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Artificial Intelligence Adoption in the Algerian Insurance Sector: An Exploratory Multi-Case Study

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Abstract:
This study aims to provide an exploratory mapping of early AI initiatives in the Algerian insurance sector through multiple cases. Using a qualitative approach, research suggests that AI adoption unfolds within a multi-level ecosystem comprising operational, analytical, customer interaction, and institutional dimensions.
Preliminary findings indicate improved efficiency, enhanced fraud detection, better customer service, and asymmetric adoption driven by institutional gaps and capability differences. The study proposes an AI Adoption Ecosystem Framework and introduces the concept of asymmetric AI adoption in emerging markets as a tentative analytical lens.
Keywords: Artificial intelligence, InsurTech, Digital transformation, Machine learning, Emerging markets, Algeria
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1. Introduction

Artificial intelligence is reshaping insurance markets worldwide, with applications ranging from automated claims processing to predictive risk modelling. This wave of technological change, often grouped under the Insur-Tech label, has been extensively documented in mature economies. In contrast, evidence from emerging markets remains limited, even though their institutional contexts, data infrastructure, and market structures differ markedly from those of mature economies.Within this global transformation, the Algerian insurance sector has historically been characterized by traditional administrative procedures and limited digital infrastructure. Recent initiatives launched by insurance companies and sectoral institutions, however, signal a significant shift toward digitalization and data-driven insurance services. Platforms such as the E-RECOURS system, machine learning applications like GAMIA, and conversational AI solutions such as the Hayat chatbot illustrate the emergence of AI within the Algerian insurance ecosystem. This transformation has direct implications for core insurance functions, including pricing, underwriting quality, claims cost control, and solvency management.

1.1 Research Problem

This study examines the adoption of artificial intelligence across different levels of the insurance ecosystem in Algeria. Despite the global expansion of AI in insurance, relatively little research has focused on its implementation in emerging markets. The study therefore explores how AI is integrated into operational, analytical, customer interaction, and institutional dimensions within the Algerian insurance sector.

1.2 Research Questions

Main question:

What is the nature and configuration of AI adoption across operational, analytical, customer interaction, and institutional dimensions in the Algerian insurance sector?

Sub-questions :

- What AI technologies are currently implemented in the Algerian insurance sector?
- How do these technologies contribute to operational efficiency and risk management?
- What role do institutional initiatives play in supporting the development of Insur-Tech in Algeria?

1.3 Research Objectives and Contributions

This study aims to analyze AI adoption in the Algerian insurance sector, classify AI initiatives across the insurance value chain, evaluate the impact of AI technologies on operational efficiency and service delivery, and examine the institutional environment supporting AI innovation in the insurance sector.

This study contributes to the literature on AI in insurance in four main ways. First, it offers one of the earliest empirical analyses of AI adoption in the Algerian insurance market, which remains largely absent from international studies. Second, it develops an AI Adoption Ecosystem Framework that links operational, analytical, customer interaction, and institutional levels rather than examining technologies in isolation. Third, it provides a multi-case comparison of concrete AI projects along the insurance value chain, generating practice-oriented insights for an emerging market context. Fourth, it introduces the notion of asymmetric AI adoption, showing how uneven data quality and internal capabilities lead to differentiated access to advanced AI solutions within the same sector.

2. Literature Review

Recent studies show that artificial intelligence is reshaping the insurance sector through increasing digitalization and data-driven decision-making (Eling & Lehmann, 2018; Stoeckli et al., 2020). In mature markets, automated underwriting and claims processing have already become widespread. Many emerging markets, however, remain at a critical inflection point where strong institutional support for AI coexists with uneven adoption (Pareek et al., 2020; Rodriguez, 2024). Evidence from comparable emerging economies suggests that large insurers are better positioned to advance digital transformation, whereas smaller firms continue to face persistent financial and technological constraints (Liu et al., 2024).

Conceptually, recent work increasingly interprets AI adoption in insurance through a multi-level ecosystem lens that links technological infrastructure, product and process innovation, and interactions between market and institutional actors (Holland & Kavuri, 2021). Digital transformation affects the entire insurance value chain. It prompts parallel changes in products, processes, and organizational structures, thereby highlighting the interdependence between these forms of innovation (Eling & Lehmann, 2018).

Empirical studies identify three main domains through which AI creates value in insurance.

First, intelligent claims automation improves fraud detection, damage assessment, and processing speed, generating substantial operational efficiencies (Bhattacharya et al., 2025; Liz Booth, 2025; Winder et al., 2025).

Second, predictive analytics and machine learning models complement traditional actuarial methods by incorporating richer datasets and enhancing risk assessment accuracy, although they require rigorous validation and raise questions about model fairness (Brati et al., 2025; Chevalier & Côté, 2025; Israni et al., 2026).

Third, conversational AI applications—such as chatbots—support continuous and personalized customer interactions, yet their effectiveness is often constrained by integration challenges with legacy systems and by user acceptance issues (Gené-Albesa & de Andrés-Sánchez, 2025; Stéphan Donzé, 2025).

In parallel, institutional frameworks play a critical role in shaping sustainable AI adoption. Regulatory and ethical initiatives contribute to establishing governance standards that emphasize transparency, fairness, and accountability, and promote principles such as explainability and inclusivity (OECD, 2017; Rodriguez, 2024).

For emerging markets, institutional support is especially important for developing shared infrastructure and building human capital (MEIR, 2026; MESRS, 2026). This discussion connects to the growing focus on asymmetric AI adoption, where the uneven spread of AI across firms and sectors generates challenges for standardization and regulation (Rodriguez, 2024).

Despite this growing body of work, existing research has devoted limited attention to how technological, organizational, and institutional dimensions interact within a single emerging market context. The Algerian insurance sector offers a particularly relevant case: it combines recent AI initiatives with a traditional institutional framework, yet no previous study has examined how these elements come together—or fail to do so—within an ecosystem-level transformation.

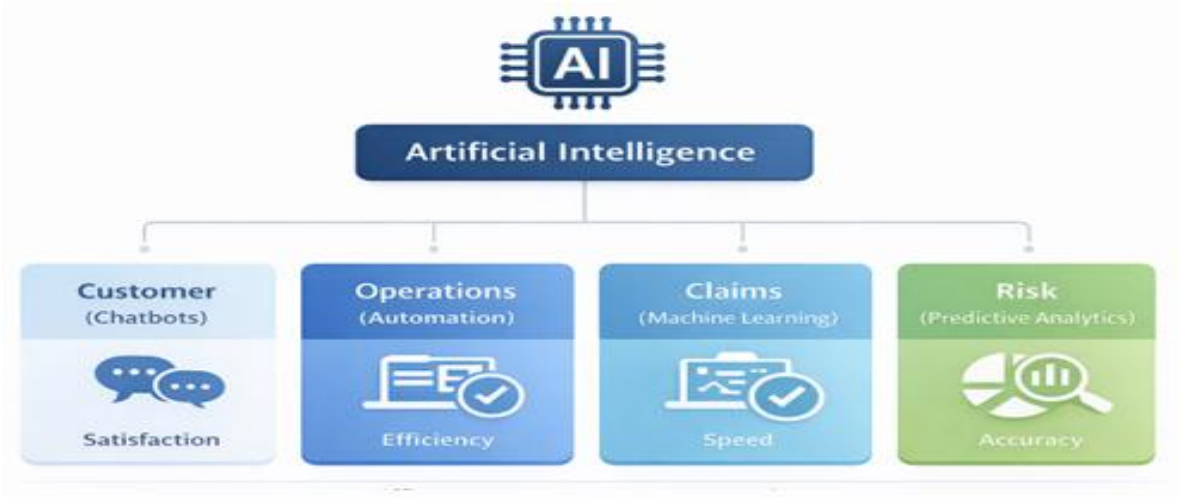
3. Conceptual Framework

Understanding AI adoption in insurance requires a framework that captures both technological change and the broader innovation ecosystem in which firms operate. AI affects multiple stages of the insurance value chain, from customer interaction to policy administration and claims processing. In emerging markets, these transformations tend to unfold gradually, constrained by data quality, technological readiness, and regulatory conditions.

3.1 AI-Driven Insurance Value Chain

Artificial intelligence technologies are increasingly embedded across different stages of the insurance value chain. Machine learning models enable insurers to analyze large datasets to improve risk assessment and detect fraud, while conversational AI supports automated and continuous interactions with customers.

Fig.1. AI-Driven Insurance Value Chain



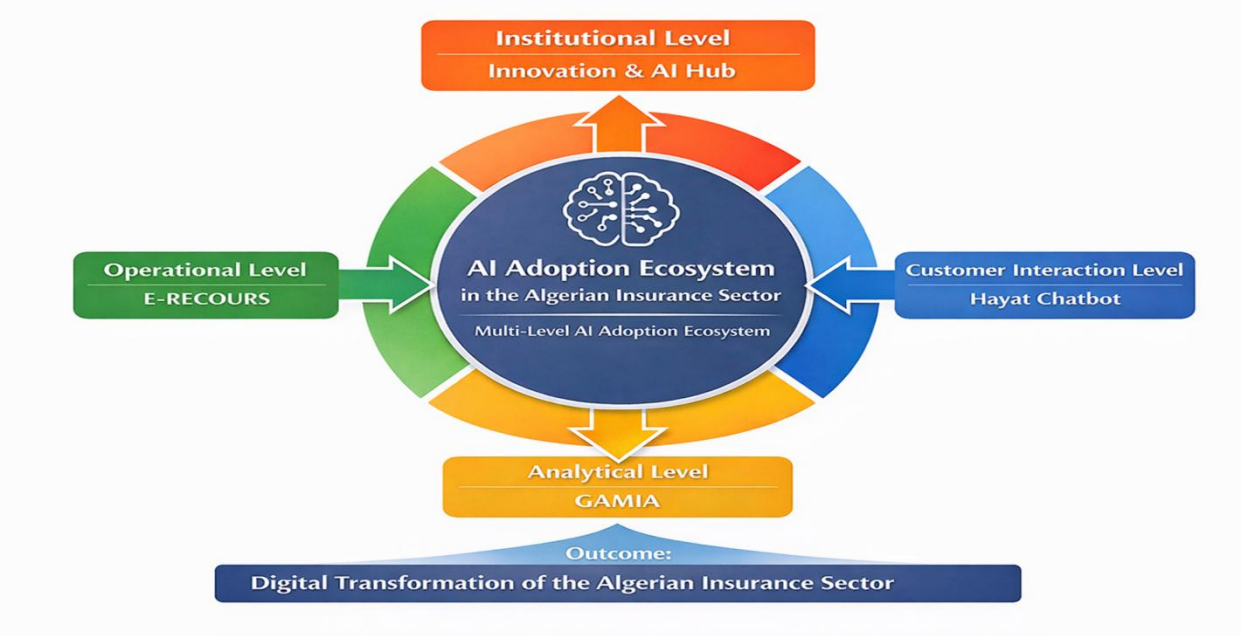
Source: Authors' elaboration based on (Eling & Lehmann, 2018) and industry case analysis.

Within this value chain, AI strengthens performance in four key operational areas. Conversational AI enhances customer interaction, digital platforms support the automation of policy management, machine learning optimizes claims handling, and predictive analytics improves risk assessment. Together, these applications contribute to improved customer satisfaction, greater operational efficiency, faster claims processing, and more accurate risk modeling.

3.2 AI Adoption Ecosystem Dimensions

Building on this value-chain perspective, the study proposes an AI Adoption Ecosystem Framework composed of four interconnected levels: operational, analytical, customer interaction, and institutional.

Fig. 2. AI Adoption Ecosystem in the Algerian Insurance Sector



Source: Developed by the authors based on empirical analysis of AI initiatives in the Algerian insurance sector.

In the Algerian insurance sector, AI adoption emerges through the interaction of four complementary dimensions:

- Operational: Digital platforms that automate procedures and generate standardized, structured data for subsequent analysis.
- Analytical: Predictive analytics systems that use machine learning to analyze claims and support fraud detection and risk assessment.
- Customer interaction: Conversational AI solutions that enhance customer engagement and facilitate access to insurance services.
- Institutional: Ecosystem-level initiatives that promote research collaboration, capability building, and coordination.

Taken together, these dimensions constitute an emerging Insur-Tech ecosystem that underpins the sector's ongoing digital transformation.

4. Methodology

This study adopts a qualitative multiple case study design to examine AI adoption within the Algerian insurance sector. Given the recent and sensitive nature of AI initiatives here, an exploratory approach based exclusively on secondary data is particularly appropriate; the analysis therefore constructs an initial, non-exhaustive mapping of ongoing developments in the emerging Algerian Insur-Tech ecosystem.

4.1 Case Selection

This study adopts a multiple case study design, which is well suited to investigating contemporary phenomena within their real-world contexts, particularly when the boundaries between phenomenon and context are not clearly delineated (Yin, 2018).

- **Case selection criteria**

Three interrelated criteria guided case selection.

First, **theoretical relevance guided case selection**: Cases were chosen to represent each of the four ecosystem levels identified in the conceptual framework: operational (E-RECOURS), analytical (GAMIA), customer interaction (Hayat), and institutional (AI Innovation Hub). This ensures the sample covers the full scope of the framework.

Second, **variation in maturity and diffusion:** cases reflect different stages of AI adoption along two dimensions, namely technological sophistication (from workflow automation to machine learning and conversational AI) and diffusion scope (from mandatory sector-wide platforms to firm-specific applications and emerging ecosystem initiatives). This variation enables cross-case comparison of adoption trajectories and constraining factors.

Third, **data availability and reliability:** cases were retained only when multiple, triangulable secondary sources were available, including official regulatory reports, corporate publications, peer-reviewed academic work, and specialized industry media, thereby supporting analytical validity in the absence of primary data.

- **Case selection rationale**

On this basis, four cases were selected.

E-RECOURS is a mandatory sector-wide platform for automobile claims processing, representing the operational level with high diffusion but limited analytical sophistication.

GAMIA is a firm-specific machine learning system for fraud detection and damage assessment, illustrating the analytical level with advanced technological maturity but confined diffusion.

Hayat is a conversational AI chatbot for customer service, representing the customer interaction level as the first publicly accessible AI application in the sector.

Innovation and Artificial Intelligence Hub is an institutional initiative launched in 2026 to coordinate AI innovation across insurers, universities, and research centers, representing ecosystem-level infrastructure.

A systematic review of available sources revealed only these four verifiable AI initiatives; no evidence was found of AI applications in pricing, underwriting, or reinsurance.

4.2 Data Collection

The study draws on multiple secondary data sources to ensure triangulation, including the CAN website, the MESRS website, company websites, academic publications, and specialized industry media.

4.3 Data Analysis

A qualitative thematic approach was followed. These sources were reviewed and classified according to the four ecosystem dimensions: operational, analytical, customer interaction, and institutional. Cross-case comparison was then conducted, and findings were interpreted through the AI Adoption Ecosystem Framework.

5. Case Studies

This section presents an empirical analysis of AI adoption in the Algerian insurance sector through four case studies, each representing a distinct dimension of the AI Adoption Ecosystem Framework: operational (E-RECOURS), analytical (GAMIA), customer interaction (Hayat), and institutional (AI Innovation Hub).

5.1 Process Automation: The E-RECOURS Platform

5.1.1 Background and Launch

The E-RECOURS platform is the first national digital system dedicated to the electronic processing of automobile insurance claims appeal files. Developed by the Algerian Unified Office for Automobile Insurance (BUAA) and launched on 1 October 2022, it marked a significant step toward sector-wide digitalization. All insurance companies underwriting motor insurance are required to process appeal files exclusively through this platform, from submission and documentation exchange to payment and case closure (Nechenache, 2024).

5.1.2 Operational Impact

The platform has significantly improved operational efficiency. According to BUAA, it processed more than one million files within its first years of operation. Since its launch in 2022, over 634,731 inter-company claims have been handled through E-RECOURS, with a total value of 35.82 billion DZD and an average of 2,027 claims per day. In 2023 alone, 116,394 claims (6.38 billion DZD) were recorded, and by September 2023 the processing rate had reached around 83% (Algeriainvest, 2024).

These improvements are likely to reduce claims handling expenses and payment delays, which are key drivers of technical profitability in motor insurance.

5.1.3 Challenges and Limitations

E-RECOURS illustrates the limits of procedural automation. Its effectiveness depends on the digital readiness of each participating insurer, which remains uneven across the sector. More fundamentally, because the platform focuses on workflow rather than analytical capabilities, it falls short of the predictive functions that would enable proactive fraud detection or risk assessment.

5.2 Predictive Analytics: The GAMIA System

5.2.1 Background and Development

The GAMIA system, developed by GAM Assurances, represents the most advanced machine learning application currently deployed in the Algerian insurance industry. After unsuccessful attempts to acquire off-the-shelf international solutions—deemed poorly adapted to the specificities of the Algerian market—the company decided to develop its own AI system internally. A dedicated team of Algerian data scientists and engineers, recruited from leading national schools, worked in close collaboration with business teams who contributed their field expertise throughout the project (GAM Assurances, 2025).

5.2.2 Technical Architecture and Training

GAMIA is based on deep learning architectures and was trained on 250,000 real claims files, carefully selected, cleaned, and structured from a historical database of more than 500,000 claims. This volume is presented by the company as the equivalent of roughly 100 years of cumulative human expertise concentrated into a single model. The system follows an auto-learning approach, continuously updating and improving its performance as it processes new cases and receives feedback from human users (GAM Assurances, 2025).

5.2.3 Functional Capabilities

GAMIA performs several key functions (GAM Assurances, 2025):

- Automatic damage scoring, assessing damages and estimating associated costs.
- Fraud detection, identifying potentially suspicious cases through inconsistency analysis.
- Autonomous processing of simple files, handled end-to-end by the system.
- Decision support for claims handlers, assisting managers in file analysis and risk assessment.

By enhancing fraud detection and damage assessment, GAMIA can influence loss ratios and support more accurate, risk-based pricing decisions.

5.2.4 International Recognition

GAMIA and the broader digital transformation strategy of GAM Assurances have received international recognition. The company was shortlisted as a finalist for the Intelligent Insurer Awards 2026 – MENA in the category “Best Digital Transformation in Africa and the Middle East” (Algerie Eco, 2026; CNA, 2026). Out of 42 regional candidates, only 12 were selected as finalists, placing GAM Assurances alongside major international groups (Algerie Eco, 2026).

5.2.5 Challenges and Limitations

Despite these achievements, GAMIA also faces several limitations. The model is trained on the data of a single insurer, which restricts its generalizability to the

broader market. Its development and maintenance require substantial investments in data science talent and computing infrastructure. In addition, the deep learning architecture raises familiar concerns regarding algorithmic transparency and explainability.

5.3 Conversational AI: The Hayat Chatbot

5.3.1 Background and Launch

Launched by Macir Vie on 4 January 2024, Hayat is presented as the first conversational artificial intelligence system in the Algerian insurance sector and the first AI solution accessible to the general public in Algeria. According to the company's official communications, the chatbot was designed to "transform the customer experience in the world of insurance". Using Natural Language Processing technologies, Hayat provides 24/7 automated customer support through the company's website (El Watan, 2024; L'Expression, 2024).

5.3.2 Strategic Positioning

Macir Vie, a subsidiary of the Ciar group and the first private Algerian company specializing in personal insurance (travel, life, and health), has positioned itself as a pioneer through this initiative (El Watan, 2024; L'assurance en mouvement, 2024). The company describes Hayat as "a revolution in the approach to customer service", reflecting a strategic commitment to integrating advanced technological solutions to improve customer experience and optimize internal processes (El Watan, 2024).

5.3.3 Services and Capabilities

According to Macir Vie's official statements, Hayat is designed to (El Watan, 2024; L'assurance en mouvement, 2024; L'Expression, 2024):

- Answer user questions about insurance products and services.
- Offer personalized advice tailored to customer needs.
- Facilitate access to information on products, subscription procedures, and claims.
- Assist with claims and reimbursements-related queries.
- Direct customers to appropriate contacts within the company.

Over time, enhanced customer support and continuous interaction may influence lapse rates, cross-selling opportunities, and portfolio stability in life and personal lines insurance.

5.3.4 Significance and Limitations

As the first publicly accessible AI application in the Algerian insurance market, Hayat serves as a demonstration model for the sector and a signal of technological ambition (Algérie Focus, 2024). However, the chatbot faces several challenges, including difficulties in processing dialectal Arabic, integration constraints with core information systems, and heterogeneous levels of digital literacy among customers, which may limit adoption.

5.4 Institutional Infrastructure: The Innovation and Artificial Intelligence Hub

5.4.1 Background and Launch

Inaugurated on 8 January 2026 at the Chahid Abdelhafid Ihaddaden Scientific and Technological Hub in the new city of Sidi Abdellah, the Innovation and Artificial Intelligence Hub represents a major institutional initiative to support AI development in the Algerian insurance sector. The project, overseen by the Minister of Higher Education and

Scientific Research, Kamel Baddari, was presented as evidence of Algeria's commitment to building an innovative, digital, knowledge-based economy in line with the government's program and the development vision set by the President of the Republic for 2024–2029 (MESRS, 2026).

5.4.2 Partners and Institutional Framework

The hub was created through a formal agreement signed by the Algerian Union of Insurance and Reinsurance Companies (UAR) in partnership with several specialized academic and technical institutions, including: the National Higher School of Mathematics (ENSM), the National Higher School of Artificial Intelligence (ENSIA), the Research Center in Applied Mathematics (CRMA), the Algeria FinLab financial innovation laboratory, the TAUS Innovation Center (industrial incubator), and the National Higher School of Computer Science (ESI) (MESRS, 2026). According to the Algerian Press Service, the hub is intended to act as "a link between academia and research and the national economic fabric, particularly the financial sector" (APS, 2026).

5.4.3 Strategic Objectives

According to the Ministry of Higher Education and Scientific Research, the hub pursues several strategic objectives (MEIR, 2026; MESRS, 2026):

- Stimulating innovation in the insurance sector through AI integration.
- Encouraging applied research and experimentation with innovative solutions.
- Training specialized students and facilitating their recruitment in the insurance sector.
- Enabling young talent to propose digital solutions adapted to market needs.
- Strengthening university–industry linkages by creating a permanent space for exchange and collaboration.

5.4.4 Strategic Vision and Future Projects

According to the UAR's General Delegate, the hub intends to develop two complementary career paths for graduates: one oriented toward administration and management, and another focused on specialized innovation expertise (El Watan, 2026). This dual-track structure reflects an institutional response to the skill gaps that underlie asymmetric AI adoption in the sector. He further emphasized that the overarching objective is "to develop a national artificial intelligence that responds to the specificities of Algerian society and respects its values and interests". To achieve this, several structuring projects are planned:

- Developing a reference framework for new insurance professions with a three-to-five-year horizon.
- Creating an investment fund dedicated to innovation.
- Establishing an innovation management institute to reinforce university–enterprise collaboration.

5.4.5 Significance and Challenges

According to official statements, the hub reflects efforts to "value the national human capital trained in Algerian universities" and to provide innovative solutions that support national economic development (MESRS, 2026). It is presented as a complementary space where academic and professional actors can structure innovation and support the profound transformation of insurance professions (El Watan, 2026).

At the same time, the hub faces challenges related to sustained coordination among diverse institutions, securing adequate and stable funding, and translating academic research into commercially viable solutions.

Taken together, the four cases illustrate a pattern of asymmetric AI adoption within the Algerian insurance ecosystem. Sector-wide but low-analytics solutions coexist with advanced yet firm-specific systems and early customer-facing applications, under emerging institutional coordination.

6. Comparative Analysis and Discussion

The four case studies are compared across the ecosystem's operational, analytical, customer interaction, and institutional dimensions. A cross-case comparison highlights key similarities and differences, followed by theoretical and practical implications for each level, and the introduction of asymmetric AI adoption as a conceptual contribution.

6.1 Cross-Case Analysis

To systematically compare the four AI initiatives across the ecosystem dimensions, Table 1 summarizes their key technological features, operational roles, and strategic contributions.

Table 1. Comparison of AI Applications in the Algerian Insurance Sector

Dimension	E-RECOURS	GAMIA	Hayat Chatbot	AI Innovation Hub
Type of AI / System	Digital platform (process automation)	Machine learning (predictive analytics)	Conversational AI (NLP)	Institutional AI ecosystem
Main Function	Claims processing & inter-company exchange	Fraud detection & risk analysis	Customer interaction & support	Innovation & capability building
Data Usage	Structured claims data	Historical datasets (500k+ files)	Customer queries & interaction data	Research & cross-sector data
Key Benefits	Faster processing, reduced disputes	Improved fraud detection, decision support	24/7 service, improved UX	Talent development & coordination
Level in Ecosystem	Operational	Analytical	Customer interaction	Institutional
Automation Level	High (workflow automation)	Medium–High (assisted decision)	High (automated responses)	Indirect (enabling environment)
Impact on Sector	Standardization & digitalization	Advanced analytics capability	Customer-centric transformation	Long-term ecosystem development

Source: Authors' compilation based on case study analysis

The cross-case comparison reveals several key patterns. One clear pattern is that each case occupies a distinct ecosystem level: E-RECOURS at the operational, GAMIA at the

analytical, Hayat at the customer interaction, and the AI Innovation Hub at the institutional. Another observation is the marked variation in data usage, automation level, and sectoral impact, which reflects different stages of AI maturity. Perhaps more significantly, despite their differences, the four initiatives are complementary. Operational digitalization generates structured data for analytics; analytical capabilities, in turn, enhance fraud detection and risk assessment; conversational AI improves customer engagement; and institutional coordination helps sustain long-term ecosystem development. What also stands out is asymmetric adoption: while some firms like GAM Assurances have built advanced machine learning systems, others remain confined to basic process automation.

The findings show that AI adoption in the Algerian insurance sector follows a multi-level transformation consistent with the proposed AI Adoption Ecosystem Framework. This trajectory mirrors broader patterns in emerging markets, where digitalization often starts with process automation before evolving toward predictive and cognitive capabilities (Eling & Lehmann, 2018; OECD, 2017). At the same time, the Algerian case highlights how institutional coordination, organizational capabilities, and technological infrastructure jointly shape an emerging Insur-Tech ecosystem.

6.2 Operational Digitalization as a Foundational Enabler

E-RECOURS acts as a structural enabler for subsequent AI capabilities by generating standardized, structured datasets across the sector, in line with data-centric innovation theories that stress the centrality of high-quality data for machine learning (Bohnert et al., 2018). Unlike bottom-up innovation paths observed in many mature markets, its mandatory adoption introduced an institutional mechanism that accelerated digital transformation and helped mitigate coordination failures among insurers.

6.3 Data Maturity and the Emergence of Analytical Capabilities

GAMIA shows how predictive analytics emerge from the combination of accumulated structured data and investment in data science expertise. GAM Assurances used its historical claims database to develop a proprietary model tailored to the Algerian market, illustrating that data availability must be complemented by organizational capabilities, such as skilled data scientists, workflow integration, and sustained managerial commitment. The in-house development of GAMIA further underscores the importance of localized expertise.

6.4 Conversational AI and the Shift Toward Service-Dominant Logic

The Hayat chatbot reflects a shift toward service-dominant logic, where value is co-created through ongoing insurer–customer interactions (Stoeckli et al., 2020). As the first publicly accessible AI application in the sector, it simultaneously improves customer service and signals technological legitimacy. Its effectiveness, however, depends on digital literacy, trust in automated systems, and robust handling of dialectal Arabic—factors that are particularly salient in emerging markets.

6.5 Institutional Support and the Role of Ecosystem Coordination

The Innovation and Artificial Intelligence Hub constitutes an institutional response to structural constraints such as limited technical expertise, fragmented innovation efforts, and weak university–industry linkages. By establishing a coordination mechanism among insurers, universities, and research centers, it addresses “institutional voids” that hinder

innovation (OECD, 2017) and suggests that firm-level AI adoption in emerging markets requires complementary ecosystem-level investments in talent, applied research, and shared infrastructure.

Effective coordination within the AI ecosystem can play a key role in narrowing capability gaps in developing and underserved regions, commonly identified in national strategies as "shadow areas". Such coordination, by extending digital infrastructure, capacity-building initiatives, and innovation support to areas outside major urban centers, fosters a more equitable and nationwide diffusion of AI-driven opportunities and benefits.

6.6 Asymmetric AI Adoption: A Conceptual Contribution

Across the four cases, not all insurers benefit from AI in the same way. Firms with richer and better‑structured data, stronger internal teams, and clearer digital strategies develop more advanced AI tools, while others remain confined to basic digitalization. While notions such as the digital divide and capability gaps have long been used to describe unequal access to technology, they often remain at a high level of abstraction and do not fully capture how specific AI capabilities accumulate within sectors. The concept of asymmetric AI adoption refines these perspectives. It focuses on how differences in data maturity, organizational routines, and investment strategies translate into uneven uptake of concrete AI applications. Examples include fraud detection models, conversational agents, or ecosystem platforms within the same regulatory and market environment. In the Algerian insurance sector, this asymmetry is visible in the contrast between firms that leverage rich historical datasets and in‑house data science teams to build advanced systems like GAMIA, and those that are still struggling with basic digitization of claims workflows.

The Algerian pattern of asymmetric AI adoption is not unique to this context. Existing research from other emerging insurance markets documents similar disparities: in India, advanced AI applications in motor insurance remain concentrated among large, digitally mature players with stronger data infrastructure and investment capacities (Pareek et al., 2020). In South Africa and other middle‑income economies, recent analyses describe a coexistence of advanced pilots and basic digitalization, with smaller insurers lagging behind their larger or more internationally connected counterparts (Rodriguez, 2024). Situating the Algerian trajectory within this broader pattern suggests that asymmetric AI adoption is not merely a local phenomenon but a characteristic feature of how AI diffuses in emerging insurance systems more generally. Theoretically, framing these patterns as asymmetric AI adoption contributes to the technology diffusion literature (Rogers, 1995; Van Dijk, 2020) by specifying how resource asymmetries shape AI uptake in insurance. It also links firm‑level capability heterogeneity with sector‑level outcomes, including performance dispersion, competitive reconfiguration, and new policy questions around fairness and standard‑setting.

6.7 Toward an Integrated Understanding of AI-Driven Transformation

Taken together, E-RECOURS (operational), GAMIA (analytical), Hayat (customer interaction), and the AI Innovation Hub (institutional) form interconnected components of an emerging Insur-Tech ecosystem. Operational digitalization supplies the structured data

needed for analytics; analytics generate efficiencies extendable to customer-facing applications; and institutional coordination sustains these developments over time.

The Algerian insurance sector appears to be at an intermediate stage of AI maturity: core digital infrastructures, early predictive models, and conversational tools are in place, alongside new institutional initiatives. Yet gaps in data governance, interoperability, and specialized human capital continue to constrain the diffusion of advanced capabilities and will likely shape the sector's evolution in the coming years.

7. Conclusion and Implications

This exploratory multi-case study has examined how artificial intelligence is being adopted within the Algerian insurance sector through four emblematic initiatives spanning operational, analytical, customer interaction, and institutional levels. The cases of E-RECOURS, GAMIA, the Hayat chatbot, and the AI Innovation Hub suggest that AI is not emerging as an isolated technological add-on. Rather, it is part of a broader ecosystem-level transformation. This transformation reshapes processes, capabilities, and relationships between insurers, customers, and public institutions. Taken together, the findings support the relevance of the AI Adoption Ecosystem Framework and highlight a trajectory in which process digitalization, advanced analytics, and institutional coordination evolve in a mutually reinforcing way.

Beyond mapping these initiatives, the study underscores the practical importance of addressing asymmetric AI adoption within the Algerian insurance market. Sector-wide platforms such as E-RECOURS generate standardized data and improve operational efficiency. However, only a subset of insurers currently possesses the data maturity and internal expertise required to develop advanced machine-learning systems like GAMIA or to fully exploit conversational tools such as Hayat. This asymmetry has direct implications for competition, service quality, and consumer protection, suggesting that regulators should support data governance and capability-building, while insurers prioritize investments in analytics, talent development, and collaboration with universities and research centers. Ecosystem-level initiatives such as the Innovation and Artificial Intelligence Hub can play a central role in reducing capability gaps and fostering more inclusive AI diffusion across the sector.

At the same time, the study faces several limitations that open avenues for future research. The analysis relies exclusively on secondary data and a limited number of verifiable AI initiatives, which constrains access to internal decision-making processes and limits the possibility of quantitatively validating performance outcomes. The recent launch of some projects also restricts the availability of longitudinal evidence. Future work could complement this initial, non-exhaustive mapping in several ways. First, researchers should collect primary qualitative and quantitative data from insurers, regulators, and technology providers. Second, they should systematically assess the impact of AI on claims performance, risk management, and customer satisfaction. Third, they should extend the proposed framework to other North African and emerging insurance markets to compare patterns of asymmetric AI adoption and institutional responses.

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