

INNOVATIVE TECHNOLOGIES FOR THE INSURANCE SECTOR IN THE REPUBLIC OF MOLDOVA

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Abstract

The trend of sustainable development implies, among other things, a process of digitization of economic processes to ensure transparency, reduce costs, increase the user experience, and make the time used more efficient. The COVID-19 pandemic has accentuated the need for digitization, the trend being supported by the level of the insurance industry as well. The purpose of this article is to analyse opportunities for the implementation of digital technologies in the insurance market in the Republic of Moldova and to identify the potential for development through digitalization. It requires research for this date on the aspirations of the Republic of Moldova to join the EU, which implies the alignment of European trends in financial innovation and digitalization. The objectives pursued in the study were to determine what are the possibilities and the challenges of insurance companies in the Republic of Moldova in the implementation of digital technologies and how this process is supported by the government. As a result of the research, directions for the digital development of the insurance industry in the Republic of Moldova were established, problems faced by insurance companies in this process were identified, and recommendations were developed regarding the consolidation of the insurance market.

Keywords: insurance market, digitalization, European Union accession

JEL Classification: G18; G22; G4; O33

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1. Introduction

Digitization of economic processes has multiple advantages, including reducing the time required for processes, their transparency, data security, improving user experience and reducing costs. However, the effective implementation of digital technologies also involves significant costs for software development, integration of new processes in the operational activity of insurance companies, and technological equipment. At the same time, there is also the issue of financial and digital training and education of consumers who must develop the necessary skills to access these services through digital channels.

In this study, we aimed to analyse the opportunities for implementing digital technologies in the insurance market in the Republic of Moldova and find innovative solutions that can be used by both insurance service providers and consumers. We also analysed the efforts of the authorities of the Republic of Moldova to digitalize the financial sector, including the insurance sector.

The research question that started this study was: How can digital technologies be implemented in the insurance market in the Republic of Moldova? An important aspect is the simplification of the digital experience for customers, which would mean offering services in an accessible and tailored manner to the needs of consumers. In this sense, we have determined what are the possibilities of accessing digital services for the population, taking into account the technological endowment, but also digital and financial education. At the same time, it is important that the digitization of processes provides professionals with all the necessary resources for ascertainment, including relevant documents and information.

The topicality of the research problem is given by the tendency to accelerate financial innovations at the European level, which was accentuated by the signing in 2022 of the European Declaration on digital rights and principles for the digital decade (2023/C 23/01) (EU, 2023).

The declaration proposed by the Commission in January 2022 expresses the European Union's commitment to a safe, secure and sustainable digital transformation, with a focus on protecting citizens' fundamental rights and respecting EU values. This declaration complements previous digital initiatives of Member States, such as the Tallinn Declaration on e-Government (European Commission, 2017),

the Berlin Declaration on the Digital Society and Value-Based Digital Governance (European Commission, 2020) and the Lisbon Declaration – Digital Democracy with a purpose (EU, 2021).

Efforts to digitize all sectors, including the financial sector, have been accelerated by the COVID-19 pandemic, and the insurance industry was no exception. Considering the aspirations of the Republic of Moldova to become a member of the European Union, alignment actions with the EU directives are necessary. On the other hand, consumers increasingly demand the implementation of technologies in all spheres of life. Thus, there are all the necessary prerequisites to increase efforts to digitize the insurance sector in the Republic of Moldova in order to strengthen the insurance market and to offer quality, fast and sustainable services to consumers.

2. Literature review

In the specialized literature, we find studies on the opportunities of digitizing the financial sector by Susanto (2022), Bartik et al. (2020), Manta (2023), Eling (2018), and Pauch and Bera (2022). This issue is also widely discussed in various forums and meetings of insurance practitioners, such as OECD (2020), NBM (2024), and Deloitte (2021).

The studies analysed show the major importance of implementing innovative solutions in all economic fields, including insurance. Understanding the contribution of digital technology to the development of business operations is one of the main research areas of information systems. Studies show that implementing technologies is always a high-cost exercise. However, authors Lu and Ramamurthy (2011) argue that digital technology should be viewed not only as a cost measure but also as an investment in revenue growth.

Based on the research analysed, we consider that the implementation of innovative technologies is all the more important in small financial markets, such as that of the Republic of Moldova. Here digital channels for distribution and information analysis could boost sales of insurance products, which would contribute to the development of the financial sector. The importance of insurance digitalization in the Republic of Moldova and trends in this field were analyzed by the author of this study in 2017 (Cuciureanu and Ungur, 2017) and in other later scientific work, what denotes the contribution of the author to the development of knowledge in this field.

Special attention in this research was given to the regulations, strategies, and statements of the European Commission to identify the European Union's direction towards the digitization of all processes. Additionally, the legislative acts and strategies developed by the Government of the Republic of Moldova were analyzed to determine the country's digital development priorities.

3. Methodology and data

To carry out this study, available data from international and national reports, including OECD statistics, European Commission reports, statistics of the National Bank of Moldova, the Electronic Government Agency, etc., were used.

The research covered the last 10 years, 2014-2023. The data were selected, grouped, and analysed dynamically, which allowed the achievement of the research objectives and the solution of the research problem from which the study started.

To reflect the current situation in the insurance market in the Republic of Moldova, the main aggregated financial indicators of the market were used, such as the solvency rate, the liquidity ratio, the volume of insurance premiums and compensations, and the profit of insurance companies. At the same time, market penetration and density indicators were calculated in US dollars using the average exchange rate for each year, and their dynamics were analysed. Insurance density was calculated by relating the volume of written premiums converted into US dollars to the total number of inhabitants of the country. The degree of penetration was calculated by reporting the volume of gross written premiums reflected in US dollars to the GDP in current prices calculated in US dollars. To establish the accessibility of digitalization of insurance services for consumers, the degree of coverage of the population with computers and Internet access was analysed.

4. Results and discussion

4.1 The current situation in the insurance market in the Republic of Moldova

Insurance markets worldwide are oriented towards development, which involves improving the insurance product portfolio in terms of diversity and quality.

The costs of these products for the population and businesses play a central role, as affordable prices can attract a larger number of customers. Accessibility refers not only to costs but also to the ease with which customers can purchase and use insurance products. In this aspect, digitization is the most important. Simplicity and transparency of procedures are essential to avoid confusion and facilitate the processes of purchasing and managing insurance. Additionally, the complexity of the information provided about products and the methods of promotion must be managed so that customers can clearly understand what they are purchasing and what benefits they receive.

From July 1, 2023, the Supervisory Authority of the non-banking financial market in the Republic of Moldova, of which the insurance sector is a part, became the National Bank of Moldova (BNM), thus replacing the National Financial Market Commission (CNPF). This transfer of responsibilities involved the NBM taking over the licensing, regulation and supervision of the activity of insurers, reinsurers, intermediaries, and the National Bureau of Motor Vehicle Insurers (BNAA). The goal pursued by the state authorities regarding this change was to strengthen the financial market and create a more integrated and resilient structure within the financial system of the Republic of Moldova.

With the transfer of insurance supervision responsibility to the National Bank of Moldova, a series of regulatory changes were implemented in the insurance industry of the Republic of Moldova. Thus, the fundamental laws in this sector were amended: Law No. 92 of 07.04.2022 on insurance or reinsurance activity (Parliament RM, 2022a); Law No. 106 of 21.04.2022 on mandatory motor third-party liability insurance for damages caused by vehicles (Parliament RM, 2022b). These legislative measures are aimed primarily at strengthening the country's insurance market by protecting the rights and interests of financial services beneficiaries and ensuring the stability of the insurance system.

The key indicators reflecting the situation in the insurance market of the Republic of Moldova are presented in Table 1.

Table 1

**Indicators of the insurance companies in the Republic of
Moldova (situation on 31.12.2023)¹**

	Name of the insurance company	Solvency ratio (%)	Liquidity coefficient	Gross premiums	Claims paid	Premiums ceded to reinsurance	Net profit
1	ACORD GRUP SA	173.9	4.3	13.69	2.64	2.71	2.26
2	ASTERRA GRUP SA	126.8	3.7	29.08	9.87	3.84	3.81
3	DONARIS VIENNA INSURANCE GROUP SA	140.2	2.3	20.75	8.07	4.59	1.94
4	GENERAL ASIGURARI SA	133.3	4.9	24.04	8.45	3.87	2.18
5	GRAWE CARAT ASIGURARI SA	140.3	4.9	24.73	11.92	1.68	2.98
6	INTACT ASIGURARI GENERALE SA	155.5	6.5	17.45	4.81	9.47	3.88
7	MOLDASIG SA	183.6	3.1	25.64	6.67	4.80	1.53
8	MOLDCARGO SA	130.5	2.7	5.54	2.36	2.58	-1.14
9	TRANSELIT SA	137.0	4.2	7.82	3.06	5.42	0.60
	TOTAL	X	X	168.73	168.73	57.85	38.97

Source: developed by the author based on NBM data

From the data presented in Table 1, it can be seen that 9 insurance companies operate on the insurance market in the Republic of Moldova, of which only one, Grawe Carat Asigurări, provides life insurance services. The share of life insurance on the market is 3.66% in 2023, constantly decreasing during the last 5 years. Of the total gross premiums subscribed for general insurance, the classes with the largest shares were held by Mandatory Motor Third-Party Liability Insurance (54.3%) and Comprehensive Motor Vehicle Insurance

¹ The exchange rate according to NBM data on 31.12.2023 was 1 Moldovan leu = 17.4 US Dollars.

(CASCO), other than railway, with a share of 19.6%. Thus, car insurance in the Republic of Moldova has a share of 74 per cent of the market (NBM, 2024).

During 2023, insurance companies subscribed gross premiums worth 168,73 million US dollars, 18.8% more than the gross premiums subscribed in the previous year, which indicates a significant growth trend in this sector.

According to the normative requirements (NCFM, 2011), the solvency rate of the insurer (reinsurer) must be equal to at least 100%. The statistical data presented by the NBM for the year 2023 (Table 1) show that all insurance companies operating on the financial market in the Republic of Moldova have a level that exceeds the established norms, which reflects a high solvency of the insurers. Regarding the liquidity of insurance companies, the NCFM Regulation (NCFM, 2011) provides that the insurer is obliged to guarantee liquidity by permanently maintaining unencumbered and liquid assets and to maintain a liquidity ratio of at least 1,0 permanently. Thus, we find that all analysed insurance companies exceed at least twice the established limit, which indicates that the insurers will be able to pay their debts from the liquid assets held.

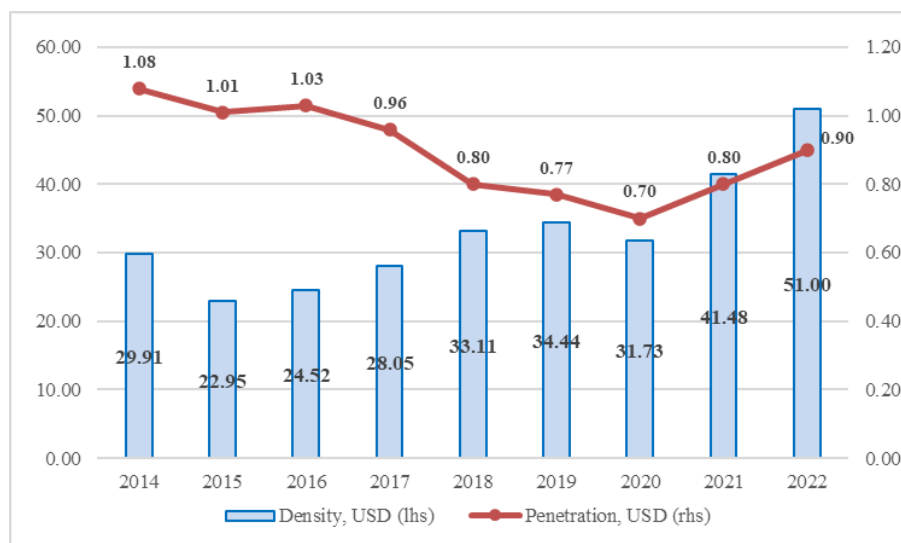
One of the particularities of the Moldovan insurance sector is the low level of reinsurance premium transmission. Only 23% of the insurance premiums are passed on to reinsurance, which is much less than in other countries. The basic indicator of the insurance business remains the net profit, which is 18,04 million US Dollars at the aggregate level of the market. Most insurance companies recorded net profits for 2023 from 0,6 million US Dollars at Transelit SA to 3,88 million US Dollars at Intact Asigurări Generale SA. Only the Moldcargo SA insurance company recorded losses of 1,14 million US Dollars in 2023.

Over the past 10 years, the number of market participants has undergone changes, largely due to legislative changes regarding capital requirements, solvency and insurance reserves. The main trends regarding the professional market participants are oriented towards the significant increase in the number of insurance and bancassurance agencies and the decrease in the number of insurance companies. From 16 companies active on the market in 2016, today we have reached 9 companies. The same downward trend is followed in the ranks of insurance brokers. However, we believe that the measures to change the legislative and normative requirements have

nevertheless contributed to the filtering of professional participants in the insurance market, leaving only those who can ensure the provision of quality services that comply with market and consumer requirements.

Regarding the general diagnostic indicators of the insurance sector, we observe an insurance penetration rate of only 0.9%, which is significantly lower than in countries with a developed economy. We can mention here that the average penetration rate of the insurance market in the European Union is around 8%. However, there is a constant increase in this indicator at the domestic level, which indicates that the insurance industry in the Republic of Moldova is developing. The same situation applies to the insurance density indicator. We find that the population is still reserved in accessing private insurance services, with the insurance density reaching only 51 US dollars in 2022.

Figure 1
The insurance market development indicators in the Republic of Moldova



Source: developed by the author on the basis of NCFM, NBM, NBS

From the analysis, we can see that the insurance market in the Republic of Moldova is going through a period of transformation and adaptation to global and European trends. These changes are driven

by factors such as digitization, increased risk awareness and international regulatory compliance requirements. Modernization and education efforts, along with adaptation to new technologies and demographic changes, will contribute to the growth and consolidation of this essential sector which is essential for the national economy.

4.2. Technologies with potential for implementation in insurance

Over 80% of insurers believe that the future of the insurance market belongs to those organizations that will make significant investments in innovation and digitization (Pauch and Bera, 2022).

Based on our research, we have identified the following digital technologies that could be implemented in the insurance sector (see Table 2).

Table 2

Digital technologies suitable for implementation in the insurance sector

Technology	Utility	Impact
Big Data	Identification of the appropriate type of products for customers in certain regions or belonging to specific demographic groups	Increasing sales productivity and reducing the volume of company losses, especially losses caused by fraudulent claims
Advanced analysis (AA)	<ul style="list-style-type: none"> - can identify which distribution channels (including agents and brokers) are best suited for certain types of potential customers; - can assess risks, for example, by analysing data posted in social channels (social media), but within the limits of the legal provisions regarding the use of personal data 	
Blockchain	The use of smart contracts in which all insurance conditions and information regarding the payment of compensation can be seen in real and transparent mode	Increases public confidence in companies and reduces the likelihood of mistakes
Internet of Things (IoT)	Sensors embedded in vehicles, homes and other equipment provide insights into customer behaviour and can deliver early warnings	Networked digital devices that can be used in cars, buildings or on land can protect people and property and thus reduce risks and claims

Technology	Utility	Impact
IoT wearables devices	Smart accessories monitor the health status of customers (heart rate, sleep quality, distance travelled per day), and within a health insurance contract, the data of these devices are considered and offer customers the possibility of obtaining discounts	Increase in the number of health insurance policies due to customers becoming more aware and responsible about their health
Telematics	Telematic data flows are used in the usage-based insurance (UBI) system, which is also called "pay-as-you-drive" or "pay-as-you-live". For example, due to a safer driving style, a car insurance customer can get a discount or priority insurance package	It increases customer security and road safety, contributes to the innovation of the sector, accelerates the pace of decision-making
Machine learning (ML)	<ul style="list-style-type: none"> - rapid adaptation to new data of insurers' information systems, without the need for reprogramming - calculation of the volume of premiums and management of compensations - voice biometrics that can be used to identify customers when they call contact centers, saving them the inconvenience of entering policy numbers and passwords, information that they don't always have at hand. 	Improving the quality of insurance services and increasing customer satisfaction
IT Infrastructure	Cloud technology has brought insurers new options for processing, computing and storing information in virtual space, and co-authoring and video calling allow connecting with customers without additional travel costs	Reducing costs of accessing services and increasing consumer satisfaction
Virtual reality (VR)	<ul style="list-style-type: none"> - risk assessment; - employee training <p>An insurer could use VR to create a three-dimensional image of a room or reconstruct an accident in detail</p>	It transforms the way information for subscription is collected, as well as how complaints are resolved

Source: developed by the author

4.3. Digitalization efforts of the insurance sector in the Republic of Moldova

Digitization is an essential component of the modernization of the national economy and alignment with European standards. Digitization efforts focus both on improving the technological infrastructure and increasing the level of digital and financial education of the population. Recently, the greatest efforts have been made to implement online sales systems. Insurers in the Republic of Moldova

have started to develop online platforms that allow customers to compare insurance offers, purchase policies directly from companies' websites, manage policies and make online payments.

At the same time, insurance companies implemented the use of chatbots and virtual assistants, which contributed to improving the user experience. These technologies provide instant customer support by answering frequently asked questions and assisting them in the policy purchase process.

Significant efforts are made in the field of digital and financial education of the population by initiating information campaigns and education programs that include workshops and training seminars, online educational materials such as video tutorials, guides and informative articles available on the websites of insurance companies and on social media platforms.

It's important to mention the efforts of the Government of the Republic of Moldova, which, in collaboration with international development partners, plays a vital role in supporting the digitization process. Regulations have been established, and favourable policies implemented to encourage innovation and the adoption of digital technologies in the insurance sector. For example, amendments to the Law on Compulsory Motor Third Party Liability Insurance (MTPL), the Contravention Code, and the Law on Preventing and Combating Money Laundering and Terrorism Financing have been passed. This has enabled the MTPL policy to be issued and perfected online in the Republic of Moldova. The amendments aimed to digitize the process of issuing MTPL policies. Thus, the conclusion of MTPL contracts electronically and online payment of the insurance premium has facilitated the process of purchasing MTPL policies for drivers, reduced the duration of contracting the service, and developed online distribution channels for insurance services. Due to these legislative changes, the obligation to issue documents (MTPL insurance policy, contract) on paper support has been eliminated.

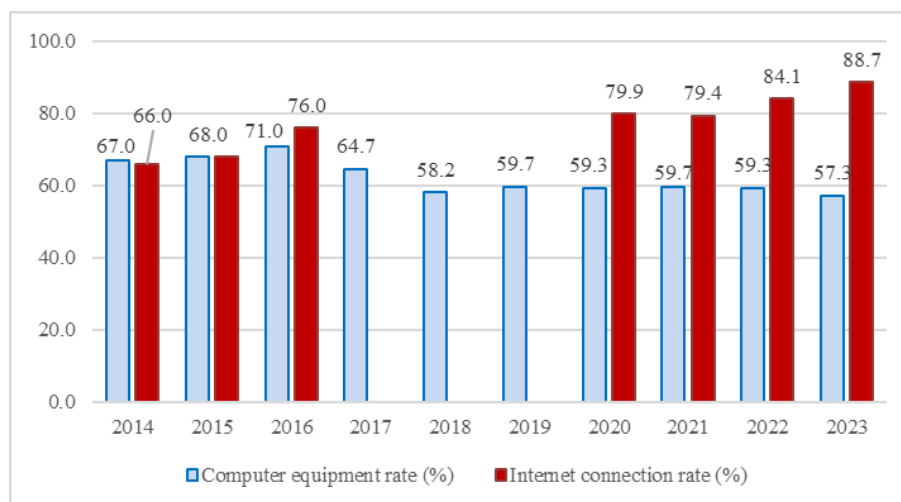
As the Republic of Moldova pursues its aspirations for EU membership, alignment with European standards in digitization becomes a priority. This involves adopting the best practices and technologies used in EU member states, as well as participating in European initiatives for financial innovation. In this regard, it is worth mentioning that the European Union aims to prepare its businesses and citizens for a more sustainable and prosperous digital future, centred around human factors. To achieve this goal, the Digital Decade

Policy Program has been created with specific targets and objectives for 2030. Among the central objectives are the digitization of all government and private enterprises, as well as the development of digital skills in at least 80% of the population by 2030 (European Commission, 2024).

The Republic of Moldova has initiated the Digital Transformation Strategy for the years 2023-2030 in support of the digitization idea promoted by the EU.

The analyses carried out within the research show a high potential for the implementation of innovative technologies in the insurance market in the Republic of Moldova due to the increased level of internet connection and the increased penetration of electronic connection devices. Approximately six out of ten households (57.3%) in the Republic of Moldova have a computer at home (EGARM, 2023). This indicator has been decreasing in recent years, the maximum being 71% in 2016. The decrease is explained by the fact that consumers are changing their preferences by choosing other, more accessible and convenient devices to use the Internet. The general internet connection rate in the Republic of Moldova in 2023 was 88.1% (Figure 2).

Figure 2
Population access to the Internet in the Republic of Moldova



Source: developed by the author based on the Electronic Government Agency of the Republic of Moldova

Besides having electronic devices and internet access, the Republic of Moldova's population has a financial literacy level of 59.5%, which is nearly equal to the average level for OECD countries (Ciumara, 2020). Financial literacy is a crucial element without which the population would not access insurance services through any distribution channels. Considering that both technical equipment and financial education levels are sufficient, we can conclude that the digitization of insurance services has a high development potential in the Republic of Moldova.

The efforts to digitize the insurance sector in the Republic of Moldova are essential for modernizing and streamlining this sector. By adopting modern technologies, promoting online sales, utilizing chatbots, digital and financial education, governmental support, and alignment with European standards, the insurance sector can become more accessible, transparent, and efficient. These measures will contribute to strengthening the insurance market and providing high-quality services to consumers, thereby supporting the sustainable development of the national economy.

5. Conclusions

The digitization of insurance brings multiple benefits to the industry, including process efficiency, improved customer experience, and reduced costs.

For insurance companies in the Republic of Moldova, it is a priority to offer suitable and affordable insurance products and services at competitive prices so that they are understood and accepted by all interested parties. This involves developing insurance products that meet the diverse needs of customers, from life and health insurance to property and liability insurance. Flexibility in customizing insurance products can also increase their attractiveness, adapting to the specific situations of each client.

In this sense, collaboration between the authorities and insurance companies is necessary to promote financial education and increase awareness of insurance's benefits. Authorities can play an important role in regulating and overseeing the sector, ensuring that standards of quality and transparency are met. In parallel, insurance companies must invest in public information and education campaigns, clearly explaining the advantages and importance of insurance in protecting assets and health.

In the insurance market of the Republic of Moldova, there is a potential for the implementation of digital technologies due to the following factors: the high level of profit of insurance companies, easy access to the Internet, equipping consumers with electronic devices, but also an average level of financial education. All of this can contribute to the development of digital insurance services for consumers but also to the implementation of innovative software for the efficiency and modernization of operational processes within insurance companies.

Promoting technological innovations in the insurance sector can significantly contribute to improving accessibility and transparency. Using digital platforms for selling and managing insurance policies, implementing mobile applications and developing interactive online tools can greatly simplify the customer experience, giving them quick access to information and services.

In conclusion, the development of the insurance sector largely depends on the ability to offer diversified, affordable and understandable products to the general public. Through effective collaboration between authorities and insurance companies and through the promotion of financial education and technological innovation, the objectives of growth and consolidation of the insurance market can be achieved, thus contributing to overall economic stability and prosperity.

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