economic downturn caused by COVID-19, despite the rather unoptimistic expert assessment of Swiss Re Institute. It is believed that the world economy has been in the grip of the deepest recession since the Great Depression of the 1930s, which leads to a drop in demand for insurance this year, especially for life insurance products (global premiums will fall by 6%), while the risk insurance market will be stronger, with near flat growth. The total volumes of premiums are expected to return to pre-crisis levels as early as 2021, along with a longer recovery of the global economy (Swiss Re Institute, 2020).

COVID-19 has had a different impact on the insurance market: the number of life and health insurance cases has risen sharply, and there has been a significant decline in travel and car insurance. However, all insurance companies have experienced changes in the system of interaction with customers. Even now, when more than 90% of market participants can do business remotely, they have felt the impact of COVID-19 on attracting new and retaining old customers (Itapro, 2020).

Despite its natural conservatism, the insurance industry now seems to be at a key point of change, and many experts consider InsurTech a great opportunity for its innovative development. It should be noted that last year the revenue of the global InsurTech market was estimated at USD 5.48 billion and is expected to reach 10.14 billion by 2025, with an average annual growth rate of 10.80% in the period 2019–2025 (Businesswire, 2020b). Today, it is safe to say that one of the main factors in such growth will be the COVID-19 pandemic, which has given a significant impetus to the expansion of innovative technologies in the insurance industry.

1. LITERATURE REVIEW

The Fourth Industrial Revolution (Industry 4.0) consists of nine pillars of technology advancement, namely big data, advanced robotics, simulation, augmented reality, horizontal and vertical integration, additive manufacturing, cloud, cybersecurity, and Internet of Things (IoT), which has influenced many sectors such as manufacturing, tourism, retail business, banking and insurance industry (Eling & Lehmann, 2017). The digital evolution is supported by advanced technologies from Industry 4.0 that permits the innovation of new products, value chain activities, and business models (Schwab, 2017), especially for InsurTech firms (Ching et al., 2020).

Financial technology (FinTech) indicates technology usage to deliver financial services that provide solutions for customers (Daqar et al., 2020, p. 20). The current market offer should be based on the preferences of the consumer for which the product should be adapted. Meanwhile, in the sphere of FinTech innovations, there is an increase in consumer interest in the very fact of FinTech implementations, which provide a certain but shallow

detuning from the competitive supply in the market (Bukhtiarova et al., 2018).

The very concept of InsurTech originated not so long ago as one of the areas of FinTech. InsurTech is a set of innovative technologies at the intersection of information and insurance services. Even before the pandemic, some insurers began the transition to digital technology in search of more individual and efficient services, and many technology providers introduced innovations into the industry (L. Klapkiv & J. Klapkiv, 2017; Łyskawa et al., 2019). Video connection, Viber, Telegram, WhatsApp, and e-mail are used when processing insurance indemnity applications. The use of such technologies as drones provides the insurance company with a rapid collection of information and rapid assessment of losses.

In 2018, for the first time, Lloyd's introduced a mandate for syndicates to electronically place reinsurance risks. All syndicates had to place at least 10% of their risks electronically at the initial stage. During 2019, the requirement was to process up to 70%. Starting from January 2020, the target was raised to 80%. The electronic placement has

become a key element of the modernization program of Future at Lloyd. The problems related to this year's COVID-19 pandemic have only underscored the importance of digital transformations on the insurance market. The insurance and reinsurance market of Lloyd's of London has already announced the upgrade of its e-underwriting and risk placement platform, increasing the target risk levels for all classes to 90% (Forinsurer, 2020b).

Neale et al. (2020) find that insurers writing a higher proportion of business in the least complex lines of insurance invest more in insurance technology. Less profitable insurers tend to invest in underwriting technology, whereas more profitable insurers invest in loss adjustment technology. Lastly, insurers with higher losses and underwriting leverage invest more in loss adjustment expense technology.

Given the above, it is not surprising that PwC, in its report back in 2017, stated that 86% of insurers worldwide believe that companies that use new technologies in the insurance industry, the so-called InsurTechs, pose a threat to their income. Simultaneously, more than half of respondents consider innovation a priority of their strategy, and they are increasingly willing to cooperate with InsurTechs (Digitalandmore, 2017). Today, one no longer asks whether insurers will cooperate with InsurTechs but consider the cooperation model and its scale. Technologies such as big data, artificial intelligence, or blockchain are the future of the industry, and both insurers and customers will feel the consequences of their implementation.

Blockchain is a continuous sequential chain of blocks containing information built according to certain rules. Blockchain – or more correctly, Distributed Ledger Technology – is not a completely new technology. In fact, it has been in use for over 10 years in the field of cryptocurrency. In the business and insurance world, it enables information to be shared quickly, securely, and confidentially with the added bonus of immutability and smart contracts.

It is commonly known that the insurance industry consumes and shares data in high quantities. Much of this information is private data on individuals, and reliance on this information re-

quires trust and transparency. Blockchain helps provide users and data owners with confidence in the authenticity of the data and its security (Marke, 2019, p. 4).

Kim and Song (2018) also analyzed the acceptance of insurance services using blockchain technology.

By intensifying the introduction of artificial intelligence technologies, the Internet of Things (Bogoviz et al., 2019), and big data, insurers want to improve pricing, underwriting, claims processing, and interaction with customers, the system for detecting and combating insurance fraud.

Machine learning algorithms learn patterns from data (Blier-Wong et al., 2020).

It is also actively used in telematics insurance (Baecke & Bocca, 2017). Telematics devices measure several elements of interest to insurers: mileage; time of day; the route of the vehicle (global positioning system or GPS); rapid acceleration; abrupt braking; sharp turns; and airbag deployment. The collected data level usually reflects the type of used telematics technology and the willingness of policyholders to share personal data. This technology allows revealing peculiar car usage features and calculating the individual tariff. It is also used in real estate insurance when houses are equipped with “smart” sensors, and the size of the insurance premium is calculated individually, taking into account all the apartment's features. Also, in the case of an insured event (smoke in the apartment), the insurer's representative gets in touch with the owners, reassures people, and calls emergency services (Arnautov, 2017, p. 98).

Chatbots are also widely used. The implementation of service innovations based on chatbot technology can contribute, among other benefits, to improving the efficiency across the insurance value chain, reduce costs, and generate customer loyalty and trust (Barrett et al., 2015; Ross et al., 2016). However, despite the advantages, the adoption success of chatbot technology depends on understanding the ambivalent perceptions, attitudes, and beliefs of the main social actors (i.e., practitioners and potential users) towards the customer interface (Cardona et al., 2019).

Currently, the number of papers on the implementation and development of InsurTech is also growing due to the widespread use of big data (Trunina et al., 2019). A significant amount of Carbone's research (2016, 2020 a,b) was conducted to reveal the essence of InsurTech, its impact on the development of the insurance market, the use of financial technology instruments in certain segments of the insurance market, and prospects for certain segments of InsurTech in a pandemic. Hollmer (2020) studied the impact of the COVID-19 pandemic on venture financing, O'Donnell (2020) – on consumer perceptions of car insurance, Daly (2020) – on the growth of insurance fraud during the recession, Cartago et al. (2020) – opportunities for technical modernization of insurers, Sheehan (2020) – on the cooperation of insurers with BigTechs and InsurTech.

At the same time, there is a lack of comprehensive research on the peculiarities of InsurTech functioning as an ecosystem in the context of the COVID-19 pandemic.

The article aims to study the transformations of the institutional environment of the InsurTech ecosystem in the context of the COVID-19 pandemic and identify prospects for its development in the post-pandemic period.

2. GENERALIZATION OF MAIN STATEMENTS

InsurTech is developing, on the one hand, in the context of the operation of FinTech, in the institutional environment in which they originated, and on the other hand, the powerful factors influencing InsurTech are the trends of the insurance market. This causes the transformation of views on understanding the very essence of InsurTech. If a few years ago, the understanding of InsurTech was dominated by institutional and technological approaches (Volosovych & Fomina, 2018, p. 125), now the emphasis is increasingly on the fact that InsurTech is an ecosystem that brings together related industries to improve customer service and which is of greater value to insurers and their customers (PWC, 2020). Based on this, the authors offer their vision of components of the InsurTech ecosystem (Figure 1). The various participants can

be divided into two groups: the ecosystem's initiator and the partners who join it voluntarily. The unifying factors of all participants include:

- economic (gaining competitive advantage, attracting new customers and retaining old clients, increase in activities' efficiency, availability of necessary financial resources for the introduction and use of financial technologies' instruments);
- technological (the use of financial technology tools that allow creating a single database of information data, the possibility of access to it for all participants).

Given that the InsurTech ecosystem is a kind of financial ecosystem, it would be logical to assume that it also has specific features of the latter: adaptability, decentralization, customer focus, inclusiveness, stability (Volosovych & Baraniuk, 2019, p. 95). It can be seen that the use of InsurTech tools facilitates the interaction of insurers, insurance infrastructure institutions, consumers of insurance services, and regulators. Simultaneously, it requires strengthening activities' transparency, establishing effective communication, and raising the social responsibility of all participants on the insurance market (Khovrak, 2017).

The functioning of InsurTech as an ecosystem necessitates the identification of challenges for the insurance market in the context of COVID-19. They include:

- ensuring the continuity of business processes in the conditions of social distancing;
- ensuring the safety of employees and customers of insurance companies;
- creation of conditions for remote work of the insurer's employees, which involves their provision with appropriate technical means and technologies to allow accessing the necessary files and performing the necessary operations from remote locations;
- formation of new cybersecurity protocols (Kaigorodova et al., 2020);

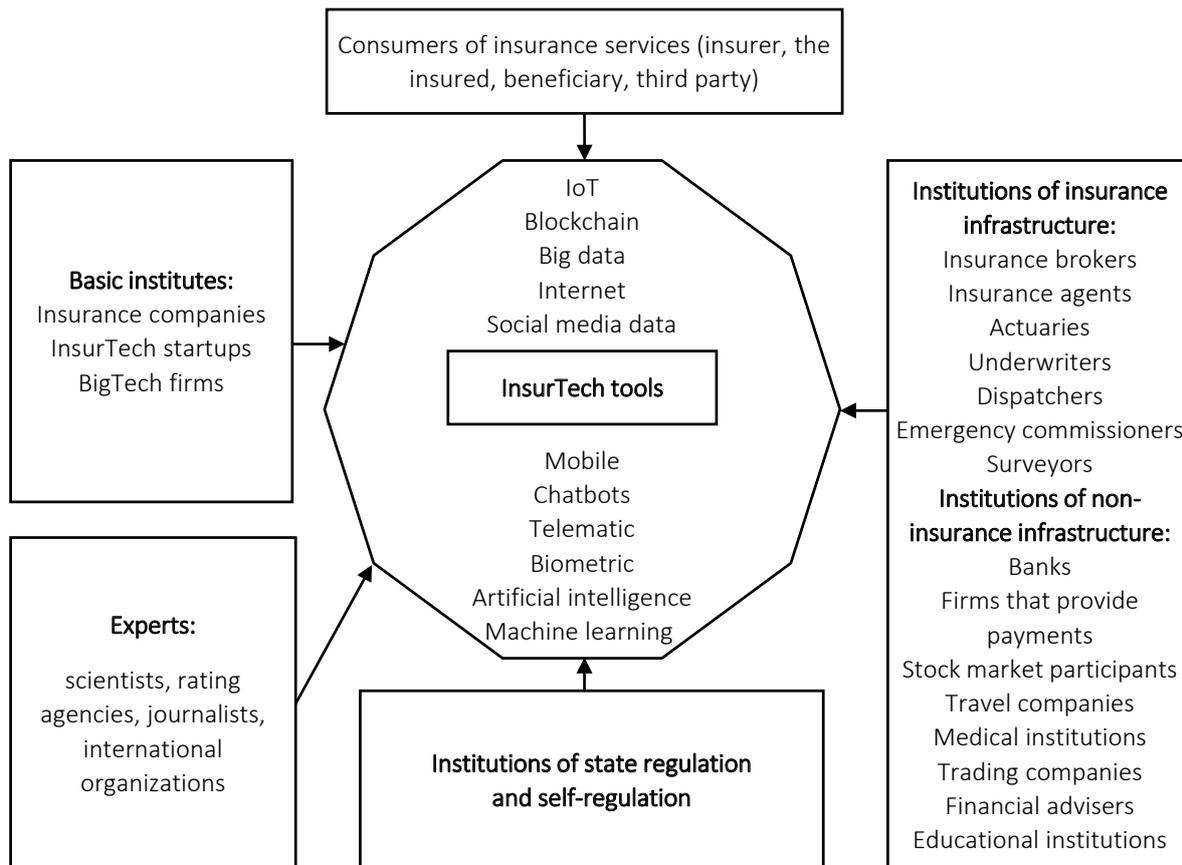


Figure 1. InsurTech ecosystem

- continuous operation of IT services to support remote work (Mustafina et al., 2018).

During the analysis, it is possible to formulate some features of the insurance market's functioning in the conditions of COVID-19:

- blurring the boundaries between insurance companies, BigTech firms, and technology partners. As there is a reorientation of insurers aimed at digitalization at the level of insurance products or individual components of the relationships with customers towards the digitalization of the entire ecosystem (Velichko et al., 2020). Both in-house developments and partnerships facilitate this with InsurTech startups and software providers;
- expansion of insurers' interaction with policyholders based on the principle of support, the components and mechanism of which are determined by studying the needs of consumers of insurance services. Insurers offer dis-
- counts on car insurance, taking into account the reduction of the time of their use; premium vacations in health insurance when clients cannot use insurance products that cover their planned surgical interventions and dental care; free car and housing insurance for National Health Service (NHS) employees in the UK (Boffey et al., 2020);
- changes in the structure of the provided insurance services. For example, against the background of a pandemic, the number of travelers decreases, and, as a result, the volume of their insurance is reduced. The massive fall in international travel demand during the first half of 2020 translates into a loss of 440 million international arrivals and about USD 460 billion in export revenues from international tourism (UNWTO, 2020). The recent pre-pandemic forecasts for the growth of the global travel insurance market to USD 35 billion by 2025 (Marke, 2019, p. 6) now seems unattainable and fantastic;

- the assessment of the risks of delayed charter flights for travel companies (Prymak et al., 2020), which was quite relevant in the pre-pandemic period, was almost leveled in 2020 by the risks of complete closure of borders and cancellation of flights; the risks associated with travel cancellation due to a positive test or the need for treatment or self-isolation in the host country in case of COVID-19; the cancellation of mass events – festivals, concerts, sports competitions, which usually attract guests from different cities and countries, etc. A similar situation of reduced collection of insurance payments is observed in the segment of auto insurance. At the same time, COVID-19 has increased demand for life and health insurance;
 - increase in insurance fraud cases. According to Accenture, only 29% of customers trust the insurers, which is quite reciprocal on the part of insurers, as the number of insurance frauds is growing, leading to increased costs for the verification of each claim (Kot, 2020). Daly (2020) argues that the incidence of insurance fraud, particularly in auto insurance, increases during periods of recession and financial difficulties. Insurers are vulnerable because of so much information they store in unstructured text. The free-form text boxes in claims notification forms and policy applications. The information was collected via e-mails and investigations. Not only that, but AI technology is both a friend and a foe! Professional fraudsters and criminals are as open to the potential of AI as any insurer. They seek out the weak points in digital workflows and processes, straight-through processing (STP), and automatic payouts (Daly, 2020);
 - growth in demand for parametric insurance products due to the increasing need to compensate for losses due to business interruptions, which in traditional insurance products are not covered during a pandemic. The positive characteristics of parametric products are transparency, simplicity, objectivity in establishing the fact of the insured event, and the amount of compensation, while its drawback is a delay in the publication of state statistics (Korvat, 2019). For example, a business insurance startup, Thimble (New York, USA), known for its 1-month and on-demand policies, is developing a low-limit, parametric casualty insurance for small and medium-sized businesses in pandemic conditions (Forinsurer, 2020a);
 - further implementation of the digital approach to interaction with customers and employees, modernization of technological infrastructure and expansion of data processing capabilities, the introduction of contactless, digital processes of underwriting and claims settlement (KPMG, 2020). The pandemic has contributed to the intensification in the use of smart contracts in the insurance sector, which are characterized by minimal human interference in information processing, ensuring the speed, transparency, and cost-effectiveness of transactions, which is based on the blockchain. Smart contracts minimize the impact of the human factor. However, there is a risk of computer code hacking, which increases the demand for smart contract security audit services. At the same time, there are problems with the existence of certain legal barriers to the use of smart contracts, to overcome which the Insurtech Task Force was created in 2019 under the European Insurance and Occupational Pensions Authority;
 - accelerated use of financial technologies by insurance market participants. The pandemic caused their intensification (Polinkevych et al., 2021). This is reflected in the global investments in InsurTech. As can be seen from Figure 2, in the first half of 2020, the volume of global investments remained at the level of the first half of 2019 – a year with record-high investments. At the same time, in March-April 2020, there was a decline in global investments against the background of the pandemic in the US, although, in May-June, there was a significant increase in global investments in InsurTech, which enabled us to maintain the trends of 2019 in the first half of 2020 (Deloitte, 2020).
- According to the World InsurTech Report 2020, 67% of insurers have expressed their readiness to cooperate with InsurTechs. 85% of InsurTechs want

Source: Built based on Deloitte (2020).



Figure 2. Global investments in InsurTech for 2016 – first half of 2020

to work with technology providers, and 83% – with insurers. More than 60% of insurers and InsurTechs are interested in working with BigTech companies. One is convinced that to establish such cooperation, companies need a new way of thinking to move from owning opportunities and assets to sharing access to increase efficiency and encourage partnerships with professionals (Itapro, 2020).

- paying attention to the issues of remote risk identification. Insurers are not only looking for ways to more widely and effectively use remote visualization to assess insurance risks and claims, but they are also stepping up efforts to use the capabilities of sensors and devices connected to the Internet of Things for the same purposes (KPMG, 2020).
- active use of social networks in the process of interaction with policyholders. For example, the Dutch insurance company Kroodle conducts interaction with customers entirely through social networks. Customers log in using their Facebook credentials; they file claims,

receive quotes, and request other services through the Facebook app (Wargin, 2020).

In the conditions of the pandemic, the accents in the expectations of consumers of insurance services change, under which the policy of insurers regarding the offer of insurance products and customer service should also be changing (Table 1).

It should be noted that to compete with companies in the information technology industry, insurers need to focus significantly on customer service, crisis management, real-time responding, good partner image, and promotion of useful insurance products (Itapro, 2020).

The COVID-19 pandemic caused challenges for the functioning of the insurance market and created the basis for further prospects of its development. About 61% of insurers in July 2020, against 57% in April, believed that COVID-19 affects the attraction of new customers, and 42% believe that it affects customer retention, compared to 29% earlier (Sheehan, 2020).

Table 1. Compliance of insurers’ policies with customer expectations

Source: Compiled by the authors based on Boffey et al. (2020) and their own research.

Customer expectations	Compliance of insurers’ policies with customer expectations
Good faith of insurer	Facilitating customers’ access to the necessary information
Facilitating access to insurance services	The use of financial technology tools on all phases of the insurance process
Understanding of customers’ individual needs	Personalization of insurance services
The need for certain insurance preferences	Using a model of changing consumer behavior based on the awareness of initial condition; an offer for good consumer behavior and a reward for it. In the future, such a model reduces the possibility of risks’ realization for the customer and the insurer

In China, in particular, the pandemic has helped increase the use of online platforms such as Ping An's Group Doctor, which connects patients and doctors and provides 900% online counseling services, the popularity of an insurance model based on mutual aid platforms when their customers pay a small amount of money for participation in collective insurance: in China, their number is about 300 million people (Yiu, 2020). The blockchain has been updated during the pandemic, which simplifies reimbursement in health insurance, reducing the time for insurers to process documents and conduct verification in partner clinics. A useful feature of the blockchain in pandemic conditions was that insurers could inform patients about the actions required to process payments. The introduction of electronic medical record systems has accelerated; the basis of operations is blockchain, which streamlines the process of filing and processing the claims and updating personal information, which, in turn, increases the efficiency and coordination of medical care. In Taiwan, 11 insurers within the Preservation/Claims Alliance Chain have introduced a blockchain technology that delivers changes to the client's personal information to all group members, as well as to the information about the initiation of claims if the consumer has several insurance policies of different insurance companies (Leong & Bosworth, 2020).

This year, the main trends in the development of insurance technologies were (Wargin, 2020) and will remain in the near future:

- unmanned drones as a technological tool for risk assessment when accepting insurance applications and assessing losses;
- chatbots that can interact with customers, saving employees' time and, ultimately, insurance companies' money. By 2025, 95% of all customer interactions will be via chatbots;
- telematics to encourage better driving habits, reduce claims for insurers and change the operator's relationship with customers from reactive to proactive;
- data from social networks (social media data) not only to implement marketing strategies and to disseminate smart advertising but al-

so to improve risk assessment for insurers, expand opportunities to detect fraud;

- Internet of Things (IoT), which can automate much of the data exchange of consumers who are willing to share additional personal information in order to save money on insurance payments;
- machine learning, which is based on the idea that it is possible to create machines for data processing and learning independently, without constant control in order to automate the processes of the settlement of losses, general administration, underwriting;
- artificial intelligence to strengthen the personalization of insurance services by finding an individual approach to the consumer, especially when purchasing an insurance product. Faster access to data and the exclusion of the human factor can lead to more accurate reporting in shorter periods;
- predictive analytics to collect a variety of data to understand and predict policyholders' behavior, price and select risks, identify customers at risk of failure, identify the risk of fraud, prioritize claims, identify claims, and predict trends.

Hopefully, all these technologies will be actively used by insurers in the future.

The pandemic is likely to lead to new trends.

The digitalization of brokerage and agency networks and their integration with the digital environment of the insurer is expected to intensify, especially in countries where the model of interaction of most customers with insurers through intermediaries has been formed. This will eliminate the gap between the needs of the client, intermediaries, and insurers and will ensure the alignment of experiences of the consumer of services with the price offer of the insurer, regardless of how the client applies for the service. At the same time, there may be a shift in favor of direct sales channels for insurance products. For example, there is a prediction for Italy with 85% of insurance products sold through intermedi-

aries regarding the increase in the share of direct channels due to the impact of the pandemic and the need for social distancing (Cartago et al., 2020).

It is possible to increase the share of telematics in car insurance. Currently, this figure is quite high in Italy, a country with the highest use of telematics, about 25% (Carbone, 2020a), in contrast to the United States, where telematics covers only 5% of cars, showing a significant gap between consumer interest and current offers (Businesswire, 2020a). At the same time, 63% of US policyholders are ready to switch to the telematics-based premium (Carbone & McMahon, 2020). Most respondents (52%) hope to obtain telematics programs from traditional insurers, but 20% of respondents chose non-traditional technology companies such as Amazon as a future preferred option, indicating a future challenge for the current market leaders (Businesswire, 2020a). According to JD Power, the total discounts offered by the US auto insurance companies are about USD 10 billion. A survey conducted by JD Power on April 14, 2020 found that only 37% of customers were aware of discounts. People who are aware of discounts still seek to further reduce insurance premiums by reducing insurance coverage (30%) and increasing deductibles (26%) (O'Donnell, 2020).

There will be a further development of public-private partnerships in different sectors of the economy (Danylkiv et al., 2020), including insurance using technological solutions, which aims to reduce losses not covered by the insurer (Mazaraki & Volosovich, 2019, p. 150).

It is possible that the change of emphasis on non-price factors (Baranovsky et al., 2020) in tender

procurement, such as terms of payment for the insurance contract, the duration of the contract and the list of insurance risks, etc., will play a significant role in determining the winning bidder.

The variability of stock markets and the falling interest rates is possible, which, in turn, will affect the investment activities of insurance companies (Kozmenko & Roienko, 2013), disrupting the profitability of their investment portfolios (Oliinyk & Kozmenko, 2019).

It is also important to consider the active development of cooperation between insurers and insurance infrastructure entities with technology companies, which is the best way to increase the competitiveness of the former in the market. According to some data, during the pandemic, the level of consumer confidence in large technology companies has increased, as evidenced by the willingness of 44% of policyholders to conclude insurance contracts with BigTechs in April 2020, compared to 17% in 2016 and 36% in January 2020 (Sheehan, 2020). According to the World InsurTech Report (2020), approximately 67% of insurers want to work with InsurTech, and 83% of InsurTech want to work with insurers. At the same time, more than 60% of insurers and InsurTech declare their readiness to cooperate with large technology companies. The connection of insurers with suppliers of innovative technologies that connect them with health care ecosystems will be strengthened, in particular, this concerns Telemedi.co (Poland), Mediktor (Spain), Medlanes (Germany), Infermedica (Poland), Breathomix Netherlands/Romania), reFit Systems (Mexico/Germany), HiNounou (China/Singapore), Neurotrack (USA) (Feniks & Peverelli, 2020).

CONCLUSION

Technologies play a vital role in the development of insurance companies, contributing to improving the product range and gaining competitive advantages. InsurTech and insurers must work together to create an ecosystem capable of providing added value to customers by meeting their digital needs. As the number of digital platforms grows, insurers will increasingly face the issue of adapting their business models to customers, intellectualization, product flexibility, and building an open ecosystem. The success of new InsurTech initiatives will require a combination of technological excellence, marketing skills, and knowledge of the insurance industry. The combination of these competencies will gain the confidence of customers.

COVID-19 creates new challenges for the insurance market, enabling it to accelerate the digital transformation and implement innovations. Digitalization will be the key to transformation in distribution channels when the direct sales market will vary greatly depending on countries and regions. COVID-19 reiterated the need for insurers to streamline, improve, and digitize loss management operations and functions.

Insurers have become aware of the close connection between customer experience and digital strategy, the approach to transformation, and the improvement of operations. Unmanned drones, chatbots, telematics, data analysis from social networks, the Internet of Things, machine learning, artificial intelligence, and forecasting analytics will continue to be widely used in the insurance market.

The development of new technologies and the insurance sector growth have influenced how insurance claims are processed, and insurance contracts are evaluated. This occurs against the background of a preliminary study of customer needs and their subsequent consideration, expressed in the personalization of insurance services. In the short term, this will lead to structural changes in the insurance market, which will be reflected in the transition from the stage of insurers' competition with InsurTech companies to the stage of cooperation with them. On the other hand, the pandemic has strengthened BigTech's position in the insurance market. In the long run, these transformations may contribute to the further growth of the insurance market.

The traditional obstacle to greater personalization has been the reluctance of customers to provide insurance companies with the necessary personal data. However, during the COVID-19 crisis, people became more concerned about their health than their privacy and agreed to install mobile applications to track COVID-19. Due to the symbiotic relationship in the exchange of data between customers and insurers, it will be possible to create more individualized and targeted products. Insurers will be able to better select products, breaking them down based on technical segmentation into different risk components while assessing an individual or a company. The insured will be able to receive personalized coverage, and the insurer will be able to set a more accurate price. A significant surge in online communication between people, including through video, will affect the system of sales of insurance products, digital consulting through video calling, becoming increasingly popular among customers before concluding an insurance contract.

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REFERENCES

1. Arnautov, A. (2017). Novoe slovo v semeystve "tekh" [A new word in the "tech" family]. *Sovremennye strakhovye tekhnologii – Modern insurance technologists*, 6, 98-99. (In Russian)
2. Baecke, P., & Bocca, L. (2017). The value of vehicle telematics data in insurance risk selection processes. *Decision Support Systems*, 98, 69-79. <https://doi.org/10.1016/j.dss.2017.04.009>
3. Baranovsky, A., Tkachenko, N., Glonti, V., Levchenko, V., Bogatyrova, K., Beridze, Z., Belinskaja, L., & Zelenitsa, I. (2020). Non-Price Criteria for the Evaluation of the Tender Offers in Public Procurement of Ukraine. *International Journal of Financial Studies*, 8(3), 44. <https://doi.org/10.3390/ijfs8030044>
4. Barrett, M., Davidson, E., Prabhu, J., & Vargo, S. (2015). Service Innovation in the Digital Age: Key Contributions and Future Directions. *MIS Quarterly*, 39(1), 135-154. <https://doi.org/10.25300/MISQ/2015/39:1.03>
5. Blier-Wong, C., Cossette, H., Lamontagne, L., & Marceau, E. (2020). Machine Learning in P&C Insurance: A Review for Pricing and Reserving. *Risks*, 9(1), 4. <https://dx.doi.org/10.3390/risks9010004>
6. Boffey, G., Fischer, D., McCorry, M., Pigg, D., & Thomas, T. (2020). *COVID-19: customer and digitization in insurance*. KPMG. Retrieved from <https://home.kpmg/xx/en/home/insights/2020/05/covid-19-customer-and-digitization-in-insurance.html>
7. Bogoviz, A., Tsvetkova, L., Bodiako, A., Gimelshteyn, A., & Tretyakova, I. (2019). The model of trust management in the age of the internet of things from the positions of various interested parties. In E. Popkova (Ed.), *Ubiquitous Computing and the Internet of Things: Prerequisites for the Development of ICT* (pp. 1163-1170). https://doi.org/10.1007/978-3-030-13397-9_119
8. Bukhtiarova, A., Hayriyan, A., Bort, N., & Semenog, A. (2018). Modeling of FinTech market development (on the example of Ukraine). *Innovative Marketing*, 14(4), 34-45. [https://doi.org/10.21511/im.14\(4\).2018.03](https://doi.org/10.21511/im.14(4).2018.03)
9. Businesswire. (2020a). *Report: 63% of US Drivers Would Consider a Change to UBI*. Retrieved from <https://www.businesswire.com/news/home/20200728005781/en/Report-63-of-U.S.-Drivers-Would-Consider-a-Change-to-UBI>
10. Businesswire. (2020b). *Global Insurtech Market (2020 to 2025) – Growth, Trends, and Forecast – ResearchAndMarkets.com*. Retrieved from <https://www.businesswire.com/news/home/20200701005415/en/Global-Insurtech-Market-2020-to-2025---Growth-Trends-and-Forecast--->
11. Carbone, M. (2016). *The future of insurance is Insurtech*. Retrieved from https://www.linkedin.com/pulse/future-insurance-insurtech-matteo-carbone?trk=v-feed&lipi=urn%3Ali%3Apage%3Ad_flagship3_feed%3B3BffcMcsJPYLIKNMrkTdnQ%3D%3D
12. Carbone, M. (2020a). *Nel dopo Covid una nuova ondata di insurtech*. Retrieved from <https://www.startupbusiness.it/matteo-carbone-nel-dopo-covid-una-nuova-ondata-di-insurtech/104663/>
13. Carbone, M. (2020b). *We are back! ...a quarantine dispatch on the InsurTech trio*. Retrieved from <https://www.linkedin.com/pulse/we-back-quarantine-dispatch-insurtech-trio-matteo-carbone/>
14. Carbone, M., & McMahon, R. (2020). *Attractive UBI Business Models for US Consumers*. Cambridge Mobile Telematics. Retrieved from <https://www.cmtelematics.com/us-connected-insurance-value-propositions-report/>
15. Cardona, D., Werth, O., Schönborn, S., & Breitner, M. (2019). *A mixed methods analysis of the adoption and diffusion of Chatbot Technology in the German insurance sector*. Paper presented at 25th Americas Conference on Information Systems (AMCIS), Cancun, Mexico.
16. Cartago, S., Plotkin, G., Tjioe, L., & Zandani, S. (2020). *COVID-19 puts insurers on the fast-track to technology adoption*. Retrieved from <https://home.kpmg/xx/en/home/insights/2020/04/covid-19-puts-insurers-on-fast-track-to-technology-adoption.html>
17. Ching, K., Teoh, A., & Amran, A. (2020). A Conceptual Model of Technology Factors to InsurTech Adoption by Value Chain Activities. In *2020 IEEE Conference on e-Learning, e-Management and e-Services (IC3e)* (pp. 88-92). Kota Kinabalu. <https://doi.org/10.1109/IC3e50159.2020.9288465>
18. Daly, M. (2020). *Detected Insurance Fraud – new data shows that every five minutes a fraudulent claim is discovered*. InsurTech World. Retrieved from <https://www.insurtechworld.org/post/102glfp/detected-insurance-fraud-new-data-shows-that-every-five-minutes-a-fraudulent-cl>
19. Danylkiv, K., Gorbova, K., Hembarska, N., Trynchuk, V., Paيدا, Y., & Havran, V. (2020). Methods of economic evaluation of concession project effectiveness. *Montenegrin Journal of Economics*, 16(4), 67-84. Retrieved from <https://ideas.repec.org/a/mje/mj ejnl/v16y2020i467-84.html>
20. Daqar, M., Arqawi, S., & Karsh, S. (2020). Fintech in the eyes of Millennials and Generation Z (the financial behavior and Fintech perception). *Banks and Bank Systems*, 15(3), 20-28. [https://doi.org/10.21511/bbs.15\(3\).2020.03](https://doi.org/10.21511/bbs.15(3).2020.03)
21. Deloitte. (2020). *COVID-19 pandemic shifts InsurTech investment priorities*. Retrieved from <https://www2.deloitte.com/us/en/pages/financial-services/articles/fintech-insurtech-investment-trends.html>
22. Digitalandmore. (2017). *Ubezpieczyciele boją się utraty zysków na*

- rzczech insurtech-ów. (In Poland). Retrieved from <https://digitalandmore.pl/ubezpieczyciele-boj-sie-utracy-zyskow-na-rzecz-insurtech-ow/>
23. Eling, M., & Lehmann, M. (2017). The Impact of Digitalization on the Insurance Value Chain and the Insurability of Risks. *The Geneva Papers on Risk and Insurance - Issues and Practice*, 43(3), 359-396. Retrieved from <https://link.springer.com/article/10.1057%2F41288-017-0073-0>
 24. Feniks, R., & Peverelli, R. (2020). Post-COVID-19 Trends for insurers. Retrieved from <https://www.insurancethoughtleadership.com/4-post-covid-19-trends-for-insurers/>
 25. Forinsurer. (2019). *Swiss Re predstavila obzor globalnogo rynka strakhovaniya: v 2018 godu premii prevysili \$5 trln* [Swiss represented an overview of the global insurance market: premiums exceeded \$5 trillion in 2018]. (In Russian). Retrieved from <https://forinsurer.com/news/19/07/24/37009>
 26. Forinsurer. (2020a). *Lloyd's nazval 10 insurtech-startapov, spetsializiruyushchikhsya na strakhovaniy i otsenke riskov COVID-19* [Lloyd's named 10 insurtech startups specializing in insurance and COVID-19 risk assessment]. (In Russian). Retrieved from <https://forinsurer.com/news/20/08/12/38347>
 27. Forinsurer. (2020b). *Lloyd's of London obyavil, chto segodnya v elektronnom vide obrabatyvaetsya 90% vseh prinimaemykh riskov v perestrahovanie* [Lloyd's of London announced that 90% of all accepted risks in reinsurance are processed electronically today]. (In Russian). Retrieved from <https://forinsurer.com/news/20/12/22/3-8930?fbclid=IwAR29xOEojzFSD20DhFm6TWC39IVSDAC0LWaYp-8gM8eJjn7wmUWynEFqA70>
 28. Hollmer, M. (2020). *Future InsurTech Venture Financings Could Face a Coronavirus Slow-down*. Retrieved from <https://www.carriermanagement.com/news/2020/03/19/204555.htm>
 29. Huang, J. (2020). *China's online health platforms see spike in usage amid coronavirus outbreak*. Retrieved from <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/china-s-online-health-platforms-see-spike-in-usage-amid-coronavirus-outbreak-57189378>
 30. Insurance Information Institute (III). (2020). *World insurance marketplace*. Retrieved from <https://www.iii.org/publications/insurance-handbook/economic-and-financial-data/world-insurance-marketplace>
 31. Itapro. (2020). *COVID-19 Accelerates Insurance Digitalization to Meet Customer Demand: World InsurTech Report 2020*. Retrieved from <http://www.emagazine.itapro.org/Home/Article/COVID-19-Accelerates-Insurance-Digitalization-to-Meet-Customer-Demand-World-InsurTech-Report-2020/3325>
 32. Kaigorodova, G., Mustafina, A., Pyrkova, G., Vyukov, M., & Davletshina, L. (2020). Cyber Risks for Insurance Company. In S. Ashmarina, A. Mesquita, & M. Vochozka (Eds.), *Digital Transformation of the Economy: Challenges, Trends and New Opportunities* (pp. 669-677). Springer, Cham. http://doi.org/10.1007/978-3-030-11367-4_64
 33. Khovrak, I. (2017). Odpowiedzialność społeczna jako strategia przywództwa przedsiębiorstwa na rynku. *Zarządzanie Publiczne*, 3(39), 391-401. <http://doi.org/10.4467/20843968ZP.16.030.7245>
 34. Kim, J., & Song, E. (2018). The Effects of Blockchain Technology Benefits on Acceptance Intentions of Blockchain Insurance Services: Based on the UTAUT Mode. *Journal of Information Technology Services*, 17(4), 163-189. <https://doi.org/10.9716/KITS.2018.17.4.163>
 35. Klapkiv, L., & Klapkiv, J. (2017). Technological innovations in the insurance industry. *Journal of Insurance, Financial Markets and Consumer Protection*, 26, 67-78. Retrieved from <https://www.ceeol.com/search/article-detail?id=602247>
 36. Korvat, O. (2019). *Asortymentna polityka strakhovykiv u strakhu-vanni produktsii roslinnyystva* [Assortment policy of insurers in crop insurance]. Paper presented at Modernization of the economy: current realities, forecast scenarios and prospects for development: Proceedings of the 1st International Scientific and Practical Conference, Kherson. (In Ukrainian). Retrieved from http://repository.hneu.edu.ua/bitstream/123456789/21995/1/%D0%9A%D0%BE%D1%80%D0%B2%D0%B0%D1%82_%D0%A5%D0%9D%D0%A2%D0%A3_2019.pdf
 37. Kot, I. (2020). *Smart contracts in insurance*. Retrieved from <https://www.insurancethoughtleadership.com/smart-contracts-in-insurance/>
 38. Kozmenko, O., & Roienko, V. (2013). Evaluation and use of indicators of insurance companies' investment activities. *Investment Management and Financial Innovations*, 10(3), 98-105. Retrieved from <https://businessperspectives.org/media/zoo/applications/publishing/templates/article/assets/jspdfjs/web/5373>
 39. KPMG. (2020). *Insurtech's place in a COVID-19 world. Who will benefit as insurers accelerate innovation efforts?* Retrieved from <https://home.kpmg/xx/en/home/insights/2020/09/insurtechs-place-in-covid-19-world.html>
 40. Leong, T., & Bosworth, D. (2020). *COVID-19 Brief: Three product digitalization trends in Asia insurers should watch*. RGA. Retrieved from <https://www.rgare.com/knowledge-center/media/covid-19/covid-19-brief-three-product-digitalization-trends-in-asia-insurers-should-watch>
 41. Łyskawa, K., Kędra, A., Klapkiv, L., & Klapkiv, J. (2019). Digitalization in insurance companies. *International Scientific Conference: Contemporary Issues in Business, Management and Economics Engineering* (pp. 842-852). Vilnius: Gediminas Technical University Press. <https://doi.org/10.3846/cib-mee.2019.086>
 42. Marke, K. (2019). Blockchain and travel. *Insurtech Revue*, 4-7. Retrieved from <https://www.itij.>

- [com/latest/long-read/blockchain-and-travel](https://doi.org/10.21511/ins.12(1).2021.01)
43. Mazaraki, A., & Volosovich, S. (2019). *FinTech* (monograph). KNUTE. (In Ukrainian)
 44. Mustafina, A., Alyakina, D., & Kaigorodova, G. (2018). Directions of improving information system of insurance company. *Journal of Physics: Conference Series*, 1015(4), 042016. <https://doi.org/10.1088/1742-6596/1015/4/042016>
 45. Neale, F., Drake, P., & Konstantopoulos, T. (2020). InsurTech and the Disruption of the Insurance Industry. *Journal of Insurance Issues*, 43(2), 64-96. Retrieved from <https://www.jstor.org/stable/26931211>
 46. O'Donnell, A. (2020). *Will COVID-19 Make Usage-Based Insurance Mainstream?* Retrieved from <https://iireporter.com/will-covid-19-make-usage-based-insurance-mainstream/>
 47. Oliinyk, V., & Kozmenko, O. (2019). Optimization of investment portfolio management. *Serbian Journal of Management*, 14(2), 373-387. <https://doi.org/10.5937/sjm14-16806>
 48. Polinkevych, O., Khovrak, I., Trynchuk, V., Klapkiv, Y., & Volynets, I. (2021). Business Risk Management in Times of Crises and Pandemics. *Montenegrin Journal of Economics*, 17(3), 117-128.
 49. Prymak, T., Ivchenko, L., Pohuda, N., Levchenko, V., & Trynchuk, V. (2020). The peculiarities of establishing the charter air transportation: European experience in Ukraine. *Innovative Marketing*, 16(1), 43-56. [http://dx.doi.org/10.21511/im.16\(1\).2020.05](http://dx.doi.org/10.21511/im.16(1).2020.05)
 50. PWC. (2020). *This is InsurTech's moment. Will insurers seize the opportunity?* Retrieved from <https://www.pwc.com/us/en/industries/financial-services/library/insurtech-innovation.html>
 51. Ross, J., Sebastian, I., Beath, C., Mocker, M., Moloney, K., & Fonstad, N. (2016). Designing and Executing Digital Strategies. In *Proceedings of the 14th International Conference on Information Systems*. Retrieved from <https://aisel.aisnet.org/icis2016/Practice-OrientedResearch/Presentations/2/>
 52. Schwab, K. (2017). *The fourth industrial revolution*. New York, NY: Crown Publishing Group.
 53. Sheehan, M. (2020). *COVID-19 accelerating demand for digital capabilities: insurtech report*. Retrieved from <https://www.reinsurancene.ws/covid-19-accelerating-demand-for-digital-capabilities-insurtech-report/>
 54. Swiss Re Institute. (2020). *World insurance: riding out the 2020 pandemic storm*. Retrieved from <https://www.swissre.com/institute/research/sigma-research/sigma-2020-04.html>
 55. Trunina, I., Khovrak, I., & Sushchenko, S. (2019). Big Data in Sustainable Regional Development: The Digital Future of Smart Regions. *International Journal of 3D Printing Technologies and Digital Industry*, 3(2), 116-123. Retrieved from <https://dergipark.org.tr/tr/download/article-file/797256>
 56. UNWTO. (2020). International tourism down 65% in first half of 2020. *World Tourism Barometer*, 18(5), 1-23. Retrieved from <https://www.e-unwto.org/doi/pdf/10.18111/wtobarometereng.2020.18.1.5>
 57. Velichko, N., Mustafina, A., Kaigorodova, G., Alyakina, P., & Zainullina, R. (2020). Digital Technology in Insurance. In S. Ashmarina, A. Mesquita, & M. Vochozka (Eds.), *Digital Transformation of the Economy: Challenges, Trends and New Opportunities* (pp. 678-685). Springer, Cham. https://doi.org/10.1007/978-3-030-11367-4_65
 58. Volosovych, S., & Baraniuk, Yu. (2019). Blockchain technology in the financial ecosystem. *Herald of Kyiv National University of Trade and Economics*, 6, 93-104. [http://doi.org/10.31617/visnik.knute.2019\(128\)09](http://doi.org/10.31617/visnik.knute.2019(128)09)
 59. Volosovych, S., & Fomina, O. (2018). Tekhnolohichni innovatsii na strakhovomu rynku [Technological innovations in the insurance market]. *Herald of Kyiv National University of Trade and Economics*, 5, 124-137. (In Ukrainian)
 60. Wargin, J. (2020). *8 Insurance Technology Trends Transforming the Industry in 2020*. Retrieved from <https://www.duckcreek.com/blog/insurance-technology-trends/>
 61. World InsurTech Report. (2020). *World InsurTech Report 2020*. Retrieved from <https://worldinsurtechreport.com/resources/world-insurtech-report-2020/>
 62. Yiu, E. (2020). *Technology turbocharges China's access to health insurance amid coronavirus pandemic – for the price of a Starbucks coffee*. Retrieved from <https://www.scmp.com/business/china-business/article/3078273/technology-turbocharges-chinas-access-health-insurance-amid>