Received: 20 April 2021 | Accepted: 07 May 2021
DOI: 10.52898/ijif.2021.4

ORIGINAL ARTICLE

How Digitalization Affects Insurance Companies: Current Status and Future Expectations

Erdem KIRKBEŞOĞLU

Abstract
The aim of this study is to define the effects of digital technologies on the insurance industry. In order to answer this question, the literature is searched systematically. Journal articles, proceedings, research reports and projects completed between 2005 and 2021 are also examined.

As a conclusion, it has been determined how the business processes of insurance companies will undergo possible evolutionary change in the future.

Keywords
Digitalization, Insurance.

JEL Classification
G22, L25

Authors Notes:
Başkent University of Ankara,
ORCID: 0000-0002-6781-9753,
erdemk@baskent.edu.tr

1. INTRODUCTION

The technological development acceleration that started with the Industrial Revolution shows that there are changes not only in business life, but also in our social and psychological behavioral patterns. The main feature of this new era, which we have named with different names such as the post-modern age, information age, technology age or digital age, is that "speed" has become more important than ever. Many sectors that are important for the world economy have become sensitive to this pace. The success of the goods or services produced is more sensitive to fast and quickly accessible data and new technologies. The finance sector, which is among these sectors, similarly needs high technology and provides stability within the economic system through the data produced by these technologies.

The modern financial system requires the use of digital technologies much more than in the past. Digitalization, which started with the banking sector, is also at the focus of the insurance industry today. However, we think that the main reason for the emergence of the digitalization process in different periods between the two life bloods of the financial sector is the conservative nature of the insurance system. Unlike many other sectors, the insurance industry is a sector that requires detailed data on more risk groups. An insurance company is in a structure that develops products that are compatible with the data in the market, prices the risk based on big data, predicts claims in advance through data and directs the collected premiums to investment in the financial markets in the most effective way. To put it more clearly, for the success of the insurance system, which is based on collecting premiums and paying claims, in achieving this balance, it is of great importance to use big data effectively and to meet the new expectations created by the age of speed. Modern insurance now needs much more than selling the policy or paying damages. Insurance companies have to invest much more in technology and digitalization for a profitable portfolio.

Insurtech, also known as insurance technologies, has emerged as a guiding development for insurance companies in terms of risk calculation, pricing, preventing adverse selection, and effective claim management. However, the common point that insurers agree on is that digital technologies, although they have already transformed many other industries to a great extent, are quite late in the transformation of the insurance industry and their current potential is not yet fully understood. Many recent scientific studies point to a paradigm shift in the insurance system in the near future (Moneta, 2014; Berger et al., 2016; Catlin et al., 2015; Johansson and Vogelgesang, 2015; Biener et al., 2015; Eling and Lehman, 2018; Cappiello, 2020). Startups and data providers that were not actors of the insurance system in the past are today both the biggest supporters of insurance companies and a major threat to the future.

In this context, our study aims to research the future of digitalization in the insurance industry. However, our sub-research questions are as follows:

1. Which digital technologies affect the insurance industry?
2. What is the impact of new technologies on the basic functions of the insurance industry?
3. What are the possible losses of insurance companies in the face of the new business system created by technology?

Therefore, the focus of this study is to describe the implications of information technologies, which are claimed to revolutionize the insurance business system in the near future, on practitioners and provide future clues.

2. RESEARCH FOCUS

In order to answer the research question, the literature is searched with a systematic review. In the first stage, we review the journal articles and proceedings where the terms "artificial intelligence, big data, digitalization, digital, machine learning, technology, block chain, internet of objects, cloud computing, telematics, insurtech" are included with the term "insurance". Our aim here is to define the impact of information technologies on the insurance industry. We review all journals and proceedings on Web of Science, Scopus, Ebsco and Proquest and Google / Google Scholar. In addition, research reports and projects completed between 2005 and 2021 are also examined. Thanks to this systematic literature review, it has been determined how the business processes of insurance companies will undergo possible evolutionary change in the future.

3. CONCEPTUAL FRAMEWORK

In its simplest definition, digitization is the process of transferring accessible information and resources to a digital environment that can be perceived by a computer. This classic definition is more than just the meaning

it implies. Especially in the world of businesses, we can say that digitalization and digital transformation are the source of great changes in the last two decades. Digital transformation at the business level refers to enabling, improving or transforming the business process using digital technologies and digitized data. The effect of digitalization on businesses emerges at the point that digital technologies change the organizational structure, change the quality of products and services, and change the marketing, sales and promotion style of these products and services. In addition, it is also easier for all departments that construct the organizational structure to produce more effective methods, analyses and projections using reliable data compared to the previous process. In this context, digital transformation represents a revolutionary change for all organizations.

While many industries, including the insurance industry, felt the effects of digital transformation, they did not believe that it could cause a revolutionary change as mentioned above. Technological and digital transformation in particular signals the opportunity or threat to many organizational actors, especially organizations in the financial sector. Although organizations that adapt to this change can turn risk into opportunity; For organizations that do not care about this change, a devastation can occur. For this reason, it is important for organizations to have high awareness and strategic action plans to reduce the risk of failure in order to avoid the possible destructive effects of digital transformation (Matt et al., 2019). The digital transformation strategy represents an important focus of the basic strategy of organizations, rather than a simple information processing strategy aimed at efficient management of information technology infrastructure and software systems (Kofler, 2018).

The word “digital transformation” represents a sharp transformation in this sense. The insurance industry, despite its late awareness level, is in the process of adapting to this change by adapting innovative business models like many other sectors. The unique business system of the insurance industry is much more traditional than many other industries. For example, there are no big differences between the operational functioning of insurance activity in the 17th century and the current system. The same traditional structure is still maintained in terms of pricing risk, management of claims processes, marketing and distribution channel structure. Of course, modern changes also come to mind. However, there was no significant change or transformation in the operational and technical dimensions of the business until the near future. The traditional perspective in the insurance system has seen digital technologies only as a tool until the 2000s. According to this understanding, digitalization refers only to various information systems instruments that facilitate operational work. Therefore, the prevailing opinion is that digital is not at the centre of the business system. However, in the near future, data provider companies such as Amazon, Apple, Facebook and Google are expected to be actors of the insurance industry. Because the raw material of the insurance system is data. In the insurance system, there is a high level of data dependency in pricing, claim management, sales, reinsurance, financial investment and many similar transactions. As Schmidt (2018) points out, digital technologies such as cloud computing, telematics, internet of things, mobile phones, blockchain technology, artificial intelligence and predictive modelling mark the birth of a new business system for the insurance industry. This new business system will be one that enables new ways of communication, information sharing and insurance. According to Eling and Lehman (2018), digital technologies in the insurance industry are expected to affect organizational processes in three dimensions. We also support this view:

1. Sales and customer relations dimension
2. Digitization of organizational processes dimension
3. Development of new products dimension

Operationally, the first and most significant impact is expected to occur in sales and customer relations dimensions. At this point, the main problem is to what extent insurance companies can understand or meet the expectations of the new generation (called Y and Z generations) sensitive to digital. The new generation, which is expressed with various names such as Generation Y, Generation Z or Millennium Generation, has very different expectations from previous generations. The expectations of this generation are changing very rapidly. They have very different characteristics from previous generations such as fast consumption, the effort to reach information in a short time, interest in products and services with visual content, adapting quickly to change and understanding from all kinds of digital. According to Bieck and Tjioe (2015), the young generation under the age of 30 prefer unconventional insurance distribution channels (e.g. websites, mobile phone apps, auto dealerships, retailers) rather than traditional distribution channels (e.g. agency, broker, bank). Similarly, Bieck et al. (2014) find that Generation Z is less price sensitive in terms of insurance products and they prefer personalized products and distribution channels. More clearly, this new generation with higher self-perception places more emphasis on personalized insurance products and finds traditional insurance products designed for the general public inadequate. These findings have found support in other studies (e.g. Barwitz et al., 2016; Catlin et al., 2013). The common finding of the studies is that the diversification in cus-

tomer profiles that demand insurance has changed remarkably. It is the need for an organizational structure and strategy that is digital and more accessible, personalized, quick price comparison can be made through websites, and can be supported through online applications. However, it is important to keep contextual differences in mind. For example, the Customer Journey Insurance Research conducted jointly by Google and Zurich Insurance revealed that 84% of consumers in Germany learned the prices of insurance products through digital technologies, but 59% purchased from traditional insurance distribution channels (Google and Zurich, 2016). However, the general trend shows that the use of digital technologies in insurance sales is increasing rapidly in developed countries.

The second significant effect is related to the digitization of all organizational processes. In fact, this expression means the automation of business processes. For example, innovations such as automatic creation of policies, automatic reporting of damage, automatic product offers, and automatic implementation of the underwriting process with various algorithms will provide significant cost savings for insurance companies. Maas and Bühler (2015) found that 41% of insurance activities in Germany, Switzerland and Austria are automated through digital instruments, and they provide insurance companies with a cost savings of around 14%. Similarly, according to Catlin et al. (2015), this cost saving is around 30%. The most important reason for this cost saving is that big data becomes more usable in the insurance system. Increased use of big data spreads automation-based insurance operations. Therefore, a shrinkage should be expected in the workforce of underwriting, technical and claims departments, which have an important place in the traditional business system of insurance. In addition, the need for traditional distribution channels will decrease. In many academic or sectoral studies, it is stated that the need for insurance agents will decrease. However, the main reason for the decrease in the need for agencies cannot be explained solely by the tendency of the new generation to digital distribution channels. In the future, insurance companies will be in a position to access flawless and large amounts of data more easily and quickly. Therefore, they will have more opportunities to create a customer portfolio that suits their own risk perceptions. Agencies' commission concerns lead to the emergence of an asymmetric information problem with insurance companies. On the one hand, there are insurance companies that can predict risk more consistently based on data, and on the other hand, insurance agents whose survival depends on the commission. This may be a reason for the decrease in the need for insurance agents in future.

However, according to Eling and Lehman (2018), it will not be so easy and practical to use big data in insurance companies. Because, although a workforce saving is achieved in operational departments, another workforce will be needed in the interpretation of digital data (e.g. telematics devices, social networks, customer notifications, photographs, etc.). This limited workforce should be supported by machine learning-based algorithms. Therefore, the success of insurance companies will be determined by the cooperation they will establish with the IT companies or the IT workforce they will supply. Another problem is the policies for the protection of personal data. Increasing risks related to informatics in societies has pushed governments to take measures to protect personal data. The level of information security that these measures will reach in the future will determine whether insurance companies can use this data or not.

The third significant effect is that digitalization enables the development of existing products or the emergence of new products. The new products that will emerge in the insurance sector due to digitalization are summarized under six sub-headings:

1. Telematics Device Insurance,
2. Sharing Economy,
3. Gig Economy,
4. Peer-to-Peer (P2P) Insurance,
5. Insurance Products for Cyber Risks,
6. The Cost Benefit of Blockchain in Insurance Products.

Telematics is a system that uses real-time data transfer and tracking technologies. These devices installed in automobiles record the location information of the vehicle, the driving style of the driver or whether he / she is obeying the rules with GPS. Considering the prevalence of automobile insurances all over the world, the conversion of insurance companies from risk calculation tendency with certain assumptions (for example demographic factors such as city, age, gender, etc.) to risk calculation based on real data will bring high profitability in motor insurances. It is possible to systematically record the risks of individuals through wearable digital products not only in automobile insurances but also in life and health insurances (Swiss Re, 2016; Anchen et al., 2015). Especially, digital tools (watch, mobile phone, etc.) that record the healthy lifestyle habits and exercise tendencies of the insured, facilitate the risk analysis of insurance companies. Traditional insurance pricing techniques evaluate individuals in similar risk groups in the same risk category. However, for individuals with low risk in this group, this method of calculation means high premium payment. Therefo-

re, wearable digital technologies can enable them to purchase large insurance coverage with low insurance premiums for each individual who wishes to use these products in the future.

"Shared Economy" and "Flexible Economy" are seen as another possible source of change in this third effect. With the technological advancement, innovative and income generating new trade styles have become widespread. There is a change from classical organizational structures where individuals only work in office environments to a flexible and freelance working culture. Of course, this kind of work culture is not valid for all sectors. However, this new working style that will meet the expectations of the new generation will affect many sectors. In the Covid-19 pandemic, adaptation to home-office or freelance working style has accelerated. Especially the new generation, which is called the Z generation, finds the patterns and norms of previous generations as normative and prefers the consumption patterns based on technological possibilities more. Sharing economy and flexible economy have emerged based on this need.

A sharing economy is defined as an economic system in which assets and services are shared between private individuals. These virtual platforms, which allow almost everyone to provide and receive services over the Internet, have the opportunity to make additional income for the service provider and the opportunity to save for the service user. Thus, consumers can quickly compare prices and get the most suitable service for their budgets. Therefore, the main purpose in the sharing economy is to supply an unused good or service from digital platforms for a short time. Today, we can provide services such as home rental, car sharing, taxi and rental cars, shared office use, through many web platforms. Platforms such as Airbnb, Couch Surfing, Amazon, eBay, VRBO and Uber used around the world are examples of these. On the other hand, flexible economy refers to a labour market characterized by short-term or self-employment as opposed to a fixed employment contract. Therefore, the main difference of the flexible economy from the sharing economy is that the employer and the workforce are brought together on a digital platform. The gig economy is a short-term, independent contract, piecework / micro-level system that brings together the customer and the workforce through a digital platform. For example, a person who wants to have his house renovated can get this service from a builder who works independently through a web or mobile phone application instead of contacting a construction company. The most important advantage of this freelance working system, which takes place in the digital environment, is that it brings together the customer and the workforce easily and quickly. These people, who can work wherever they want, say goodbye to problems such as spending time in traffic to and from work, and they can meet their lives according to their own comfort needs compared to working full-time. Childcare, lecturing, construction, home catering services are the most preferred examples through these platforms. According to the data of the global freelance platform Upwork, 57.3 million people are living as freelancers today in the USA. By 2027, this figure is predicted to reach 86.5 million (Upwork, 2017).

This consumption pattern, which is frequently preferred by the new generation, of course also affects the insurance industry. When the current situation is examined, it is seen that there are various problems in the insurability of the sharing economy and the gig economy. For example, in applications such as Airbnb, the risks of guests and tenants are not covered by the homeowner's traditional home insurance policies. Similar problems are also observed in car sharing platforms. Most auto policies do not provide coverage if vehicles are rented for a certain fee or used as an informal taxi service. In the face of these restrictions, digital platforms are working hard to fill the gaps in insurance. For example, the housing sharing platform Airbnb provides Host Protection Insurance to its customers and charges an extra fee for this insurance. The Host Protection Insurance program provides up to $ 1 million in protection against damage to a registered location or Airbnb property during a stay. Similarly, Uber provides an insurance service that provides an assurance of up to $ 1 million in possible damages when the Uber application is open, that is, when the customer gets in the vehicle. Therefore, even if not 100%, digital platforms are working to provide a protection service that includes the insurance system. In the future, insurance companies are likely to recognize these digital platforms as important customers and develop their products to include them.

Another contribution of digitalization to products and services in the insurance industry has emerged with the Peer to Peer (P2P) approach. P2P Insurance is when a group of like-minded and knowing each other comes together and buys insurance cover together. The most important difference compared to traditional insurance is that the individuals that make up the insurance portfolio have similar life habits and similar risk tendencies. In this way, the insurance company can make a more realistic premium calculation for this limited number of people in the same risk pool, and the members of the group can buy high coverage with low premiums. As mentioned before, the hypothetical realization of premium calculations with various demographic information meant high premium payment for individuals who were included in that group but had a higher risk perception. Therefore, a person can get coverage from the insurance company for the same risk by bringing together people who have a risk perception like himself. If the group comprising the portfolio does not suffer any damage at the end of the policy period, some of the insurance premiums accumulated in the pool can

be refunded or kept for the next year. Damages up to a certain amount (which is determined by the insured) are evaluated within the scope of exemption, and if this damage is exceeded, the insurance company may step in. Therefore, it offers the policyholders flexibility to adjust some details of the policy according to their own risk perception and creates an insurance portfolio that can be managed more easily for the insurance company. Insurance companies such as Friendsurance, Guevara, Inspeer, TongJuBao.com and Lemonade offer this service. The main purpose of P2P insurance is to enable people to minimize their false claims of damage by overwhelming their sense of responsibility.

Similarly, cyber risks are another issue that has started to be discussed today and is expected to have reflections in the insurance system. Cyber risks, which insurance companies have started to provide assurance, aims to provide assurance against risks that cause them to lose money, customers and reputation by targeting the information technology infrastructures of the companies if they occur. However, the studies conducted reveal that as of today, full protection cannot be provided against the losses due to interrelated cyber losses, data deficiency and information asymmetries (Biener et al., 2015). However, it is inevitable to create more consistent products regarding cyber risks in the near future (Eling and Lehman, 2018).

We expect another reflection of technology-based innovations in insurance products in blockchain technology. According to the Research of Smart Contracts in Financial Services by Capgemini Consulting Firm, it has been stated that smart contracts gathering insurers, customers and third parties under a single platform in motor vehicle insurances will lead to process efficiency and reduction of claims processing time and costs (Capgemini, 2016). In addition, third parties of the insurance claim process such as automobile services, assistance companies and hospitals will be included in the system, enabling faster service. It has been determined that the use of these smart contracts in the British insurance system saves approximately $ 1.67 billion annually (Capgemini, 2016). This amount means a savings of 12.5% from the current claim payments. If smart contracts are used in the US insurance system, it is estimated that 21 billion dollars can be saved annually (Capgemini, 2016). With a cost advantage of this size, the insured will be provided with insurance coverage by paying less premiums.

In summary, the use of more data for new products related to technology and digitalization in insurance organizations and the fact that these data consist of real personal data regarding the insured will enable them to make more reliable premium calculations. A reliable premium account means a profitable insurance portfolio. Especially investments in telematic devices will support this. In addition, the shift of commercial life to web platforms such as sharing and gig economy will lead to legitimacy of virtual commerce in the insurance system. Today's business systems have gradually begun to adapt to the patterns of the new generation and the flexible structure that does not like bureaucracy. P2P insurance and blockchain technology will provide both a convenience for the new generation of insured and a serious cost advantage for insurance companies.

4. THE EFFECT OF NEW TECHNOLOGIES ON THE BASIC FUNCTIONS OF THE INSURANCE SECTOR

Eling and Lehman (2018) and Capiello (2020) have similarly expressed the change in the basic functions of insurance companies in the face of new technologies. We aimed to revise the claims of these researchers with reference to both studies. Table 1 represents the digital technologies that are expected to be used in four basic functions of insurance companies.

Product Development

In the traditional structure of insurance, it was not an achievable situation for the insurance company to know its customer and develop suitable products. Because this required big data. However, in today's world, we see that many data provider technologies are starting to be at the centre of business life. The nature of the interactions of insurance companies with data providers is also important in this sense. To put it more clearly, it is thought that the processes of customers' purchasing the product can be predictable through the data obtained from various data sources of insurance companies (Swiss Re, 2020). For example, a young person who finds a new job is likely to tend to increase healthcare opportunities in the next step, choose a better-quality residential area, get married, and over time will be able to spend more luxury. Big data provide the opportunity to make important predictions about the spending trends of individuals today. Therefore, being able to anticipate the next steps of customers and provide them with the right insurance products will mean making insurance sales easier. On the other hand, the courage to design new products with blockchain technology will also increase. Because the tendency of the new generation to access products and services quickly and the effort to avoid bureaucracy in classical business processes will make it necessary for insurance companies to use smart contracts (block chain) more. For example; With the Fizzy project, AXA Insurance has

Table 1. The Effects of Digital Technologies on Basic Functions of Insurance Companies

Basic Functions	Digital Technologies	Effects on Functions
Product Development	**Big Data** **Block Chain**	It will be possible to develop new products specific to individuals or groups with more reliable and more data.
		With the application of smart contracts to new insurance products, insurance companies will both increase demand and reduce costs in the long run.
		Telematics devices support the collection of big data.
Risk Analysis and Pricing	**Artificial intelligence** **Big Data** **Internet of Things** **Block Chain** **Cloud computing**	It is possible to provide personal data for risk assessment.
		It is possible to make more reliable pricing by means of telematics devices.
		Information asymmetry between the insurance company and the insured is eliminated.
		It is possible to prevent or reduce risks with Internet of Things sensors.
		With Block Chain technology, it is possible to prepare policies automatically and digitally according to the risk profile of the individuals.
		Contract information can be stored digitally.
Marketing, Sales & Customer Service	**Big Data** **Chatbot** **Mobile Devices** **Aggregator Websites** **Robo-Advisor** **Cloud computing** **Video Platforms** **Web Site, Social Networks**	Digitally stored contracts and their data will increase.
		It will be possible to sell products automatically via chatbot or real people will be engaged only when necessary.
		It will become widespread to be able to prepare contracts with devices such as iPad that allow independent sales from the workplace.
		Aggregator websites that can make price comparisons and policy sales between companies will become widespread.
		In life and pension products, robo-advisors will begin to guide investment preferences. The need for financial advisors will decrease.
		The intensity of face-to-face sales will decrease with new digital applications.
		An insurance company that knows its customers well will create customer loyalty and cross-sell opportunities will increase.
		The opportunity to introduce products and services to the customer with simple video visuals will increase.
		Product information / advertisement, reputation management will be ensured.
		It will become widespread to provide after-sales services with chatbots.
Claim Management	**Artificial Intelligence and Big Data** **Block Chain** **Mobile Devices**	Fraud prevention will be ensured through data analysis.
		It will be possible to calculate and pay the amount of loss automatically.
		It will be possible to store information for automatic payment.
		Claim payments can be made with mobile applications.

Source: Adapted from Eling and Lehman (2018) and Capiello (2020)

designed an insurance product that will instantly pay compensation to passengers whose flights are delayed. Fizzy works with a system that establishes a connection between the computer that reports the flight delay and the insurance company, without any claim forms, proof of delay or other paperwork. The policy is purchased, stored on the blockchain, and the decision of whether the policyholder is eligible for compensation is

made by smart contracts in the blockchain, not by the insurer. Therefore, it is likely that such new products suitable for the lifestyle of the new generation will proliferate.

Risk Analysis and Pricing

As it is known, the main problem of insurance companies is to achieve actuarial balance. In order to establish this balance successfully, insurance companies need real and a large number of reliable data. However, in the vast majority of developed and developing insurance economies, many insurance products are still priced on more general and hypothetical data (eg demographic factors such as city, age, gender, etc.). Big data minimizes errors that may arise due to these hypothetical calculations. For example, it is possible to instantly monitor a person's risks through telematics devices and wearable computers. For example, with wearable devices, the health status of policyholders can be monitored in real time, making it easier for them to receive customized offers. Likewise, thanks to telematics connected to automobiles, the real risks of drivers are recorded throughout the year, allowing personal risk analysis and pricing. In addition, smart sensors are an important risk management support for homeowner and workplace insurances. These sensors work with the Internet of Things logic. For example, sensors installed in homes and business centres can inform the insured through computers in advance of many risks such as smoke, mould, toxic gases, internal water leaks. Likewise, machine damages, employee and customer injuries and work interruption losses can be reduced thanks to the Internet of Things sensors placed on construction machines (Canaan et al., 2016).

With the use of blockchain technology in the Risk Analysis and policymaking process, insurance companies will be able to make policy renewals faster and through automated smart contracts. The digitally stored information of the insured will allow the automatic contract to be suggested. The policy will be certified by electronic signing and can be stored digitally. For example, in 2018, AIG Insurance successfully implemented the first multinational insurance policy using blockchain and smart contracts with the support of Standard Chartered and IBM (Derebail, 2018).

Marketing and Sales

Marketing and sales, which is the most important function of the insurance system, contributes to the insurance company to reach the most suitable customer portfolio for itself. Choosing the most suitable customer is undoubtedly related to the level of risk. All insurance companies want to work with a customer base with low risk and no moral hazard. In traditional insurance, the measurement of risk is carried out on the losses caused by the insured in the past and the distribution of these losses according to various demographic characteristics. However, in recent years, it has become easier to predict the behaviour of customers, to predict what kind of product they will need in a timely manner and to calculate the risk perceptions of these people through new technologies of data providers. Artificial intelligence systems offer significant advantages in predicting the purchasing tendencies and needs of customers.

Another change in marketing and sales processes occurs through mobile phone applications and websites. A customer service model is created that is digital and more accessible, personalized, quick price comparison can be made through websites, and can be supported quickly through online applications when technical support is needed. It is noteworthy that aggregator websites, which allow price comparisons between various insurance companies, have started to increase in number. These sites also provide the opportunity to purchase policies. In addition, chatbots are software that have the ability to communicate with the insured with the help of an artificial intelligence and serve to communicate quickly based on the message between the insured and the insurance company. Especially, this is exactly the communication method of the new generation that we call Generation Z. Similarly, it is seen that the use of robo-advisor in life insurance and pension products is increasing rapidly. Robo-advisors are algorithm-based fintech products that analyse data from financial markets and advise client portfolios like traditional investment experts. The ability of this artificial intelligence to advise on investment preferences of individuals in life and pension products will cause the concept of financial consultancy to change in the near future.

These possible expectations in the marketing and sales processes are alarming for many agencies and brokers today. Although insurance companies state that sales made through agencies, brokers and banks will never lose their importance, when the available data are analyzed, it is seen that there is a rapid change. For example, two scientific studies commissioned by Accenture Risk Management company in 2013 and 2017 reveal how policy holders' perspective on digital insurance has changed in four years. In 2013, 23% of consumers were keen to purchase insurance products from digital platforms; It was determined that this rate increased to 29% in 2017. Similarly, in 2013, 54% of consumers stated that they were willing to receive

information about insurance products from online platforms (websites, mobile phones, e-mail, chatbots and social media); It was determined that this rate increased to 68% in 2017. In addition, in the same study, it was determined that 74% of consumers were willing to listen to insurance product recommendations to be provided by robo-advisor (Accenture, 2017). Therefore, although it is seen that digital sales have a very low share as of today within the scope of distribution channels, the pace of change is very high. In a short period of ten years, significant changes can be experienced and the current concerns of agents and brokers can become reality. As in the nature of all organizations, the profit-oriented perspectives of insurance companies and the success of online and digital applications after the Covid19 Pandemic will encourage the continuity of this process.

Claim Management

Calculation of risk through more realistic and simultaneous data will result in more successful claim estimates. This not only leads to a more reliable calculation of expected claim, but also saves the reserves that need to be set aside for claim. In addition, it will be possible to reduce insurance frauds with various artificial intelligence technologies. The follow-up of the insured in the high-risk group is made easier with big data. As mentioned earlier, it will also be possible to accelerate or automate claim payments with blockchain technology. In summary, in addition to a decrease in claims payments and claims provisions for the insurance company, service satisfaction can also be increased for the insured through rapid damage payment. For example, Lemonade Insurance Company has reached a worldwide brand value by making a claim payment in a short time like three minutes via the mobile phone application.

5. CONCLUSION: EXPECTATIONS AND FORECAST

The insurance system perceived the digital transformation and the importance of digital later than other fintechs. Although sectoral media reports express the threat to be created by digitalization with the decrease in the share of traditional distribution channels, the change to be experienced in the future will be much more extensive and large. Therefore, our aim in this section is to identify the threats and opportunities that await insurance companies in the face of digitalization, and at the same time to predict the possible major change.

All over the world, insurance companies still consider information technologies and related technological resources as an outsourcing. The perspective of insurance companies' use of technology is that it is a service supply. Therefore, according to the type of business processes, this resource use will continue as in the past. However, the digital transformation mentioned above indicates that insurance companies should move towards a paradigm shift. More successful management of risk through telematics devices, wearable computers, smart contracts, the internet of things, and the ability to price all these digital processes with an artificial intelligence will lead to a serious competitive advantage against another insurance company. In addition, the role of customers in the insurance process will not be the same as before. Insurance companies will need to act more quickly and flexibly in the face of customers for many reasons such as being able to intervene in the contract, follow the process digitally, P2P Insurance, provide the right to choose the price through aggregators, and communicate more with chatbots. Most importantly, the new generation will expect the insurance system to be included in their shopping style. To be more precise, the change to be experienced will be much more than purchasing an outsourcing service.

According to Eling and Lehmann (2018: 370), automobile manufacturers are the leading threats that will affect insurance companies. Because automobile insurances are still the dominant type of insurance all over the world and the technological change in automobile production makes automobile manufacturers asymmetrically advantageous against insurance companies. Cars of the future are capable of measuring drivers' risks. Through driverless vehicles and telematics, the world's major automakers are beginning to have the ability to measure drivers' risks. Insurance companies' ability to measure risk, which was the biggest competence in the past, is now more dependent on these technologies. This is a situation that puts automobile manufacturers in an advantageous position over insurance companies. Automobile manufacturers or distributors, who have been working as agents to date and prefer to receive commissions, may turn into insurance companies that only provide coverage for cars in the future. Automobile manufacturers can become the new actors of the insurance system in the future, with the ability to measure drivers' risk using new technologies and to access the first data at the time of loss.

It is possible to further expand this asymmetrical advantage. Elon Musk recently stated for Tesla that by calculating the data on vehicles and the driver's driving profile, they can calculate the accident probability and the customer's risk trend, and the premiums can be calculated monthly, not annually. The ability of low-

risk drivers to purchase insurance products with very low insurance premiums (20-30% lower than traditional insurance companies) is a serious competitive advantage (Zarifis, 2020). This is true not only for automobile manufacturers, but also for many large companies that provide data to various insurance branches. For example, technology-oriented companies such as Apple, Amazon, Google and Facebook have the opportunity to become an actor of the insurance industry due to their large data (Eling and Lehman, 2018: 371). Because the main skill in insurance is to be able to measure risk, and soon big data providers will become more aware that they have this know-how.

However, having qualified and big data alone is not enough for these companies to establish new companies in the insurance system. For example, the Google Compare Insurance Company, which was founded by Google in 2012, decided to terminate its activities in 2016, although it entered the market in automobile insurance in a very ambitious way. It is estimated that the insurance activity did not include large profit margins for a company such as Google, and they ended this activity in a short time (Accenture, 2016). Also, regardless of the insurance profession, it requires experience. For these new companies entering the market, it does not seem easy to fill the lack of experience with high technology. According to Eling and Lehman (2018: 371), another reason why these companies avoid entering the insurance market is that they do not want to lose their reputation. The insurance profession is a profession with more legal problems compared to many other sectors. Legal problems with the insured, even for minor insurance claims, may negatively affect the reputation these companies have created in the market so far. Therefore, low profitability and possible loss of reputation are the main obstacles for new technology companies to enter the market.

InsurTech is one of the stakeholders that will determine the future of the insurance industry. Despite the pandemic, Insurtech investments in the world reached 7.1 billion dollars in 2020, with an increase of 12% compared to the previous year (Willis Towers Watson, 2020). We observe that InsurTechs generally provide services in three categories:

1. InsurTechs Offering Pre-Sales Solutions: These are web platforms where customers can compare prices and content between insurance companies through aggregators. It is ensured that new generation customers have insurance products in a fast and simple way, just as they want. However, research shows that insured who buy insurance policies from digital platforms have lower company loyalty compared to those who buy insurance policies in traditional ways (Bain, 2020).
2. InsurTechs Offering After Sales Solutions: The software enables the insured to access contract information and digitally see the stages in the claim process. In addition, solutions that enable insurance companies to calculate repair costs and work flow according to the type of part in the damage process are also offered.
3. InsurTechs Offering New Business Model and Product: Initiatives that offer new business models such as sharing economy, gig economy, P2P insurance and telematics devices, which were mentioned at the beginning of our study, fall under this category.

Today, the interaction of insurance companies with InsurTechs continues in a controlled manner. Insurance companies are trying to purchase or cooperate with these startups to purchase services. It seems that the extent to which insurance companies will invest in these technological startups will soon become clear. However, studies (for example, Furr & Shipilov, 2019) state that past examples of acquisitions have created negative consequences. The right thing is that insurance companies cooperate with technology producing companies in the medium and long term and leave those companies free in technological production. More precisely, it is an irreversible cost for an insurance company to purchase an insurtech. However, establishing new collaborations that change with time and in line with sectoral expectations and establishing flexible partnerships with these companies in the medium and long term can provide much more gain.

In addition, abandoning traditional methods at once and relying on the power of digitalization can create just as erroneous results. What matters is step-by-step modernization. Disposing of existing old systems in a short time can bring a lot of risks and costs. Instead, insurers should believe the necessity of digital transformation and develop new applications that meet customer expectations and efficiently replace legacy systems step by step (Furr & Shipilov, 2019).

Technological transformation or integration comes to mind when it comes to digitalization in insurance. However, research reveals that digitalization is all about the customer. The critical point for the insurance company is that it understands its own customers and retains them by offering customized products. Digital technologies must be a tool to do this. Having high technology is not enough to satisfy the customer. The important thing is to use technology to meet customer expectations. The real change is seen in the expectations of the new generation, and this generation has a high connection to technology. It should not be considered possible to retain the next generation in future. Undoubtedly, the next generation will spend less time on face-to-face sales to purchase insurance, will not want bureaucratic difficulties in tracking claims processes,

and will tend to prefer more personalized products and prices. In addition, changes in the commercial life due to technology will bring new opportunities for insurance companies. Web platforms that sell or lease new or second-hand products and services such as Amazon, Hepsiburada, Gittigidiyor, Yemeksepeti, Uber, Airbnb, N11 will continue to spread and new insurance products will be needed for these new areas. These product and service transfer platforms, which were not considered legitimate in the past, should be expected to be the most legitimate channels of trade in the future. For this reason, change in the insurance sector concerns distribution channels, assistance services, damage repair centers as much as the insurance company. Digital insurance sales may not completely replace agents and brokers. However, it will seriously affect the agencies and brokers who act reckless about technology. Similarly, depending on the automation in claim process, the need for the insurance claim adjuster will decrease.

As a result, insurance is one of the sectors with the highest dependence on data. It is of great importance that insurance companies calculate the risk with personal and more reliable data and construct or market this based on the interests of the new generation in the future. In the future, being fast and flexible in terms of technological adaptation will be much more valuable than before. Perhaps the expected change will not be revolutionary, or it will not necessitate a thorough aggressive change for insurance companies. However, for insurance companies to succeed in their future strategies, their fate will be determined by closely following new technologies and their contacts with the entrepreneurs who produce them.

REFERENCES

Accenture (2017). The Voice of the Customer: The Future of Insurance Distribution, https://www.accenture.com/t00010101t000000z__w__/gb-en/_acnmedia/pdf-50/accenture-distribution-marketing-survey-insurance-report.pdf (Access: 07.01.2021).

Accenture Insurance (2016). The rise and fall of Google Compare, https://insuranceblog.accenture.com/the-rise-and-fall-of-google-compare (Access: 10.01.2021).

Anchen, J., Frey, A. and Kirova, M. (2015). Life Insurance in the Digital Age: Fundamental Transformation Ahead, http://media.swissre.com/documents/sigma6_2015_en.pdf (Access: 20.01.2021).

Bain & Company (2020). Costumer Loyality in Insurance Survey, https://www.bain.com/insights/a-digital-reckoning-for-insurance-companies (Access: 14.02.2021).

Barwitz, N., Maas, P., Block, D. and Nützenadel, C. (2016). Die Customer Journey in einer multioptionalen Welt, I.VW-HSG and Synpulse Schweiz AG, http://www.ivw.unisg.ch/~/media/internet/content/dateien/instituteundcenters/ivw/studien/pm-customer%20journey%20mfz-studie2016.pdf (Access: 17.02.2021).

Berger, D., Broer, P. and Pankoke, D. (2016). Digitization in Life Insurance: A prerequisite for success in spite of low interest rates. I. VW HSG Trendmonitor, 1: 15–19.

Bieck, C. and Tjioe L. H. (2015). Capturing Hearts, Minds and Market Share: How Connected Insurers are Improving Customer Retention, IBM Institute for Business Value, https://www.ibm.com/downloads/cas/VWVGDELZ (Access: 28.02.2021).

Bieck, C., Marshall, A. and Patel, S. (2014). Digital Reinvention: Trust, Transparency and Technology in the Insurance World of Tomorrow, IBM Institute for Business Value, https://www.the-digital-insurer.com/digital-reinvention-trust-transparency-and-technology-in-the-insurance-world-of-tomorrow-ibm-report-by-christian-bieck-anthony-marshall-and-sandip-patel (Access: 05.02.2021).

Biener, C., Eling, M. and Wirfs, J. H. (2015). Insurability of cyber risk: An empirical analysis, The Geneva Papers on Risk and Insurance—Issues and Practice, 40(1): 131–158.

Canaan, M., Lucker, J., and Spector, B. (2016). Opting in: Using Iot Connectivity to Driand Differentiation the Internet of Things in Insurance. Deloitte University Press.

Capgemini Consulting (2016). Smart Contracts in Financial Services: Getting from Hype to Reality, Capgemini Consulting, https://www.capgemini.com/consulting-de/wp-content/uploads/sites/32/2017/08/smart_contracts_paper_long_0.pdf (Access: 12.02.2021).

Cappiello, A. (2020). The Digital (R)evolution of Insurance Business Models. American Journal of Economics and Business Administration, 12(3): 1-13.

Catlin, T., Hartmann, R., Segev, I. and Tentis, R. (2015). The Making of a Digital Insurer: The Path to Enhanced Profitability, Lower Costs and Stronger Customer Loyalty, McKinsey & Company, http://www.mckinsey.com/industries/financial-services/our-insights/the-making-of-a-digital-insurer (Access: 01.03.2021).

Catlin, T., McGranahan, D. and Ray, S. (2013). Winning Share and Customer Loyalty in Auto Insurance, McKinsey & Company, https://de.scribd.com/document/306175438/Winning-Share-and-Customer-Loyalty-in-Auto-Insurance (Access: 20.02.2021).

Chishti, S. and Barberis, J. (2016). The FinTech Book: The Financial Technology Handbook for Investors, Entrepreneurs and Visionaries, Chichester: John Wiley and Sons Ltd.

Daft, R. L. (2010). Organization Theory and Design. Mason, OH: South-Western Cengage Learning.

Derebail, A., (2018). Three areas in the insurance industry to use blockchain. https://www.ibm.com/blogs/blockchain/2018/03/three-areas-in-the-insurance-industry-to-useblockchain (Access: 01.03.2021).

Drummer, D., Jerenz, A., Siebelt, P. and Thaten, M. (2016). FinTech: Challenges and opportunities-how digitization is transforming the financial sector. Dusseldorf: McKinsey.

Eling, M. and Lehman, M. (2018). 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: 359–396.

Furr, N. and Shipilov, A. (2019). Digital Doesn't Haand to Be Disruptive. Harvard Business Review, https://hbr.org/2019/07/digital-doesnt-have-to-be-disruptive (Access: 07.03.2021).

Google and Zurich (2016). Customer Journey Insurance 2016. ROPO Studie für Versicherungsprodukte in Deutschland https://www.thinkwithgoogle.com/_qs/documents/4034/97ed9_GfK_PJ_Insurance_Short_Version_20161014_final.pdf (Access: 21.02.2021).

Johansson, S. and Vogelgesang, U. (2015). Insurance on the Threshold of Digitization: Implications for the Life and P&C Workforce, McKinsey & Company, http://www.mckinsey.com/industries/financial-services/our-insights/insurance-on-the-threshold-of-digitization (Access: 01.03.2021).

Kofler, T. (2018). Digitale Transformation in Unternehmen. https://zentrum-digitalisierung.bayern/wp-content/uploads/Dig-Dial_Kofler-Thomas_Digit-Transf-v12-1.pdf (Access: 01.03.2021).

Maas, P. and Bühler, P. (2015). Industrialisierung der Assekuranz in einer digitalen Welt, I.VW-HSG and Adcubum, St. Gallen, http://www.ivw.unisg.ch/~/media/internet/content/dateien/instituteundcenters/ivw/studien/industrialisierung-digital2015.pdf (Access: 18.01.2021).

Matt, D. T., Orzes, G., Pedrini, G., Beltrami, M., and Rauch, E. (2019). Roadmap in eine Digitale Welt. ZWF Zeitschrift für wirtschaftlichen Fabrikbetrieb, 114(9), 576-579.

Moneta, A. (2014). The Customer-Centric Insurer in the Digital Era, https://www.accenture.com/t20150523T033833__w__/sg-en/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Dualpub_9/Accenture-The-Customer-Centric-Insurer-In-The-Digital-Era.pdf (Access: 01.03.2021).

Nicoletti, B., (2017). The future of FinTech. Palgraand Macmillan, Cham.

Schmidt, C. (2018). Insurance in the Digital Age. The Geneva Association. Zurich. https://www.genevaassociation.org/sites/default/files/research-topics-document-type/pdf_public/insurance_in_the_digital_age_01.pdf (Access: 25.02.2021).

Swiss Re Sigma. (2020). Data-driven insurance: ready for the next frontier?, https://www.swissre.com/dam/jcr:430c9b00-09ee-448f-8307-0ca484a2ad96/sigma1_2020_en.pdf (Access: 15.02.2021).

Swiss Re. (2016). Telematics: Connecting the Dots, Swiss Re, https://www.swissre.com/dam/jcr:88abf052-fdc8-4cce-912d-ca3e88d051fb/SwissRe_Telematics_connecting_the_dots_KBW.PDF (Access: 19.01.2021).

Upwork (2017). Freelancing in America 2017 Report, https://www.upwork.com/press/releases/freelancing-in-america-2017 (Access: 01.02.2021).

Willis Towers Watson (2020). Quarterly InsurTech Briefing Q4 2020, https://www.willistowerswatson.com/en-US/Insights/2021/01/quarterly-insurtech-briefing-q4-2020 (Access: 16.01.2021).

Zarifis, A. (2020). Why is Tesla selling insurance and what does it mean for drivers?, https://theconversation.com/why-is-tesla-selling-insurance-and-what-does-it-mean-for-drivers-130910 (Access: 20.02.2021).

How to cite this article: Kırkbeşoğlu, E. (2021). How Digitalization Affects Insurance Companies: Current Status and Future Expectations. International Journal of Insurance and Finance, 1(1), 33-44. https://doi.org/10.52898/ijif.2021.4