

RESEARCH ARTICLE

The Reality of Financial Innovation in the Algerian Insurance Sector: Emerging Trends, Digital Transformation, and Market Development

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Keywords

Financial innovation; Insurance sector; FinTech; Digital insurance; Takaful insurance; Algeria; Insurance market development.

Abstract

Financial innovation has become a strategic driver of transformation in insurance markets by improving operational efficiency, expanding financial inclusion, strengthening risk management, and enhancing customer-oriented service delivery. In emerging economies, where insurance penetration remains relatively low, innovative financial technologies and digital insurance solutions offer important opportunities to improve market competitiveness and resilience. This study examines the current state of financial innovation in the Algerian insurance sector, with particular emphasis on the adoption of financial technologies, digital insurance services, Takaful insurance, and innovative financial products introduced by public and private insurance companies. The research employs a descriptive-analytical approach based on an extensive review of the relevant literature, institutional reports, and sectoral statistics to evaluate the evolution of financial innovation within the Algerian insurance market. The findings indicate that the sector has experienced gradual but significant modernization through the expansion of digital payment systems, online insurance services, electronic claims management, mobile applications, customer relationship technologies, and the development of Takaful insurance following recent regulatory reforms. Nevertheless, the pace of innovation remains constrained by limited digital infrastructure, regulatory challenges, relatively low insurance penetration, insufficient technological investment, and varying levels of digital literacy among consumers. The study concludes that accelerating financial innovation requires a comprehensive policy framework that integrates technological modernization, regulatory support, institutional capacity building, cybersecurity enhancement, and greater collaboration between insurance companies and financial technology providers. Such reforms are expected to improve operational performance, strengthen market competitiveness, and contribute to the sustainable development of Algeria's insurance industry.

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1. Introduction

The insurance sector constitutes one of the fundamental pillars of modern financial systems due to its central role in risk transfer, financial intermediation, capital accumulation, and economic stability. Beyond its traditional function of compensating policyholders for unexpected losses, insurance mobilizes substantial financial resources that can be invested in productive sectors, thereby supporting long-term economic growth and sustainable development. Efficient insurance markets reduce uncertainty, encourage entrepreneurship, facilitate investment, and strengthen financial resilience for households, businesses, and governments alike.

Rapid technological advancement and digital transformation have fundamentally reshaped the global insurance industry during the past decade. Innovations such as financial technology (FinTech), artificial intelligence, big data analytics, blockchain, cloud computing, Internet of Things (IoT) applications, mobile insurance platforms, and automated underwriting systems have transformed conventional insurance business models. These technologies enable insurers to improve operational efficiency, reduce transaction costs, enhance customer experience, strengthen fraud detection, personalize insurance products, and accelerate claims processing. Consequently, financial innovation has become a major determinant of competitiveness within increasingly dynamic insurance markets.

The emergence of InsurTech, representing the convergence of insurance services and financial technology, has further accelerated the digital transformation of insurance industries worldwide. InsurTech solutions facilitate real-time risk assessment, digital distribution channels, electronic policy management, predictive analytics, and customer-centered insurance services. These developments have encouraged insurance companies to redesign their operational strategies in response to changing consumer expectations and intensifying market competition.

In developing economies, including Algeria, financial innovation has become increasingly important as governments pursue financial sector modernization and digital economic transformation. The Algerian insurance market has traditionally been characterized by relatively low insurance penetration, a dominant public-sector presence, and gradual regulatory reforms. However, recent initiatives promoting digital financial services, electronic payment systems, financial inclusion, and Islamic finance have created new opportunities for innovation within the insurance industry. In particular, the introduction of Takaful insurance and the expansion of digital insurance platforms represent important milestones in the sector's modernization process.

Despite these positive developments, the Algerian insurance sector continues to face several structural challenges. These include limited technological infrastructure, relatively slow digital adoption, cybersecurity concerns, regulatory constraints, insufficient investment in innovation, and varying levels of consumer awareness regarding digital insurance services. Addressing these challenges is essential for improving market efficiency, increasing insurance penetration, enhancing customer trust, and strengthening the sector's contribution to national economic development.

Against this background, the present study investigates the current reality of financial innovation in the Algerian insurance sector by examining the adoption of innovative financial products, digital technologies, and emerging insurance services among both public and private insurance companies. The research also evaluates the opportunities and challenges associated with financial innovation and explores its implications for improving competitiveness, operational performance, and long-term sectoral development.

Accordingly, the study addresses the following principal research question:

To what extent does financial innovation contribute to the modernization, competitiveness, and sustainable development of the insurance sector in Algeria?

To answer this question, the study tests the following main hypothesis:

The adoption of modern financial innovations—including financial technology, digital insurance solutions, electronic payment systems, and Takaful insurance—significantly contributes to improving the operational efficiency, competitiveness, service quality, and sustainable development of the Algerian insurance sector by expanding innovative insurance products, optimizing financial transactions, strengthening risk management, and enhancing customer accessibility.

The objectives of this study are threefold:

- To examine the current status of financial innovation within the Algerian insurance sector.
- To analyze the role of digital financial technologies and innovative insurance products in enhancing sectoral performance and competitiveness.
- To identify the principal challenges and future opportunities associated with accelerating financial innovation and digital transformation in Algeria's insurance industry.

To achieve these objectives, the study adopts a descriptive-analytical research design, combining theoretical analysis with the examination of institutional reports, official statistics, and recent developments in the Algerian insurance market. This methodological approach provides a comprehensive understanding of the evolving relationship between financial innovation and insurance sector development while offering evidence-based recommendations for policymakers, regulators, and insurance practitioners.

2. Literature Review

Financial innovation has emerged as one of the principal drivers of transformation in modern financial systems, particularly within the insurance industry, where technological advancement, digitalization, and product innovation have significantly reshaped traditional business models. The concept encompasses the development of new financial products, services, technologies, organizational processes, and distribution channels designed to improve market efficiency, reduce transaction costs, strengthen risk management, and enhance customer satisfaction (Hassan Jamal, 2020).

Recent literature emphasizes that financial innovation has evolved beyond conventional product diversification to include digital ecosystems supported by financial technology (FinTech), artificial intelligence (AI), blockchain, cloud computing, big data analytics, and mobile financial services. These technologies have fundamentally altered the relationship between insurers and policyholders by facilitating faster underwriting, automated claims processing, personalized insurance products, and real-time risk assessment (Khalifa, 2018; Ben Azza, 2023).

The emergence of digital insurance (InsurTech) represents one of the most significant innovations in the global insurance industry. Digital insurance platforms integrate technological infrastructure with insurance operations to improve operational efficiency while expanding customer access to insurance services. According to Zayed et al. (2019), digital insurance contributes to reducing administrative costs, improving service quality, accelerating claims settlement, and increasing transparency in insurance transactions. Likewise, Said (2022) demonstrated that InsurTech solutions enhance customer experience by enabling fully digital insurance purchasing, electronic policy management, and automated customer support.

Within developing economies, financial innovation has become increasingly important for improving financial inclusion and expanding insurance penetration. Habbar (2018) argues that innovation enables insurance companies to diversify products, improve competitiveness, and respond more effectively to changing customer needs. Similarly, Fellag et al. (2020) found that although the Algerian insurance market has experienced gradual modernization, the pace of innovation remains constrained by regulatory limitations, technological infrastructure deficiencies, and relatively low levels of digital adoption.

The literature also highlights the growing importance of Islamic insurance (Takaful) as an innovative financial mechanism capable of promoting financial inclusion while complying with Islamic financial principles. Zouambi and Kouach (2023) emphasize that Takaful insurance contributes not only to market diversification but also to strengthening the national economy by attracting new customer segments that previously remained outside the conventional insurance system.

Technological innovation has further expanded through the adoption of artificial intelligence, cloud computing, blockchain, and digital financial platforms. Ben Azza (2023) argues that these technologies improve operational efficiency, enhance cybersecurity, facilitate fraud detection, and promote digital financial inclusion. Blockchain technology, in particular, offers considerable potential for increasing transparency, automating smart contracts, reducing fraud, and strengthening trust between insurers and policyholders (Khalifa, 2018).

Financial innovation also contributes to improved risk management through the development of sophisticated financial instruments and derivative products. Gaidi and Lahcen (2015) explain that innovative financial instruments enable financial institutions to better hedge market risks and optimize resource allocation, thereby increasing financial stability.

Despite these advances, several studies acknowledge persistent barriers to financial innovation in emerging insurance markets. These challenges include insufficient regulatory flexibility, limited digital infrastructure, cybersecurity risks, inadequate investment in research and development, and low levels of digital literacy among consumers (Habbar, 2018; Fellag et al., 2020). Consequently, successful digital transformation requires coordinated efforts among regulators, insurance companies, technology providers, and financial institutions.

Overall, the existing literature demonstrates a strong positive relationship between financial innovation and insurance sector development. Nevertheless, empirical evidence regarding the Algerian insurance market remains relatively limited, particularly concerning the integration of financial technologies, digital transformation strategies, and recent regulatory reforms. This study seeks to address this research gap by providing a comprehensive assessment of the current state of financial innovation in Algeria's insurance sector and evaluating its contribution to sectoral modernization and sustainable development.

3. Methodology

3.1 Research Design

This study adopts a descriptive-analytical research design, which is considered appropriate for examining the current state of financial innovation within the Algerian insurance sector. The descriptive component facilitates a systematic presentation of theoretical concepts related to financial innovation and insurance development, while the analytical component enables the interpretation of sectoral developments, technological trends, and institutional reforms affecting insurance companies operating in Algeria.

3.2 Research Approach

The study employs a qualitative research approach based primarily on documentary analysis and secondary data. Rather than conducting surveys or interviews, the research synthesizes evidence from scholarly publications, official reports, governmental statistics, institutional documents, and previous empirical studies to evaluate the evolution of financial innovation within the Algerian insurance market.

3.3 Data Sources

The analysis relies exclusively on secondary data obtained from multiple sources, including:

- Peer-reviewed journal articles on financial innovation and insurance;
- Official publications of Algerian governmental institutions;
- Reports issued by insurance regulatory authorities;
- Publications of the Algerian Press Agency;
- Previous academic studies examining financial innovation, digital insurance, FinTech, and Takaful insurance;
- International literature addressing insurance digitalization and financial technology.

The combination of these sources provides a comprehensive overview of recent developments affecting the Algerian insurance sector.

3.4 Data Analysis

The collected information was analyzed using descriptive and qualitative analytical techniques. Relevant literature was systematically reviewed to identify major themes related to financial innovation, digital transformation, insurance technologies, and market development. The analysis focused on evaluating the adoption of innovative financial products and digital technologies by Algerian insurance companies, identifying opportunities created by financial innovation, and assessing the principal challenges that continue to hinder sectoral modernization.

3.5 Scope of the Study

The study focuses specifically on the Algerian insurance sector, including both public and private insurance companies. Particular attention is given to recent developments involving financial technology (FinTech), digital insurance services, electronic payment systems, mobile insurance applications, blockchain-related innovations, cloud computing, and Takaful insurance. The analysis primarily reflects developments occurring during the last decade, with particular emphasis on recent regulatory reforms and technological advancements.

3.6 Research Framework

The analytical framework of the study is structured around three interconnected dimensions:

1. Financial innovation technologies, including FinTech, digital insurance platforms, artificial intelligence, blockchain, and cloud computing;
2. Insurance sector development, measured through product diversification, operational efficiency, customer service improvement, and market competitiveness;
3. Challenges and future opportunities, including regulatory issues, technological infrastructure, financial inclusion, cybersecurity, and institutional readiness for digital transformation.

This framework enables a comprehensive evaluation of how financial innovation contributes to improving the performance and sustainability of the Algerian insurance industry.

3.7 Limitations of the Study

Several limitations should be acknowledged. First, the study relies exclusively on secondary data and therefore does not include primary empirical evidence collected directly from insurance companies or policyholders. Second, because financial innovation is

rapidly evolving, some technological developments may continue to change after the completion of this study. Finally, data availability regarding certain aspects of digital insurance adoption in Algeria remains limited, restricting the possibility of conducting advanced quantitative analysis.

Despite these limitations, the study provides an up-to-date and comprehensive assessment of financial innovation in Algeria's insurance sector and offers valuable insights for policymakers, regulators, insurance practitioners, and future researchers interested in financial sector modernization.

4. Financial Innovation and Its Role in the Development of the Insurance Sector

4.1 Financial Innovation: Concept and Classification

Financial innovation has become a fundamental component of contemporary financial systems, facilitating the development of new financial products, services, technologies, organizational processes, and market structures that improve efficiency, competitiveness, and financial stability. Within the insurance industry, financial innovation enables insurers to respond more effectively to technological change, evolving customer expectations, regulatory reforms, and increasingly complex risk environments.

According to Fellag et al. (2020), financial innovation refers to a set of procedures and practices aimed at improving financial products and services to generate greater economic and social value. Similarly, Hassan Jamal (2020) defines financial innovation as the creation or substantial improvement of financial products, institutions, technologies, and financial markets that enhance financial intermediation and resource allocation. Consequently, financial innovation extends beyond the introduction of new financial instruments to encompass digital technologies, innovative business models, financial infrastructures, and institutional reforms that strengthen the overall performance of financial institutions.

The rapid digital transformation of financial markets has further expanded the scope of financial innovation through the integration of financial technology (FinTech), artificial intelligence, blockchain, cloud computing, big data analytics, and mobile financial services. These technological developments have significantly transformed insurance operations by improving underwriting accuracy, accelerating claims settlement, enhancing fraud detection, reducing operational costs, and enabling personalized insurance products (Ben Azza, 2023; Said, 2022).

Financial innovation within financial institutions can generally be classified into five principal categories (Zawawid & Hajjaj, 2018):

- Risk mitigation innovations, which introduce financial instruments designed to reduce or transfer financial and operational risks through advanced hedging mechanisms.
- Insurance innovations, consisting of financial products that provide protection against specific categories of risk, including credit default swaps and catastrophe-related insurance instruments.
- Liquidity enhancement innovations, which improve the marketability and liquidity of financial assets while facilitating more efficient capital allocation.
- Equity generation innovations, whereby financial instruments combine debt and equity characteristics, allowing investment returns to depend partly on the issuer's financial performance.
- Asset and liability management innovations, which enhance financial institutions' capacity to optimize balance-sheet management, improve capital allocation, and strengthen long-term financial sustainability.

Collectively, these forms of financial innovation enhance insurers' ability to manage uncertainty, diversify investment portfolios, improve operational efficiency, and strengthen competitiveness within increasingly dynamic financial markets.

4.2 The Role of Financial Innovation in Insurance Sector Development and Risk Management

The insurance sector operates within an environment characterized by rapidly evolving financial markets, technological disruption, increasing cyber threats, climate-related risks, and changing customer expectations. As a result, financial innovation has become an essential strategic instrument for improving insurers' operational efficiency, financial resilience, and long-term competitiveness.

Modern financial innovations enable insurance companies to diversify risk-transfer mechanisms, improve capital management, optimize liquidity, strengthen underwriting practices, and enhance customer-oriented services. Digital transformation has further enabled insurers to automate underwriting, accelerate claims processing, improve fraud detection systems, and develop customized insurance products through artificial intelligence and predictive analytics (Ben Azza, 2023; Said, 2022).

Among the numerous financial innovations influencing contemporary insurance markets, insurance securitization and financial derivatives represent two of the most important mechanisms for improving risk management and financial stability.

4.2.1 Insurance Securitization

Insurance securitization is an innovative financial mechanism through which insurance risks are transformed into tradable financial securities that can be transferred from insurance companies to investors through capital markets. This approach provides insurers with an alternative source of risk financing while reducing dependence on conventional reinsurance arrangements.

The securitization process typically involves pooling homogeneous insurance risks into a Special Purpose Vehicle (SPV), which subsequently issues insurance-linked securities whose returns depend on the occurrence or non-occurrence of predefined insured events. Investors purchasing these securities assume part of the insurance risk in exchange for potentially attractive financial returns.

Insurance-linked securities have become particularly important for covering catastrophic risks, including natural disasters, extreme weather events, and other low-frequency, high-severity risks. According to Girard (2019), insurance securitization improves insurers' ability to manage technical risks, liquidity risks, and solvency risks while ensuring continuous access to capital during periods of financial stress.

Compared with traditional reinsurance, securitization provides greater flexibility in capital management, broader risk diversification, and increased access to global financial markets. Consequently, it has become one of the most significant financial innovations supporting the sustainable development of the international insurance industry.

4.2.2 Financial Derivatives as Instruments for Insurance Risk Hedging

Financial derivatives constitute another important category of financial innovation that enables insurance companies to manage various financial risks more efficiently. Financial derivatives are contractual instruments whose values are derived from underlying assets such as equities, bonds, foreign exchange rates, commodities, interest rates, or market indices.

The primary objective of derivative instruments is to transfer, hedge, or redistribute financial risks among market participants. The principal categories include options contracts, futures contracts, forward contracts, and swap agreements.

Insurance companies increasingly utilize derivative instruments to manage exposure to several categories of financial risk, including:

- investment portfolio risk;
- interest rate risk;
- foreign exchange risk;
- credit risk;
- liquidity risk; and
- market price volatility.

Gaidi and Lahcen (2015) argue that credit derivatives represent one of the most important innovations in financial engineering because they allow institutions to separate credit risk from underlying financial assets and transfer that risk to specialized investors.

Options contracts enable insurers to protect investment portfolios against unfavorable market movements. Purchasing put options allows insurance companies to limit potential losses resulting from declining asset prices while preserving opportunities for future capital appreciation if market conditions improve (Girard, 2019).

Likewise, futures contracts are widely employed to hedge against fluctuations in interest rates and asset prices. Insurance companies frequently establish offsetting positions in futures markets to reduce exposure associated with investments or anticipated liabilities. Under this strategy, losses incurred in one market are substantially compensated by gains realized in another, thereby improving portfolio stability and reducing financial uncertainty.

The growing integration of artificial intelligence, predictive analytics, and real-time financial data into derivative risk management has further enhanced insurers' ability to optimize hedging strategies, strengthen investment performance, and improve enterprise-wide risk management. These technological advances have significantly expanded the strategic importance of financial derivatives within modern insurance operations.

Overall, financial derivatives have become indispensable instruments for strengthening insurers' financial resilience, improving capital efficiency, and enhancing the stability of insurance companies operating within increasingly volatile financial markets.

4.3 Financial Innovation as a Driver of Insurance Sector Competitiveness

Beyond risk management, financial innovation has become a strategic driver of competitiveness in the insurance industry. Digital transformation enables insurers to introduce customer-centered business models, improve service quality, shorten policy issuance and claims processing times, and reduce operational costs. The adoption of FinTech solutions, cloud computing, artificial intelligence,

blockchain technology, and digital payment systems has enhanced operational efficiency while expanding insurance accessibility to previously underserved populations.

In Algeria, financial innovation has contributed to the gradual modernization of the insurance market through the introduction of electronic payment systems, online insurance platforms, mobile applications, digital customer relationship management, and the implementation of Takaful insurance following recent regulatory reforms (Zouambi & Kouach, 2023). Nevertheless, the pace of innovation remains constrained by limited technological infrastructure, regulatory challenges, relatively low insurance penetration, cybersecurity concerns, and insufficient investment in digital transformation.

Therefore, strengthening financial innovation requires coordinated efforts among regulators, insurance companies, financial technology providers, and policymakers. Continued investment in digital infrastructure, regulatory modernization, cybersecurity, human capital development, and technological innovation will be essential for enhancing the competitiveness, resilience, and long-term sustainability of Algeria's insurance sector.

4.2.3 Swap Contracts in Insurance Risk Management

Swap contracts constitute another important financial innovation employed by insurance companies to manage financial risks and improve balance-sheet stability. A swap is a financial agreement between two parties to exchange future cash flows according to predetermined contractual conditions. Within the insurance industry, swaps are primarily used to hedge against fluctuations in interest rates, exchange rates, and catastrophe-related risks, thereby reducing financial uncertainty and improving capital management.

Among the most widely used instruments are interest rate swaps, which allow insurance companies to exchange fixed-rate payment obligations for floating-rate obligations, or vice versa. These contracts enable insurers to align the structure of their assets and liabilities while minimizing exposure to adverse movements in market interest rates. By anticipating future interest rate trends, insurers can reduce financing costs, stabilize investment returns, and improve long-term asset–liability management.

Another important innovation is the catastrophe swap, a specialized risk-transfer instrument designed to protect insurers against large-scale catastrophic events. Under this arrangement, the insurance company agrees to exchange a series of predetermined fixed payments with another counterparty in return for variable payments that become payable if a predefined catastrophic event occurs. Unlike catastrophe bonds, catastrophe swaps generally involve lower issuance costs, simpler contractual arrangements, and faster implementation, making them an attractive alternative for transferring catastrophe risks. Nevertheless, they may expose participating institutions to counterparty credit risk and liquidity constraints if contractual obligations cannot be fulfilled during periods of severe financial stress (Girard, 2019).

Overall, swap contracts provide insurance companies with flexible and cost-effective instruments for managing financial exposures while strengthening solvency and improving overall risk management.

4.3 Financial Technology (FinTech) Innovations in the Insurance Industry

The rapid advancement of financial technology (FinTech) has fundamentally transformed the global insurance industry by enabling insurers to modernize business operations, improve customer experiences, and develop innovative insurance products. Compared with traditional financial innovations such as securitization and derivatives, FinTech solutions rely on digital technologies that improve efficiency, transparency, accessibility, and operational resilience.

Digital transformation has accelerated the emergence of InsurTech, which integrates advanced information technologies into insurance processes ranging from underwriting and pricing to claims management and customer relationship management. The most influential technological innovations include digital insurance, big data analytics, blockchain technology, smart contracts, artificial intelligence, cloud computing, mobile applications, and innovative insurance business models.

4.3.1 Digital Insurance

Digital insurance refers to the complete digitalization of insurance services through electronic platforms that enable customers to purchase policies, submit claims, monitor contracts, and communicate with insurers entirely online. Digital insurance replaces traditional paper-based procedures with integrated electronic systems, thereby improving service efficiency, reducing administrative costs, and accelerating decision-making processes (Zayed et al., 2019).

Fully digital insurance products utilize advanced software platforms, cloud-based infrastructure, and automated underwriting systems to provide faster, more accurate, and customer-oriented insurance services. Consequently, digital insurance has become a key component of insurers' digital transformation strategies and an important source of competitive advantage (Said, 2022).

4.3.2 Big Data Analytics

Big data analytics has become one of the most valuable technological innovations in insurance. Insurance companies routinely generate and process massive volumes of structured and unstructured data obtained from policyholders, financial transactions, connected devices, and external information sources.

Advanced analytical techniques enable insurers to identify hidden patterns, assess customer behavior, improve risk prediction, optimize premium pricing, detect fraudulent claims, and enhance underwriting accuracy. Big data analytics also supports personalized insurance products and improves customer satisfaction through more precise risk assessment and faster service delivery (Said, 2022).

4.3.3 Blockchain Technology

Blockchain is a decentralized digital ledger that records transactions securely across multiple interconnected computer systems without requiring centralized intermediaries. The technology ensures transparency, immutability, and high levels of data security, making it particularly suitable for insurance operations involving sensitive contractual information (Khalifa, 2018).

Within the insurance sector, blockchain technology facilitates secure policy management, fraud prevention, claims verification, premium payments, and transparent information sharing among insurers, reinsurers, brokers, and policyholders. Its decentralized architecture significantly reduces operational risks associated with data manipulation while improving trust among all stakeholders.

4.3.4 Smart Contracts

Smart contracts are self-executing digital agreements whose contractual terms are automatically enforced through computer code, typically operating on blockchain platforms. Once predefined contractual conditions are satisfied, transactions are executed automatically without requiring manual intervention.

Insurance companies increasingly utilize smart contracts to automate policy administration, premium collection, claims settlement, and indemnity payments. Compared with conventional paper-based contracts, smart contracts reduce administrative costs, minimize human error, improve transparency, and accelerate insurance claims processing (Said, 2022).

4.3.5 Artificial Intelligence

Artificial intelligence (AI) has become one of the most transformative technologies shaping the future of the insurance industry. AI refers to computer systems capable of performing tasks that traditionally require human intelligence, including learning, reasoning, prediction, pattern recognition, and decision-making (Ben Azza, 2023).

AI applications are now integrated across nearly every stage of insurance operations, including customer service, underwriting, pricing, claims assessment, fraud detection, and predictive risk analytics. Machine learning algorithms enable insurers to evaluate customer risk profiles with greater precision while improving operational efficiency and reducing processing time. According to Said (2022), artificial intelligence is expected to generate substantial productivity gains and significant cost savings across the global insurance industry by the end of this decade.

4.3.6 Cloud Computing

Cloud computing provides insurance companies with scalable, on-demand access to computing resources, including servers, databases, storage systems, software applications, and analytical tools via internet-based platforms (Ben Azza, 2023).

Cloud infrastructure enhances organizational flexibility by enabling insurers to store and process large volumes of customer data securely while reducing hardware investments and maintenance costs. Furthermore, cloud computing facilitates real-time collaboration, disaster recovery, cybersecurity management, and rapid deployment of digital insurance services.

4.3.7 Mobile Technologies

The widespread adoption of smartphones has created new opportunities for insurance companies to improve customer engagement through dedicated mobile applications. Mobile platforms enable policyholders to purchase insurance products, renew policies, pay premiums, submit claims, monitor claim status, and receive customer support anytime and anywhere.

These applications improve service accessibility while strengthening customer satisfaction through continuous digital interaction and personalized insurance services.

4.3.8 Innovative Insurance Business Models

Technological innovation has also transformed traditional insurance business models by introducing customer-centered approaches that improve flexibility, affordability, and transparency.

Among the most significant innovations is peer-to-peer (P2P) insurance, which enables groups of individuals with similar insurance needs to pool resources collectively and share risks. This model reduces administrative expenses while increasing transparency, trust, and customer participation.

Another rapidly expanding innovation is on-demand insurance, which allows customers to activate insurance coverage only when needed for specific activities or time periods. This flexible approach offers customized protection while reducing unnecessary premium payments.

Usage-based insurance (UBI) has become increasingly popular in automobile insurance. Under this model, insurance premiums are determined according to actual driving behavior, distance traveled, speed, braking patterns, or other telematics data collected through sensors installed in vehicles. This approach enables insurers to price risk more accurately while encouraging safer driving behavior.

Additional innovative insurance products include comprehensive multi-risk insurance, which combines multiple types of coverage under a single policy; microinsurance, designed to provide affordable protection for low-income populations; and flexible insurance coverage, particularly in health and life insurance, where policyholders can customize premiums, benefits, and payment schedules according to their financial circumstances and protection needs (Said, 2022).

Collectively, these technological innovations have fundamentally reshaped the insurance industry by increasing operational efficiency, expanding financial inclusion, improving customer experiences, and strengthening insurers' long-term competitiveness.

5. Innovative Financial Products in the Algerian Insurance Sector

The Algerian insurance sector has undergone significant structural transformation following the liberalization of the insurance market and the gradual introduction of competition between public and private insurance companies. Market liberalization has encouraged insurers to modernize their operations, diversify insurance products, improve customer services, and adopt innovative financial technologies capable of meeting evolving market demands.

Financial innovation has therefore become one of the principal strategic mechanisms through which Algerian insurance companies seek to strengthen their competitive position while adapting to international developments in the insurance industry. Recent reforms have accelerated the adoption of digital insurance services, electronic payment systems, online customer platforms, mobile applications, and Takaful insurance, reflecting the country's broader efforts toward financial sector modernization (Habbar, 2018).

Before examining the current landscape of innovative financial products offered by Algerian insurers, it is first necessary to review the development of bancassurance in Algeria, which represents one of the earliest and most significant forms of financial innovation within the national insurance market. Bancassurance has strengthened cooperation between banks and insurance companies by integrating insurance products into banking services, thereby expanding insurance distribution channels, increasing financial inclusion, and improving customer access to insurance products. This integration has laid an important foundation for the subsequent development of more advanced digital insurance products and financial technologies within the Algerian insurance sector.

5.1 Bancassurance Products in the Algerian Banking Sector

Bancassurance has emerged as one of the earliest forms of financial innovation in Algeria's financial system. It represents a strategic partnership between banks and insurance companies, enabling insurance products to be distributed through banking networks. This integrated business model allows financial institutions to diversify their service portfolios while providing customers with convenient access to insurance products through a single distribution channel.

The introduction of bancassurance has contributed to increasing insurance penetration, improving customer accessibility, strengthening financial inclusion, and generating additional revenue streams for both banks and insurance companies. Furthermore, bancassurance has enhanced customer loyalty by offering integrated financial solutions that combine banking and insurance services within a unified customer relationship framework (Habbar, 2018).

Table 1 presents the principal bancassurance products currently offered by major Algerian banks.

Table 1. Bancassurance products offered by selected Algerian banks

Bank	Personal Insurance Products	Property and Damage Insurance Products
National Bank of Algeria (BNA)	Travel and international assistance insurance; Temporary death insurance	Natural disaster insurance; Comprehensive home insurance

Bank of Agriculture and Rural Development (BADR)	Travel and international assistance insurance; Personal accident insurance; Credit repayment insurance	Natural disaster insurance; Comprehensive home insurance; Agricultural insurance
National Savings and Reserve Fund (CNEP)	<i>My Health</i> insurance; <i>Comprehensive Backup</i> insurance	—
BNP Paribas Algeria	Comprehensive protection insurance; Home insurance	Professional insurance
Banque Paribas El Djazaïr	Individual and professional insurance; Customer health insurance; Corporate insurance; Travel insurance	—

Source: Adapted from Habbar (2018, p. 360).

The products listed in Table 1 demonstrate that Algerian banks have progressively expanded beyond traditional banking activities by integrating insurance services into their financial portfolios. Personal insurance products—particularly travel, health, accident, and life insurance—constitute the largest share of bancassurance offerings. Meanwhile, property insurance products primarily focus on housing, agriculture, and natural disaster coverage. These developments illustrate the growing role of bancassurance in improving insurance accessibility while strengthening collaboration between the banking and insurance industries.

5.2 Innovative Insurance Products in Algerian Insurance Companies

In addition to bancassurance, Algerian insurance companies have gradually introduced a range of innovative insurance products designed to improve customer satisfaction, diversify insurance coverage, and strengthen market competitiveness. These innovations reflect insurers' efforts to respond to evolving customer needs while adapting to international developments in insurance services.

The introduction of specialized insurance packages demonstrates the sector's gradual transition from standardized insurance products toward more customer-oriented and flexible insurance solutions. Innovative offerings increasingly target specific professional groups, business activities, travel needs, healthcare requirements, and automobile services.

Table 2 summarizes the principal innovative insurance products introduced by major Algerian insurance companies.

Table 2. Innovative insurance products offered by Algerian insurance companies

Insurance Company	Innovative Insurance Products
Algerian Insurance Company (SAA)	<i>Guarantee</i> package; <i>Loyalty</i> package; Craftsman and Professional insurance; Loss of Use insurance; Business Interruption (Loss of Exploitation) insurance; <i>Best Repair</i> insurance
Cash Assurance (Petroleum Insurance Company)	Roadside Assistance insurance
International Insurance and Reinsurance Company (CIAR)	Roadside Assistance insurance
Algerian Insurance Company	Automobile loan insurance; Travel insurance; National and international health insurance

Source: Adapted from Habbar (2018, p. 362).

The products presented in Table 2 illustrate the increasing diversification of Algeria's insurance market. Unlike traditional insurance policies, these innovative products are tailored to meet specific customer needs by offering more comprehensive protection and greater service flexibility. For example, roadside assistance services, business interruption insurance, and specialized professional insurance represent important value-added products that improve customer experience while enhancing insurers' competitive advantage.

Moreover, the expansion of travel insurance, international health insurance, and customized insurance packages reflects the sector's gradual alignment with international insurance practices. These innovations demonstrate that Algerian insurers are increasingly adopting customer-centered strategies aimed at improving service quality, expanding insurance coverage, and strengthening long-term relationships with policyholders.

Although the Algerian insurance market has made notable progress in product diversification, the level of innovation remains relatively modest compared with more advanced insurance markets. Future sectoral development will depend on the continued

integration of digital technologies, artificial intelligence, InsurTech solutions, blockchain applications, and data-driven insurance services that enable insurers to deliver more personalized, efficient, and technology-oriented insurance products.

5.3 Emerging Trends and Recent Developments in the Algerian Insurance Market

Although the Algerian insurance sector has made notable progress in expanding its portfolio of innovative products, motor insurance continues to dominate the market, accounting for the largest share of insurance premiums. This concentration limits market diversification and highlights the need for insurers to develop products that address emerging social, economic, and demographic risks. Consequently, both public and private insurance companies have increasingly focused on restructuring their product portfolios to improve competitiveness, broaden insurance penetration, and meet evolving customer expectations (Habbar, 2018).

Several insurance products are regarded as having considerable growth potential and are expected to contribute significantly to the modernization of the Algerian insurance industry. These include:

- School insurance for students in public and private educational institutions;
- Repatriation insurance covering the transportation of human remains from abroad;
- Professional liability insurance for social security personnel;
- Legal protection insurance;
- Takaful (Islamic cooperative insurance), particularly within personal insurance;
- Roadside assistance services.

These products reflect insurers' efforts to diversify their offerings beyond conventional motor insurance while addressing previously underserved market segments. Their expansion is expected to enhance financial inclusion, improve customer protection, and stimulate sustainable market growth.

The modernization of the Algerian insurance market is also reflected in its recent financial performance. According to the National Insurance Council (CNA), the sector recorded a 4.3% growth rate in 2022 compared with the previous year, generating total premiums of approximately DZD 151.3 billion. This positive performance demonstrates the sector's increasing resilience despite ongoing economic challenges.

Claims settlement activity has also expanded considerably. During the first quarter of 2023, insurance companies settled 439,264 claims, representing compensation payments of approximately DZD 16.2 billion. This corresponded to a 25.1% increase compared with the same period in the previous reporting cycle, indicating improved operational efficiency and stronger customer service. Among these claims, 81 cases were processed under Takaful insurance, illustrating the gradual expansion of Islamic insurance products within the Algerian market (Algerian Press Agency, 2023).

5.4 Takaful Insurance as a Financial Innovation in Algeria

One of the most significant recent financial innovations introduced into the Algerian insurance sector is Takaful insurance, which represents an Islamic cooperative insurance model based on the principles of mutual assistance, solidarity, and shared responsibility.

Unlike conventional commercial insurance, Takaful operates through a cooperative risk-sharing mechanism in which policyholders contribute to a common fund that is collectively owned by participants. Compensation for insured losses is paid from this fund according to predefined contractual conditions, while any surplus may be redistributed among participants or retained to strengthen the fund's financial sustainability.

The implementation of Takaful insurance in Algeria has been facilitated through regulatory reforms designed to diversify the national insurance market and expand financial inclusion. Among the pioneers in this field is Salamah Insurance Company, which provides Sharia-compliant insurance services based on cooperation, transparency, and mutual support among policyholders (Zouambi & Kouach, 2023).

The introduction of Takaful has broadened insurance accessibility by attracting customers who previously refrained from purchasing conventional insurance products for religious reasons. Consequently, Takaful contributes not only to market diversification but also to strengthening financial inclusion, increasing insurance penetration, and supporting the long-term development of Algeria's insurance industry.

Furthermore, the continued expansion of Islamic finance in Algeria is expected to stimulate innovation in insurance product design, encourage greater competition among insurers, and create new opportunities for sustainable growth within the national financial system.

6. Conclusion

Financial innovation has become a fundamental driver of transformation within the global insurance industry, enabling insurance companies to improve operational efficiency, strengthen risk management, diversify insurance products, and enhance customer experience through technological advancement. The findings of this study demonstrate that financial innovation has increasingly influenced the modernization of the Algerian insurance sector despite the structural and institutional challenges that continue to characterize the national financial environment.

The analysis shows that Algerian insurance companies have progressively adopted various forms of financial innovation, including bancassurance, digital insurance services, financial technology (FinTech), artificial intelligence, blockchain applications, cloud computing, innovative insurance business models, and Takaful insurance. These developments have contributed to expanding product portfolios, improving service quality, strengthening operational efficiency, and enhancing market competitiveness.

Recent sectoral performance further illustrates this positive trajectory. The growth of insurance premiums, increased claims settlement, expansion of digital insurance services, and gradual development of Takaful insurance indicate that the Algerian insurance market is entering a new stage of modernization. Nevertheless, motor insurance continues to dominate the market, while personal insurance and other innovative insurance products remain relatively underdeveloped. This imbalance highlights the need for further diversification and greater investment in customer-oriented insurance solutions.

Despite these encouraging developments, several challenges continue to constrain the pace of financial innovation. These include regulatory limitations, insufficient technological infrastructure, relatively low insurance penetration, limited digital literacy, cybersecurity concerns, and the need for greater investment in digital transformation. Addressing these constraints will require coordinated efforts among policymakers, insurance regulators, financial institutions, and technology providers.

The study concludes that accelerating financial innovation should remain a strategic priority for the Algerian insurance industry. Future development should emphasize the wider adoption of InsurTech solutions, artificial intelligence, blockchain technology, advanced data analytics, cloud computing, and digital insurance platforms. At the same time, expanding Takaful insurance and other customer-centered products will contribute to greater financial inclusion and market diversification.

Overall, strengthening financial innovation will improve the competitiveness, resilience, and sustainability of the Algerian insurance sector while enhancing its contribution to national economic development through more effective risk management, increased investment capacity, and broader financial protection for individuals and businesses.

Declarations

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Conflicts of Interest

The authors declare that they have no competing interests or conflicts of interest regarding the publication of this manuscript.

Ethical Approval

This study is based exclusively on secondary data obtained from publicly available academic literature, institutional reports, and official statistical sources. It did not involve human participants, animals, or identifiable personal data; therefore, ethical approval was not required in accordance with institutional and international research ethics guidelines.

Informed Consent

Not applicable.

Data Availability Statement

The data supporting the findings of this study are derived from publicly available sources cited in the reference list. Additional information is available from the corresponding author upon reasonable request.

Author Contributions (CRediT)

- **Mahmoud Berkane:** Conceptualization, literature review, methodology, investigation, writing—original draft.
- **Boudjemaa Yassine:** Data collection, formal analysis, validation, writing—review and editing.
- **Khalil Gherbi:** Supervision, visualization, interpretation of results, manuscript review, and final approval.

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