

Insuring the Future: Harnessing Digital Transformation for Sector Development

تأمين المستقبل: استغلال التحول الرقمي لتطوير قطاع التأمين

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Abstract:

Digital transformation is one of the challenges facing the insurance sector in Algeria, as efforts seek to digitize insurance companies by changing their traditional pattern, by adopting digitation to improve and develop their insurance service, whether through promoting the insurance policy, submitting an insurance request, subscription or submitting losses.

Keywords: Digital Transformation, Digital Insurance, Smart Contracts, Big Data.

ملخص:

يعتبر التحول الرقمي من التحديات التي تواجه قطاع التأمين في الجزائر، حيث تسعى الجهود في رقمنة شركات التأمين من خلال تغيير نمطها التقليدي، وذلك بتبنيها الرقمنة لتحسين وتطوير الخدمة التأمينية لديها سواء من خلال الترويج لوثيقة التأمين أو تقديم طلب التأمين أو الاكتتاب أو تقدير الخسائر. كلمات مفتاحية: التحول الرقمي، التأمين الرقمي، العقود الذكية، البيانات الضخمة.

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1. INTRODUCTION

The tremendous advancement in technology and the significant developments in the field of information and communications have led to the emergence of new patterns in human life, as digital transformation has become an economic necessity, leading to the emergence of a new type of

economy called the "digital economy", in which it relies heavily on technology in various fields, and some countries have made remarkable progress in digitizing many different fields and sectors, and Algeria is among the countries that embraced digital transformation, launching the e-Algeria project in 2013, seeking to spread digitization to all public and private sectors¹, including the insurance sector because of its big importance, thus, Algeria has recognized the necessity of digital transformation in the field of insurance and its effective role in improving and developing the insurance industry. Therefore, we pose the following problematic:

What is the extent of the impact of digital transformation on the improvement and development of the insurance industry?

To answer this question, we divide the research paper into two axes:

The first axis: The concept of digital transformation in the insurance industry.

The second axis: The role of digital transformation in improving and developing the insurance industry.

2. The concept of digital transformation in the insurance industry

With the great and rapid developments taking place in the international arena, our world is witnessing a digital transformation in all areas of business, regardless of its size and type, digital transformation has become an inevitable necessity for all institutions and bodies that seek to develop and improve their services and facilitate their access to beneficiaries, and many countries have adopted the digital experience and sought to apply it in the insurance industry, therefore, we will try to define digital transformation and determine its importance, identify the requirements of digital transformation and the challenges and obstacles that many institutions and companies are exposed to.

2.1 Defining Digital Transformation in the Insurance Industry

¹ President Abdelmadjid Tebboune announces the establishment of the High Commission for Digitization, highlighting the important role this sector will play in organizing the Algerian economy (Algerian Press Service, n.d.).

Firstly, we need to define insurance, then digital transformation, and finally we need to define digital insurance.

2.1.1 Definition of Insurance

Insurance is basically based on the idea of co-operation, because while it is difficult for one person alone to bear the harmful consequences of accidents and risks that may occur, it is easy to bear these risks if other co-operators contribute with him, thus reducing the burden of bearing these risks (Hamida, 2011, p. 8).

Insurance is defined as a contract and a technical process at the same time, as it contains two aspects, one legal and the other technical, as it is not limited to the contractual relationship between the two parties, otherwise it turns into a bet and is therefore illegal, but it is a technical process based mainly on cooperation between a number of people and participation in bearing the disasters that befall them (Ben Khrouf, 1998, p. 11).

The French jurist, J. Hemard, defined it as a process whereby one party, the insured, in return for a premium, obtains a pledge of an amount to be paid to him or others if a certain risk is realized, and the other party, the insurer, who takes on a set of risks and offsets them according to statistical laws (Hadidi, 2003, p. 11).

Thus, insurance is an effective means of addressing the risks to which individuals and institutions are exposed in order to mitigate their impact, as it is a means of security that is consistent with the spirit of the modern era, in which the requirements of life have increased and the risks of development have become clear.

2.1.2 Definition of Digital Transformation

Digital transformation is defined as:" The process by which an organization integrates digital technology into all areas of the business. This process fundamentally changes the way the organization delivers value to customers. Companies adopt innovative digital technologies to make cultural and operational shifts that better align with changing customer requirements" (Amazon Web Services, 2023).

It is also defined as:" Digital transformation underscores how information technology influences organizational structure, processes,

information dissemination, and the organizational capacity to integrate and adjust to technological advancements. It emphasizes the foundational role of technology in information technology IT² and the importance of aligning IT strategies with business objectives" (Li et al., 2018).

It is also defined as: "The digital transformation strategy serves as a framework that guides companies in managing the changes brought about by the adoption of digital technologies, and in their ongoing operations following the transformation" (Matt et al., 2015).

2.1.3 Defining digital transformation in the insurance industry

Define digital insurance: "Technological transformation and automation³ of processes, to change customer and insurer communication and generate new data" (Shraqa, 2021, p. 245).

It is defined as: "The transformation of all insurance services provided by insurance companies to all customers into digital services, i.e. automation of processes to enhance efficiency and speed, as automation is the use of computers and devices based on processors or controllers and software in various industrial, commercial and service sectors, in order to ensure the automation of procedures and works in an accurate and proper manner and with the least possible error" (Zayed, Al-Sharqawi, & others, 2019, p. 193).

It is also defined as: "Providing fully digitized insurance products and services, through the use of devices built on powerful processors and software, in order to achieve fast and accurate insurance" (Said, 2022, p. 67).

Based on the previous definitions, it is clear that digital transformation is the strategy that the insurance market should pursue to rebuild business models better by automating processes with the aim of enhancing efficiency and speed

² IT stands for "Information Technologies." Information Technologies encompass the use of computers, networking, storage, and other physical devices, infrastructure, and processes to create, process, store, secure, and exchange all forms of electronic data.

³ Automation is defined as: "the automation of a device, process, or system, automatically controlled by other automated devices, replacing humans in monitoring, effort, and making programmed decisions."

- It is also defined as: "The automatic flow of information, which is a non-Arabic word and is an inaccurate translation of the French word (Automatique), which means: Automatic, automatic or self-moving (Al-Ahbab, 2018, p. 159).

2.2 Requirements for Digital Transformation

Digitization is the process of converting information into digital data and format⁴ that can be processed by a computer, in order to represent an image, sound, document or signal, such as scanning a paper document and saving it as another digital document in a computer (Diab, n.d.).

In essence, digitization is a key component of digital transformation, but digital transformation involves more than just digitizing existing processes and systems, as it requires a fundamental shift in the way organizations work, deliver value and leverage digital technologies to drive innovation, growth and competitive advantage (Dafater Blog, 2023). To achieve a successful digital transformation, there are key pillars:

2.2.1 Strategic Vision

It is all the strategic principles and behaviors adopted by the country to implement and achieve the desired goals (Salima & Al-Shami, 2023, p. 453), which must be based on an accurate study of the market and future technology trends.

2.2.2 Technology Infrastructure

The digital infrastructure must be present and ready to support digital transformation, this includes the current infrastructure of internet networks, hardware and software, which must be updated and improved to meet the needs of digital transformation (Expert Vision Consulting, n.d.), for digital transformation makes the digital organization live in the middle of information, linked to a wide network and has its own passwords on the network, walking a wide road within the new economy, armed with rare electronic communications with super quality specifications (Ahmed, 2009, p. 115).

2.2.3 Human Resources

⁴ The word digital is taken from the Latin word Digitus, which means an arithmetic number, as it refers to one of the oldest means used in the counting process, and when information is stored or converted into a digital format, it is transformed into a series of numbers ending with the first basic level (zeros and ones) (Ahmed, 2009, p. 113).

The human element is considered the main and decisive element in the success of the digital transformation project, through the orientation towards preparing and qualifying human resources, before appointment and during service, and providing continuous learning programmes and self-learning in the field of digital technology (Muhammad, 2023, p. 563).

The digital transformation process requires a human element with high competencies and capabilities in the field of information technologies to implement the transformation programme and achieve its desired goals (Slaimi & Bouche, 2019, p. 952).

2.2.4 Customer Experience

The customer experience expresses the sum of the experiences that a customer has with a company, it is the product of the interaction between the company and the customer during the period of their relationship, and therefore a good customer experience means that his experience was in accordance with his expectations, so companies seek to manage customer experiences by designing interactions with them to meet and exceed their expectations to increase the level of customer satisfaction and loyalty⁵.

2.2.5 Cybersecurity

It is the activity that ensures the protection of human and financial resources associated with communication and information technologies, and ensures the possibility of minimizing losses and damages in the event of the realization of risks and threats related to software, computers, networks and others, and allows the situation to be restored as quickly as possible, so that the wheel of production does not stop (Bara, 2017, p. 257).

2.2.6 Analyzing Big Data

It is a huge amount of complex data that exceeds the capacity of traditional databases in terms of storage, collection and processing, to detect patterns or correlations, generate ideas or predict some events in a more

⁵ Customer experience is concerned with the rational and emotional aspect that focuses on the customer's feelings and impressions at every point where the customer interacts with the service provider or product, which is the opposite of customer service, which relies heavily on the rational (functional) aspect of the customer's relationship with the service provider or product, it meets his needs and takes care of solving his issues and complaints (Salem, 2022).

accurate and timely manner, it is big data and its analyses play a key role in solving the issue of unstructured data in insurance companies that adopt insurance technology (Said, 2022)

2.3 Challenges and Obstacles of Digital Transformation

Digital transformation has become an urgent necessity for the success of any public or private sector in today's rapidly evolving era, no business can rely on traditional procedures and techniques in the digital economy, but this transformation comes with major challenges that make it difficult for organizations to achieve it, the most important of these obstacles are:

2.3.1 Talent

It may be difficult to find the right people who possess the necessary knowledge and skills to support this transformation, so appropriate measures must be taken to attract the right competencies and improve recruitment and selection processes (High Source, 2023), as well as developing the resources of existing employees by training and qualifying them to pass the work through electronic means, and this requires holding training courses for workers or qualifying them on the job to keep pace with technological developments (Ahmed, 2009, p. 72).

2.3.2 Lack of financial resources

Lack of financial resources is one of the most prominent obstacles to achieving digital transformation in organizations, because the latter requires significant financial resources for planning, investments, project coordination, building infrastructure, and developing information systems management to deliver a well-designed digital transformation project (Al-Ahbabi, 2018, p. 48).

2.3.3 Resistance to change

Even if employees are aware and technologically ready for digital transformation, this is not enough unless managers realize the importance and urgency of the matter (Etunum, 2002). On the other hand, it is difficult to convince customers of the benefits and advantages of digital transformation, as well as their fear of losing control of information through

privacy violations and security considerations (Makawi, 2019, p. 12). Also, to convince customers of the benefits and advantages of digital transformation.

2.3.4 Lack or absence of laws for digital transformation

In order to meet the challenges of digital transformation, it is necessary to provide laws governing digital transformation processes that protect beneficiaries and mechanisms that control privacy and data breaches

3 The role of digital transformation in improving and developing the insurance industry

The intense competition in the insurance market today requires speed, efficiency and ease of use, and this calls for the need to move to digital technology using digital techniques, as most insurance companies deal online or through applications to design new insurance products to meet changing business and market requirements, and conduct immediate transactions by creating and processing underwriting and claims quickly and easily, which inevitably leads to creating interaction and rapid communication between insurance companies and insureds, as well as reducing the cost of insurance service, as digital insurance makes many processes more efficient and effective compared to traditional insurance (firstly), and it plays a significant role in advancing the insurance industry (secondly). This has made the adoption of digital transformation projects in the insurance sector by Algerian insurance companies an imperative necessity for its improvement and development (thirdly).

3.1 Uses of digital technology in the insurance industry

In recent years, insurance companies have realized the necessity of introducing digital techniques into their business, which are the main drivers of digital transformation:

3.1.1 Mobile technology and applications

Smartphones and their applications have emerged as a game changer for all industries, and the insurance sector is no exception to this change. As technology evolves and customer expectations rise, today's customers are already used to buying and managing everything, including insurance

products (applying for insurance, paying premiums, reporting claims, paying compensation, life insurance, health insurance, catastrophe insurance), using their mobile phones (Raouf, 2021).

Insurance claims are now being processed online with rapid image exchange from smart mobile phones using 3D images, which will open up innovative possibilities for the settlement of accidents (Shraqa, 2021, p. 251).

In 1917, GSMA conducted a survey, the first in this regard, on the provision of insurance services via mobile phones, the results of which indicated that at least 61 million micro-insurance policies were issued via mobile phones in 27 countries (Raouf, 2021).

3.1.2 Smart contracts insurance

Smart contracts are software implemented in a decentralized manner on the blockchain whose functions are triggered by the fulfilment of predefined conditions (Mansour & Zarqin, 2022, p. 526). The information contained in smart contracts is defined in code, which makes the contract automatic and self-executing, meaning that the specified activities are automatically performed when certain conditions in the agreement are met (Hajj Mohammed, n.d.).

As for the blockchain, it is the application platform for smart contracts through which the services of a third party are dispensed with, and the cryptocurrency is the intermediate currency through which payment is made and contracts are fulfilled. Due to the link between smart contracts and these two elements, many researchers call smart contracts block chain contracts or cryptocurrency contracts (Maadawi, 2021, p. 63). Smart contracts have been used in the field of insurance, including the following:

3.1.3 Property Catastrophe Insurance

Insurers use digital technology to evaluate or modify claims and reduce costs. Drones were used as a practical tool in loss assessment by AIG to collect visual data to know the extent of damage caused by Typhoon Johnny 2015 in Japan, and drones were used to assess the damage caused by the impact of weather on crop yields in India in 2016, as this technology enabled accurate and timely compensation data to be sent to those affected, which had the greatest impact in mitigating the effects of production losses

on low-income farmers (Egyptian Insurance Federation, n.d.).

In the same context, we also find smart flood insurance, where the client installs a tamper-proof flood sensor, a GPS system and a camera capable of determining the water level and sending information about the water level to the Ledger system, this information will enable the determination of an appropriate customized premium based on the risk information and the client's specific circumstances, the client will choose the policy or smart contract based on the indicators they set in advance, with the policy in place, Pinsent Masons envisages the possibility of using the smart contract to collect the monthly premium from the client and pay compensation to the client when a flood occurs (Egyptian Insurance Federation, 2019).

3.1.4 The connected car insurance contract is known as Pay how you drive

Through this insurance product by placing an electronic device installed in the insured car that can collect information about the average distance travelled by the driver daily, the rate of speed, the types of maintenance performed on the car and other information that can reach the insurance company that wrote the policy, in order to analyze it and ensure the proper performance of the car to reduce traffic accident rates and the end result will be a steep decline in the volume of compensation incurred by insurance companies annually due to the absence of digital information (Tawfiq, 2018).

In this context, the French company (Direct Assurance) has chosen a new offer (You drive) based on the Pay how you drive model, which works through a smart box connected to a mobile application and placed inside the car to record and analyze driving data, this system enables good drivers to reduce their monthly bill by up to 50% (Shraqa, 2021, p. 249).

3.1.5 Cargo insurance

IBM Maersk has recently developed an electronic system to track and trace the journey of containers between ports. The containers are fitted with sensors, and the data from the sensors is used in underwriting to calculate premiums, loss and damage mitigation as well as automatic payment of claims resulting from the occurrence of the risk. For example, if a shipment is exposed to heat in terms of loss mitigation, if the sensory sensors detect an

increase in temperature, the sensors will be sent to the customer to take the necessary measures to prevent a loss to the shipment, and if a loss occurs to the shipment and is detected by the trusted Oracle system devices, the compensation will be paid to the customer automatically (Egyptian Insurance Federation, n.d.).

3.1.6 Blockchain technology

In recent years, countries have paid increasing attention to blockchain technology and its use cases as a tool for digital transformation.

Blockchain technology is the largest secure, transparent, high-speed, decentralized and transparent digital data managed by its users without an intermediary, which cannot be modified or removed and manages a growing list of blocks that contain a number of data and information, as economists and cybersecurity experts agree that it is the most secure technology because it is decentralized and cannot be hacked by hackers because of its system (Saghar & Shersham, 2022, p. 151).

The insurance sector is one of the sectors that pays attention to the introduction of blockchain technology to its field of activity, because this technology will help insurance companies to overcome deceptive claims, and fraud that occur every day in this industry, which causes huge losses, because it brings transparent information about transactions and creates a sense of trust, and improves the processing and verification of claims in a faster, less expensive and more efficient way (Ben Mohammed & Toubal, 2020, p. 54).

3.1.7 Big Data

The International Standards Organization (ISO) defines Big Data as a diverse collection of data of various types⁶ characterized by its volume, velocity, variety, variability, and reliability. This data presents challenges for efficient processing using current and traditional technologies, yet offers

⁶ Raw data classification is categorized into three types: Data structured, which is data organized in tables or databases (Data Base). And, unstructured data represents the largest percentage of data, which is the data that is obtained daily from text, images, videos, messages and paragraphs on websites. Finally, data semi structured is a type of structured data, but the data is not in the form of tables or databases (Bar & Marhabi, 2018).

significant potential for leveraging its benefits (ISO, 2019). Although big data analytics as a service is still fairly new, insurance companies rely heavily on it, an example of which is risk assessment by analyzing big data in more accurate ways, where data is collected from different sources such as past accident records, geographical information and economic data to identify potential risks and analyze them based on statistical models (Ejada, n.d.), as well as using this data to improve performance, identify trends and make strategic decisions in case of anticipating any potential changes in the market.

3.2 The role of digital transformation in improving and advancing the insurance industry

The digital economy has allowed the introduction of new technologies, such as cloud computing, big data analytics, machine learning and artificial intelligence, so companies demand a different skill set from their employees in order to keep up with such changes and stay up-to-date with modern technological trends in order to stay relevant in their field, which reflects the importance of digital transformation in their lives and its direct impact on all industries, especially the insurance industry.

3.2.1 Designing a new insurance product "Fostering Innovation"

The Organization for Economic Co-operation and Development (OCDE) defines innovation as: "The sum of the scientific, technical, commercial and financial steps necessary for the successful development and commercialization of new or improved industrial products, the commercial use of new or improved methods, processes or equipment, or the introduction of a new method of social service, and research and development is only one of these steps" (Habar, 2018, p. 349).

Insurance companies must introduce new insurance products in the market to increase the volume of sales and provide consumers with less expensive and quality services, which gives them the character of efficiency and effectiveness, which enhances their competitiveness⁷.

⁷ In this context, a Japanese life insurance company "Dai-ichi" conducted joint research with Hitachi, a company that has developed a range of medical technologies and solutions, electronic medical records and testing systems for hospitals and

3.2.2 Rapidly attracting and targeting insureds "Marketing"

Marketing is: "A methodology based on the scientific study of consumers' desires, which in turn allows the organization to achieve its goals of profitability while providing the best products and services that match the market" (Aknarous, 2020, p. 183).

In the field of insurance to market insurance services, marketing managers within insurance companies must put themselves in the place of consumers, through an integrated system of activities that specialize in planning, advertising, promotion, distribution and presentation of insurance services in various forms, which aim to satisfy human needs and reduce the severity of the risks facing them in their daily and practical life, and this is achieved within the framework of the exchange process between companies and their customers in a way that achieves the objectives of both parties (Bourgada, 2017, p. 1224).

3.2.3 Faster delivery of insurance services

The digital transformation contributes to streamlining the work procedures in insurance companies, and shortening the time of issuing policies to issuing them on the same day instead of waiting for days, thanks to the availability of all customer data on the database, which directly benefits the insured and saves his time and effort.

The use of digital technology allows the electronic payment of insurance premiums from the customer's (the insured) bank balance after his approval, and in the case of compensation, the deduction from the insurance company's account in banks and transfer it to the insured's bank account without the need to issue bank cheques and wait for them to be paid, saving them time and effort (Abdel Nabi & Gomaa, 2019).

3.2.4 Reducing the cost and performance of insurance services

medical institutions in Japan and abroad, to build a disease evolution model that uses artificial intelligence to predict the incidence rates of lifestyle diseases (diabetes, hypertension, heart disease) and total medical expenses, and based on this model he developed a solution to control the annual medical spending on lifestyle diseases and predict the incidence rates of these diseases and take advantage of the big medical data to innovate specialized life insurance products (Japanese Company "Dai-Ichi" & Hitachi, n.d.).

Experts point out that in the next two decades, digital technology will significantly reduce insurance premiums in Western countries in general and in the United States in particular, as cars are equipped with features that reduce road traffic accidents, such as blind spot detection, forward collision avoidance, and driverless technology.

On the other hand, these features on vehicles will reduce the amount of compensation incurred by insurance companies annually, thus shifting insurance policies from "risk insurance" to "risk avoidance" (Tawfiq, 2018).

3.3 Status of digital transformation in the Algerian insurance sector

The insurance sector in Algeria has witnessed significant growth over the past few years in light of the development and diversification of its services as well as the existence of great competition with insurance companies. Algeria has realized that access to the world of digital technology is an inevitable necessity that requires a lot of time, effort and money, and in line with this development, it has modernized the payment system and introduced electronic payment methods in the insurance sector.

E-payment was launched at the level of insurance companies on 04 October 2016, however, there has been a significant lack of demand by insurance companies for this service product, so we will address some insurance companies that have adopted e-payment as a mechanism towards development and change.

3.3.1 Algerian Insurance and Reinsurance Company "CAAR"

In 2017, the company launched the electronic payment service for the insurance contract under an agreement with the Algerian Popular Loan Bank. The application of this type of electronic underwriting was limited to one product only, "Multi-Risk Residential Insurance", which allows the customers of the insurance company "CAAR" holding a bank card active in Algeria to pay for their insurance contract through the online portal of the company "CAAR", the first official of this company stated that the online payment service will soon be extended to other insurance products marketed by this company (Algerian Press Service, 2017).

3.3.2 CAARAMA

In the same context, "Karama", a company specialized in personal insurance, signed an agreement with the Algerian Popular Loan to allow holders of electronic bank cards to subscribe to an insurance contract electronically, and this subscription was limited to travel insurance as a start towards development and change, and for this purpose the company opened a portal for electronic subscription, management and payment, and this portal developed by the company allows not only preparing an electronic estimate statement and converting it into a contract and paying by electronic bank card, but also managing and changing the contract remotely, for example with regard to the period and duration of the contract (Algerian Press Service, 2017).

3.3.3 National Insurance Company (SAA)

The National Insurance Company (SAA) has also launched an e-payment service on its website for two primary insurance products: "Multi-Risk Residential Insurance" and "Natural Catastrophe Insurance".

With the aim of intensifying communication channels with insurance consumers and developing the private insurance industry, SAA's new digital platform offers its customers the possibility of underwriting insurance contracts online, conducting an evaluation of the insurance contract online, finding the nearest commercial agency, counselling and guidance at any time, following the development and processing of the accident file, and browsing new areas of news, employment and tenders (Algerian Press Service, 2021).

4. CONCLUSION

In light of the technological development and the radical change in the mechanisms of communication between people and their interaction with companies, digital transformation is no longer an option for companies, but rather a necessity and an essential factor to be able to continue their business and keep pace with the rapid developments in the business sector.

In this paper, we have concluded that:

- The world has witnessed a great development in information and communication technology in all fields, the most important of which is the

field of insurance, which has also adopted technological transformation to achieve maximum efficiency.

- Digital transformation is a process associated with the intensive use of digital technologies, through which new insurance products are created in order to improve operational efficiency and increase productivity, in order to attract a larger segment of customers in order to outperform competitors.
- Insurance companies must embrace the concept of digital transformation as an imperative to keep pace with developments in ICT to erase the digital divide and secure the benefits of the digital revolution in the field of insurance.
- The Algerian insurance sector has lagged behind in digital transformation due to poor telecommunications infrastructure.

In light of the findings, the following recommendations can be proposed that are believed to contribute to the adoption of digitalization by Algerian insurance companies:

- The need to provide a strong, robust and appropriate telecommunications infrastructure that helps the insurance sector to digitize.
- Improving operational efficiency and optimizing the services they provide to customers and the target audience of those services through training of employees.
- Spreading awareness and e-insurance culture among employees of insurance companies and members of the community.
- The need for Algerian insurance companies to enter into partnership projects with Insurtech companies to activate and accelerate the digital transformation of the insurance sector in Algeria.
- Focusing on the regulatory and legal aspect that plays a pivotal role in supporting and activating digital technology in the insurance sector.

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