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The importance of artificial intelligence in InsurTech start-ups a case study of the French start-up Shift Technology.

أهمية الذكاء الصناعي في شركات تكنولوجيا التأمين الناشئة– دراسة حالة الشركة الفرنسية الناشئة – Shift Technology

[1*] **Sabrina Cheraga, email :** sabrina.cheraga@univ-setif.dz

[1] Lecturer Class A, University of Setif, Algeria

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Abstract

Artificial Intelligence technology has emerged as a driving force for change in traditional insurance services, as well as being an effective tool for improving vital processes in InsurTech start-ups. This is especially true given the growing trend towards integrating digital technologies in business models. AI helps these companies to overcome major challenges in the insurance industry such as insurance fraud, the manual processing of insurance claims and risk-based pricing. This paper will highlight the crucial role of AI in the InsurTech industry using a descriptive approach and a case study of the French startup Shift Technology, which employs an AI-based insurance document management system for detecting fraudulent insurance claims.

Our research concludes that AI is an effective tool for InsurTech startups, helping them to detect insurance fraud, develop and improve traditional insurance processes, and enhance customer experience. .

Keywords

InsurTech startups
Artificial intelligence
Insurance Fraud
Force solution

JEL Classification Codes : G22 ; G28 ; L21

الملخص

ظهرت تكنولوجيا الذكاء الصناعي كقوة دافعة للتغيير في خدمات التأمين التقليدي، وكأداة فعّالة لتحسين العمليات الحيوية في الشركات الناشئة في مجال تكنولوجيا التأمين، خاصة مع الاتجاه المتنامي نحو دمج التكنولوجيات الرقمية في نماذج الأعمال. يساعد الذكاء الصناعي هذه الشركات على تجاوز أكبر التحديات التي تواجه صناعة التأمين كالاحتيال التأميني، المعالجة اليدوية لمطالبات التأمين، التسعير القائم على المخاطر. وبذلك يلعب دورا بالغ الأهمية في صناعة تكنولوجيا التأمين، والذي سنحاول إبرازه من خلال هذه الورقة اعتمادا على المنهج الوصفي، وأسلوب دراسة حالة لشركة "شيفت" الفرنسية الناشئة لكشف مطالبات التأمين الاحتيالية. وقد خلص البحث إلى أهمية الذكاء الصناعي في شركات تكنولوجيا التأمين الناشئة كأداة فعّالة لكشف الاحتيال التأميني، وتطوير وتحسين عمليات التأمين التقليدية، وتحسين تجربة العملاء.

الكلمات المفتاحية

شركات تكنولوجيا التأمين الناشئة؛ ذكاء صناعي؛ احتيال تأميني؛ حل Force.

تصنيف JEL: YYY ؛ YYY ؛ YYY ؛ YYY

* corresponding author : Sabrina Cheraga, email :cheraga.sabrina@yahoo.fr

I.INTRODUCTION:

The global insurance industry is undergoing profound transformation due to technological risks, cybersecurity threats and natural disasters, as well as shifts in customer demand and behaviour. Amidst these changes, InsurTech has emerged as a leading innovator in the industry. Since its inception over 10 years ago, InsurTech has brought about a significant transformation in the established insurance sector, making it more active and dynamic by creating innovative start-ups that focus on customers and utilise digital technologies to change the way traditional insurance companies operate and interact with clients. One of the most important and widely used technologies in the InsurTech field is artificial intelligence. Based on this, the research problem can be formulated as follows:

What is the importance of artificial intelligence technology in managing insurance operations and detecting insurance fraud within InsurTech start-ups?

1-Importance of the research:

The importance of the current study lies in the significance of artificial intelligence in managing and facilitating insurance operations, from inception to claims settlement. It is well known that the insurance industry's most strategic goals are digital transformation and technological innovation. Startups and technology are key to the industry's innovation, development and overcoming various challenges. This study aims to demonstrate the importance of artificial intelligence in InsurTech start-ups, particularly with regard to addressing the industry's biggest challenge: insurance fraud and the manual processing of insurance claims.

2- Objectives of the research:

- To define artificial intelligence and InsurTech.
- To define InsurTech startups and highlight their main characteristics.
- To analyse the importance of artificial intelligence in InsurTech start-ups, with a particular focus on the French start-up "Shift Technology".

3- Research methodology:

Due to the exploratory and descriptive nature of the research, the descriptive approach was deemed the most suitable for describing the study variables and addressing the research question. This approach is evident through the theoretical presentation of artificial intelligence technology and InsurTech start-ups, as well as a case study of the French start-up « Shift Technology ». An electronic survey was conducted based on various relevant references to develop the theoretical and practical elements.

II.THEORETICAL FRAMEWORK AND PREVIOUS STUDIES:

1. Artificial Intelligence (AI):

A. **Origin and Definition**:

Artificial intelligence (AI) is a term that has become widely used in recent years due to its association with computer science and software programmes. Abbreviated as (AI), it refers to any machine that exhibits characteristics related to human intelligence, such as learning, perception and problem solving. One of the most famous definitions of this concept comes from the global

company Deloitte, which stated that AI is: 'the simulation of human intelligence in machines programmed to think like humans and mimic their actions (Adam Uzialco, AI in insurance: how does Artificial intelligence technology impact on insurance industry?, 2023). The European Commission's AI (HLEG) defined artificial intelligence as: 'Systems that exhibit intelligent behaviour by interacting with their environment and taking autonomous actions to achieve specific goals. This technology enables machines to replicate various complex human skills' (Haroon Sheikh C. P., 2023, p. 20)

A review of various definitions and researchers' opinions — which cannot all be mentioned in this paper shows that there is agreement on the connection between artificial intelligence and machine intelligence, and on the ability of machines to simulate human intelligence by building algorithms that enable computers to perform tasks and cognitive functions that require human-like intelligence, such as learning, perception, speech and language recognition, logical thinking, reasoning and image recognition. Notably, the term 'artificial intelligence' was first coined in 1955 by computer scientist John McCarthy, who presented his research on designing a smart machine capable of mimicking humans in their work and performing tasks without human intervention at a summer scientific conference on artificial intelligence in Dartmouth, USA. He defined artificial intelligence as 'the science of studying and engineering the creation of intelligent machines' (Eton Business, 2025)

The evolution of artificial intelligence has unfolded over several decades, reflecting significant milestones in the field from 1958 to 2024. During this period, highly advanced models were created that can process all types of data, such as images, text, audio and video, simultaneously.

B. Major branches of artificial intelligence

An artificial intelligence system consists of essential components that work together to accomplish complex tasks and functions. The field of artificial intelligence is broad and encompasses the following technical concepts:

- **Machine learning:**

This branch of AI involves training machines or computers to use data without human intervention through algorithms that enable them to learn from data and past experiences automatically, without the need for explicit programming, in order to predict outcomes (COLEMAN, 2012, p. 23).

- **Deep learning:**

A subfield of machine learning, deep learning uses multi-layered artificial neural networks (hence the term 'deep') to analyse various data factors and learn from them automatically without training. These neural networks are inspired by the structure and function of the human brain (Tiwari, 2025). This highly specialised type of algorithm was developed to solve complex problems that machine learning algorithms cannot address, such as image and speech recognition, natural language processing, handwriting and more. Thus, deep learning provides a more adaptable way to use deep neural networks, enabling machines to make decisions (Nilay Ganatra, 2018, p. 701).

– **Natural Language Processing**:

This is a branch of computer science that involves machines reading, understanding and interpreting language. It involves computers understanding spoken human language and analysing it

using machine learning algorithms for language processing (COLEMAN, 2012, p. 23). Interactions between computers and humans therefore require natural language processing programs to comprehend different languages, as a machine's ability to understand and interpret these is central to many of the applications we use daily, such as chatbots, email, search engines and voice assistants (G.L.N.Jayaprada, 2024, p. 1).

– **Neural networks:**

These machine learning programs or models make decisions in a manner similar to the human brain. They use processes that mimic the way biological neurons operate in order to identify phenomena and reach conclusions (IBM, 2021). They consist of interconnected nodes, or artificial neurons, which collaborate to process complex problems and highly intricate patterns that are difficult for humans to handle. Also known as artificial neural networks (ANN), they are used in a wide range of applications, including image recognition, predictive modelling, decision-making, language processing, handwriting and face recognition, and speech-to-text conversion (yasar, 2024).

– **Computer vision:** This is a subfield of artificial intelligence involving the ability of machines to perceive and interpret visual information as humans do. The aim is to extract valuable insights from digital images and videos. Advanced techniques such as image processing and pattern recognition are used to analyse and understand visual data, interpreting visual signals in a way that mimics the remarkable capabilities of human vision (K. G. Suma, 2024, p. 120).

2. InsurTech Startups :

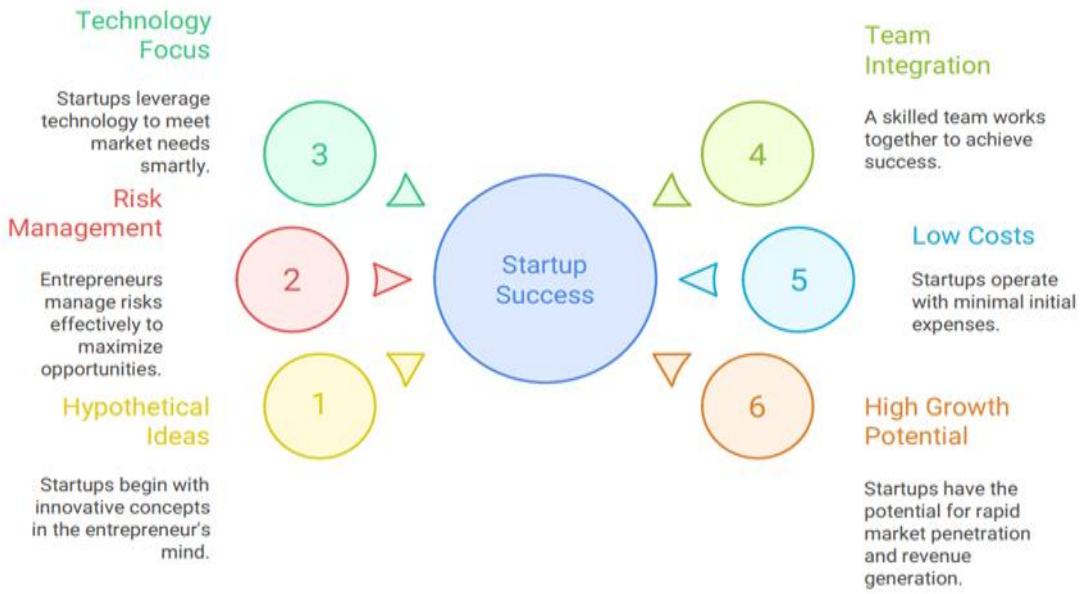
In recent years, new and innovative companies have emerged in the insurance industry. Known as InsurTech Startups, they have transformed the world of insurance by leveraging modern and emerging technologies to reshape the traditional insurance business model. The term 'startup' emerged after World War II, coinciding with the establishment of venture capital firms that specialise in funding this type of company. By definition, it refers to a small project that has just begun, consisting of two parts:

- (start): Referring to the idea of launch.
- (Up): Strong growth.

A. Definition of Startups and Their Characteristics:

A startup is a company that is developed from scratch with the aim of achieving rapid growth in the short to medium term by developing technology, a product or a business model that is often innovative. Paul G. defined a startup as follows: 'An innovative company designed for rapid growth. Being newly formed does not necessarily mean that it is a startup' (Belachour, 2023, p. 420). Thus, startups are understood to be recently established, innovative companies that focus on high growth potential and swift expansion by creating new markets or capturing a significant share of existing markets through innovative value propositions. These companies are often characterised by flexibility and rapid adaptation to new digital technologies, as well as strong growth and a need for substantial funding, while adopting innovative business models with a high degree of risk. The following figure illustrates the key characteristics that distinguish these companies:

Figure (1): Key characteristics of startups



Source: Prepared by the researcher based on: (Belkiss, 2024, pp. 50-51)

B. InsurTech Startups:

− InsurTech:

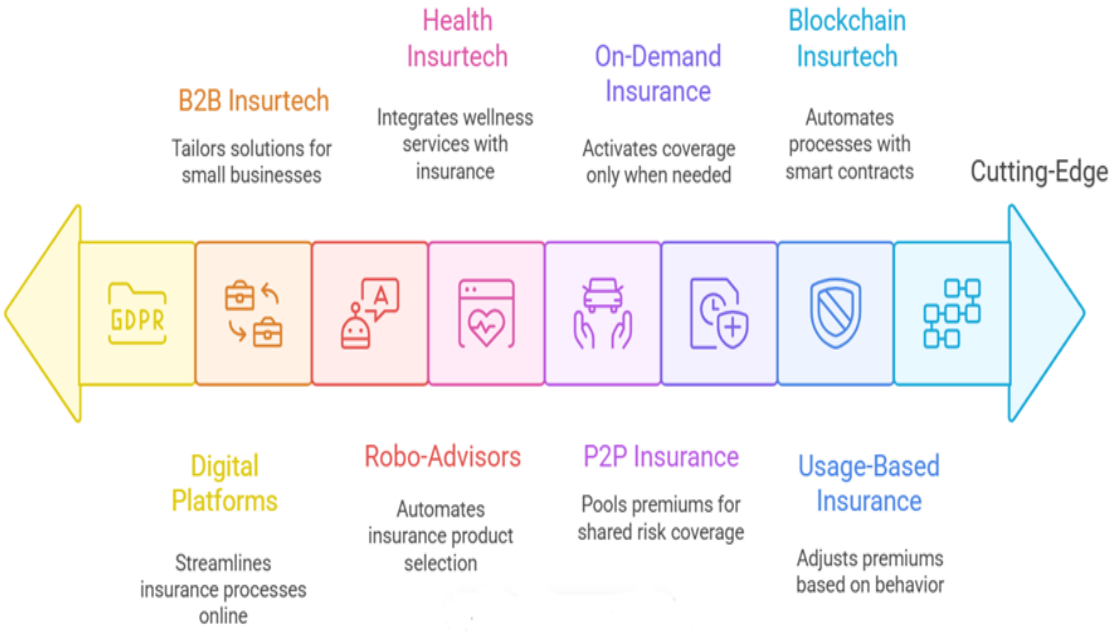
This compound term (Technology + Insurance) is used to describe a new approach in the insurance industry that relies on the innovative use of technology and the application of digital solutions and smart applications to improve and simplify various stages of the insurance value chain, as well as to transform old insurance practices by offering new products and services and enhancing the customer experience. In this context, (Jamil Saleh Issa et al.) define InsurTech as: "the application of technology in the insurance industry to improve the efficiency and effectiveness of insurance company operations and enhance user experience, encompassing various aspects such as smart applications, big data analytics, artificial intelligence, encryption, and machine learning". (Jamil Saleh Issa, 2023, p. 106)

The term 'InsurTech' first emerged during the 2011 Consumer Financial Services Conference, when a Google representative suggested that the auto insurance industry could be transformed by new companies using modern technologies. They clarified that the idea behind InsurTech's emergence is straightforward: the need to use technology to provide insurance services that are faster, more efficient and more accessible to customers (Run sensible, 2022). Discussions about InsurTech are often associated with financial technology because InsurTech is inspired by FinTech. Just as the insurance sector is part of the financial sector, InsurTech is a subfield of financial technology. Since insurance is a vast sector, InsurTech should be considered a separate industry, aimed at making the current insurance model more efficient and customer-focused.

– Types of InsurTech:

InsurTech encompasses a variety of technologies and business models that can modernise and disrupt the traditional industry model. The following figure identifies the main types of InsurTech agreed upon by experts:

Figure (2): Different types of InsurTech



Source: Prepared by the researcher based on (Kidecha, 2024)

– Emergence of InsurTech Startups:

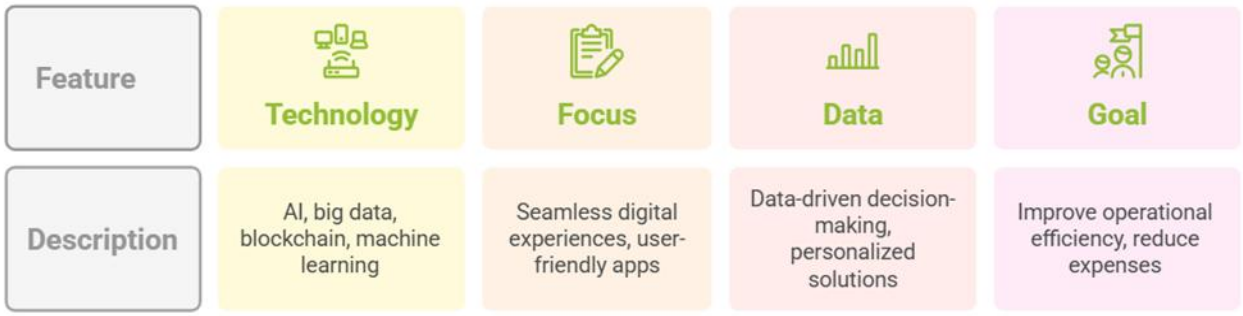
The development and growth of InsurTech start-ups has been somewhat slower than in other sectors, with their true inception beginning in 2015. These startups have emerged as collaborative and innovative entities in the global insurance market, leveraging technology to challenge traditional methods and provide existing insurance companies with advanced tools and approaches. They have successfully established innovative business models that redefine the customer experience and address the shortcomings of traditional insurance models (Alexander Braun, 2025, p. 2). InsurTech is considered a strategic concept in the insurance industry due to its dual yet interconnected meanings. On the one hand, it refers to the digital technologies adopted by the industry to manage risks and serve customers. On the other hand, it pertains to technology-based companies, often start-ups, that collaborate with or compete against traditional (established) insurance companies (Alexander Braun, 2025, p. 2).

An InsurTech startup is defined as an innovative company that utilises technological advancements and advanced technologies to provide unique experiences for customers, making insurance services convenient, easy and fast, and specifically targeting the younger, tech-savvy demographic (Choubey, 2023).

– Characteristics of InsurTech Startups and Reasons for Their Emergence

InsurTech start-ups are characterised by their innovative nature. They use technological innovations to transform the way insurance products and services are designed, distributed and purchased, making them more tailored to each customer's needs. They thus possess a set of characteristics (in addition to those mentioned earlier), summarised in Figure below:

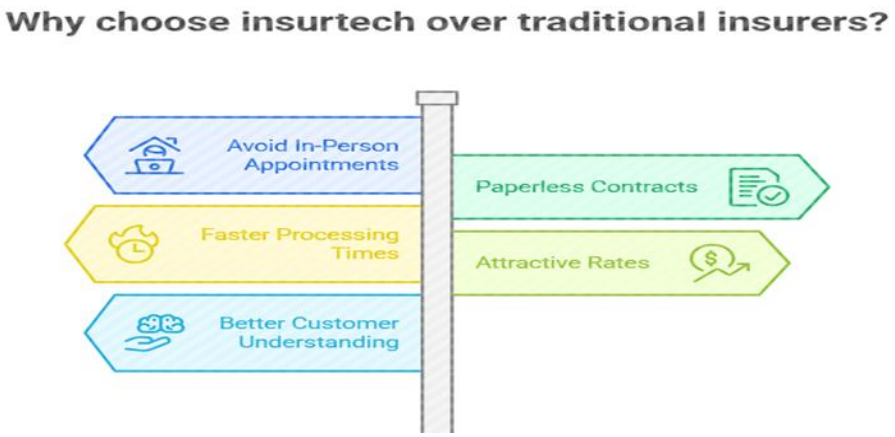
Figure (3): Key Characteristics of InsurTech Startups



Source: Prepared by the researcher based on (Choubey, 2023)

The figure shows that InsurTech start-ups mainly focus on improving customer experience by offering user-friendly digital platforms that are completely seamless and digital. They use advanced technologies, such as artificial intelligence and big data, to enhance critical elements of the insurance process, including underwriting, pricing, claims processing, and customer service. These companies target various branches of insurance, including health, auto and housing insurance, through easy-to-use smart applications. These companies are at the forefront of innovation in the insurance industry, offering leading digital interfaces and innovative new services. Additionally, they appeal to customers as they offer insurance services at lower premiums while eliminating the need for a physical presence through the digitisation of insurance contracts and the use of technology to understand customer needs. The main reasons that have driven customers to opt for the services of emerging InsurTech companies are presented below:

Figure (4): Reasons for choosing InsurTech start-ups as an alternative to traditional insurance companies



Source: Prepared by the researcher based on: (https://life5.fr/blog/tech/insurtech-assurtech-quest-ce-que-cest/)

– **Supporting technologies for InsurTech startups:**

InsurTech start-ups employ various technologies, which can be summarised in the following table:

Table (1): Core technologies adopted by InsurTech startups

technology	AI/ML	Data Analytics/Big Data	Blockchain/Smart Contracts	IoT	Mobile Apps	Cloud Computing	Chatbots/NLP	RPA
Function	Predict risks, detect fraud	Data-driven decisions, refine risk	Secure record-keeping, automate processes	Real-time data for risk assessment	Access insurance, manage policies	Scalability, efficient data handling	Customer support, policy guidance	Automate repetitive tasks
Benefit	Personalized offerings, improved experience	Personalized policies, enhanced efficiency	Enhanced trust, swift claims settlements	Customized coverage, proactive risk	Improved customer experience, increased engagement	Reduced costs, quicker deployment	Improved service, quicker response	Increased efficiency, reduced error

Source: prepared by the researcher based on: (Kidecha, 2024)

c. Business models of InsurTech:

Three primary models for InsurTech start-ups can be identified:

– **Digital Insurers or Full-Stack Insurers:** These are platforms that issue various insurance policies and assume the risks typically borne by traditional insurance and reinsurance companies. They manage insurance operations from underwriting to compensation claims (Mueller, 2018, p. 5). They are integrated insurance companies that focus on the entire insurance service value chain and seek to gain a competitive advantage by digitising their products and processes. They often target digitally advanced customer segments.

– **Digital Distribution Model:** These are referred to as distributors. During the first wave of digital transformation, new start-ups focused on digital distribution, enabling them to offer digital business models without having to develop a comprehensive administrative platform or comply with regulatory solvency requirements (Oletzky, 2022, p. 2). Acting as digital insurance brokers, these distributors simplify the process of purchasing insurance policies through online platforms, providing clients with a wide range of insurance coverage in exchange for a commission based on the number of policies issued and sold (Alexander Braun, 2025, p. 2).

– Digital Service Providers: These are the largest category of InsurTech startups overall and are referred to as "enablers". They utilise digital technology and focus on one or a few processes within the insurance business model. They rely on collaboration with traditional insurance companies to reach end customers (Oletzky, 2022, p. 2).

Together, these three types of InsurTech startup pose a challenge to traditional insurance companies, as full-stack insurers compete with traditional insurers and threaten to capture their market share. Meanwhile, digital distributors compete with traditional insurance brokers and agents. These companies have indeed changed the current industry landscape, outperforming established firms. Therefore, the latter cannot ignore the ongoing changes and must either adapt quickly to compete with start-ups in the long term, or enter into partnership agreements and collaborative strategies to turn the threat into a real opportunity for change in insurance services (Oletzky, 2022, p. 3).

3. Artificial Intelligence in InsurTech

A. Statistics

In recent years, artificial intelligence and machine learning have become crucial pillars of InsurTech start-up activities. According to the global financial consulting, accounting and auditing

firm PwC, the global market for artificial intelligence in insurance reached a value of $4.59 billion in 2022 and is expected to reach $80 billion by 2032, with North America leading the way (Phillips, 2025). A 2023 report by KPMG confirmed that InsurTech companies are increasingly adopting emerging technologies, with artificial intelligence recognised as the most significant advanced technology shaping the future of the insurance industry (Mok Wan Kong, 2024, p. 4). A joint study by the Hong Kong Trade Development Council and PwC revealed the applications of AI in InsurTech with the most potential (Yeung, 2025, p. 3):

- Chatbots and virtual assistants: 80%.
- fraud detection: 70%.
- Customer service: 64%.
- Claims processing: 60%.

B. Areas of application of artificial intelligence technology in InsurTech activities

As an advanced technology, artificial intelligence is transforming the business model of the insurance industry by hyper-personalising products and services. The following areas show how InsurTech start-ups have adopted artificial intelligence to automate key processes and enhance their business models, focusing only on the most important use cases:

– **Streamlining claims processing:**

Claims processing is one of the most sensitive and complex areas in the insurance industry where AI has a significant impact on InsurTech companies. Previously, this process was complicated and time-consuming, as it involved manual document and data review. However, with the adoption of artificial intelligence in InsurTech, this process has become much simpler, enabling these companies to automate a significant portion of it without the need for extensive and costly paperwork. This accelerates the settlement of amounts associated with these claims. For instance, Lemonade, an American startup focusing on home and renters insurance, incorporates NLP and ML technologies into its business model to process claims quickly. This enables it to analyse claims documents and verify information, thus evaluating the validity of a claim in seconds instead of days (Capital, 2024). This reduces the risk of fraudulent claims and speeds up processing time.

– Personalized Customer Experience:

High levels of personalization in insurance offerings and a focus on the customer are among the trends redefining the insurance sector, based on customer behaviors, preferences, and expectations. To increase the personalization of insurance policies and transform them into on-demand digital products, artificial intelligence-based chatbots are utilized (Salem, 2022, p. 1). In this context, InsurTech startups are integrating chatbots and virtual assistants to provide more personalized customer experiences, offering immediate support to customers and answering their questions and inquiries without the need to travel or communicate with a human agent (Sharma, 2022). For example, Policy Genius—a startup in the InsurTech sector—uses AI-based chatbots to communicate with customers and guide them to insurance offerings suitable for their needs. These chatbots are designed to understand human language despite its variations, and by employing NLP technology, they provide tailored recommendations based on the customer's needs, resulting in a more enjoyable and personalized experience.

Furthermore, artificial intelligence facilitates the process of uploading customer documents and files, as well as securely managing them, especially documents related to insurance contracts, which individuals can easily upload through self-service platforms (Khropatyy, 2024).

– Automated Underwriting Risk Assessment:

The underwriting phase is an important yet labour-intensive daily operation for insurance companies as it involves assessing risks relating to individuals' lives and property, and calculating appropriate insurance premiums. Using machine learning in this phase accelerates and simplifies employees' work, increases operational efficiency and improves decision-making by automating the sorting of insurance applications, streamlining processing and enhancing risk assessments and premium calculations. According to a report by the global consulting firm McKinsey, the number of employees required to complete and implement the underwriting process is expected to decrease by 70–90% by 2030 compared to 2018 (Spangenberg, 2025), especially since automated underwriting is widely used and highly successful in the auto insurance industry.

InsurTech start-ups rely on artificial intelligence and machine learning algorithms for risk assessment and underwriting. These algorithms accurately analyse and evaluate data to make correct underwriting decisions, thereby pricing insurance policies with greater transparency and fairness. For example, the startup "Tractable" has adopted AI technology in its business model, developing a deep learning algorithm that analyses images of accident-damaged cars to assess loss costs and repair expenses. By leveraging historical data and comparing it with images of the damaged vehicle, the AI-driven system can provide an immediate and highly accurate damage estimate (Capital, 2024).

– Fraud Detection and Prevention:

According to statements from the Coalition Against Insurance Fraud, the insurance industry loses approximately $80 billion annually due to fraudulent activities, particularly during the claims process. This has forced new insurance companies to increase current premiums by 10–20%, creating an additional financial burden for customers (Stefanovskyi, 2024). Consequently, the industry is facing its biggest challenge in processing claims quickly and accurately, while rejecting suspicious and fraudulent ones. To this end, InsurTech start-ups rely on sophisticated artificial intelligence algorithms to detect discrepancies and suspicious activities. They also use machine learning to recognise images and verify the accuracy and credibility of submitted claims (Spangenberg, 2025).

The machine learning system analyses customer behaviour and, if it detects any unusual activity, sends immediate alerts to the company — especially for complex cases, such as repeated fraud involving billing for medical services or inflated car repair costs. In this context, an Accenture report indicated that only 29% of customers trust InsurTech start-ups, while the number of insurance fraud cases is increasing, leading to higher verification costs for each claim. The auto insurance sector is particularly affected by these cases, especially during periods of recession and financial difficulty (Svitlana Volosovych, 2021, p. 6). Therefore, adopting artificial intelligence and machine learning technologies in insurance will certainly reduce fraudulent payouts, save operational costs and prevent increased premiums due to fraudulent activity.

Based on the above, the following table summarises the key areas in which InsurTech companies can use AI to transform the insurance industry:

AI Applications in InsurTech

Application Area	Description	Example
Streamlining Claims Processing	Automates document review and data analysis.	Lemonade uses NLP/ML for quick claim analysis.
Personalized Customer Experience	Offers tailored support via chatbots.	Policy Genius uses AI chatbots for customer guidance.
Automated Underwriting Risk Assessment	Accelerates risk assessment and premium calculation.	Tractable uses AI to assess car damage costs.
Fraud Detection and Prevention	Detects discrepancies and suspicious activities.	AI systems analyze customer behavior for fraud alerts.

Source: prepared by the researcher based on what was mentioned previously.

4. Previous studies on the topic:

Research and studies analysing the relationship between artificial intelligence and InsurTech startups are generally limited. We have relied on some that are directly or indirectly related to the topic**:**

-Study (Mahfoud Belkiss, 2024): The reality of startups in Algeria and their challenges: a case study of Khidma-Tch and Nahla Delivery, Journal of Legal and Economic Studies, Vol. 7, No. 1, 2024.

This study aimed to analyse the situation of start-ups in Algeria and identify the challenges they face, through a field study conducted in two institutions in the Annaba province. The researcher used a descriptive analytical approach and a case study method to conclude that, despite their importance to the national economy, startups face numerous obstacles and challenges, such as financial difficulties, weak technological infrastructure and a lack of experience among these companies' founders.

- Study (Torsten Oletzky, 2022): Insurtechs and Innovation in the Insurance Industry, Risk Management Review, GEN Re, a Berkshire Hathaway Company, Edition 2022.

The study aimed to identify how InsurTech and digital innovations can enhance and develop insurance business models by digitising them and improving routine administrative processes through artificial intelligence algorithms. The researcher discussed how insurance companies interact with these changes and the strategies available to maximise the benefits of technological transformation in the insurance sector. It was concluded that emerging InsurTech companies are a true and essential driver of digital innovation in insurance and that existing companies must face the necessary challenge of digitising the industry, which takes time amid the rapidly accelerating wave of digital transformation.

- Study (Nilay Atul, 2018): A Comprehensive Study of Deep Learning Architectures, Applications and Tools, International Journal of Computer Sciences and Engineering, Vol. 6, Issue 12, December 2018.

The researcher discussed the possible applications of deep learning developed by researchers in various fields, highlighting the tools used to collect, analyse and process vast amounts of data. They

also noted the three most common deep learning architectures: convolutional neural networks, recurrent neural networks and deep belief networks. The study concluded that deep learning models are characterised by their ability to produce suitable results without human intervention, and that various tools are used to implement instant applications supported by deep learning models (DL).

– What makes our study different from previous studies?

previous studies focused on one variable, while the current study combined the variables: artificial intelligence and Insurtech start-ups to determine the importance of implementing artificial intelligence in the insurance processes, to increase their efficiency and improve the customer experience. Our study also focused on detecting insurance fraud, unlike previous studies, by examining the innovative solution of the French startup company "Shift".

III.METHOD AND PROCEDURES:

1. Case study of the startup (Shift Technology)

A. Company definition:

Shift Technology is a French InsurTech and cybersecurity startup. Founded in Paris in 2014 by (Jérémy J., Éric S. and David D.), it specialises in detecting insurance fraud using artificial intelligence technology. It became a member of the exclusive club of unicorn companies in 2024 and has established itself as a leading player in the InsurTech field. Thanks to its advanced technology, Shift Technology has analysed hundreds of millions of insurance claims and earned the Global Market Leadership Award from Frost & Sullivan in 2020. The idea for Shift Technology emerged when its founders noticed that, in some cases, the cost of an insurance claim to the company exceeds the compensation amount paid out. This prompted them to develop innovative, AI-based solutions aimed at identifying individuals who attempt to exploit loopholes in claims design systems to achieve illegitimate profits, as well as automating the processing of these claims (Aronica, 2024). The business model of the Shift startup is based on blending three core areas, which we will explain below:

Shift Technology = AI + Insurance + SaaS

The company has a global presence, operating in over 25 countries and with specialised offices in Paris, Boston, Tokyo, London, Madrid, Zurich and Singapore. It is continuously planning to expand its global geographic footprint by extending its operations in Europe and entering the strategic markets of the United States and Southeast Asia. It processes hundreds of millions of claims annually for over 80 leading global insurance companies in fields such as health, travel, accident and property insurance, including Axa, Pan Asian and Assurant US (Sullivan, 2020, p. 4). In 2024, Shift was ranked among the 13 French unicorn companies after raising $220 million from the international investment fund Advent, bringing the total amount invested in the start-up to $320 million. With this new funding, Shift Technology aims to establish the world's largest data science centre dedicated to the French insurance sector by 2024. The company plans to employ a team of 300 data scientists to develop technologies and techniques that facilitate and improve decision-making throughout the customer journey (Vitard, 2021).

B. Technologies Used and Innovative Solutions from Shift Technology

The company has developed software as a service (SaaS) solutions to automate claims processes and detect insurance and cybercrime fraud, using AI and big data technology to analyse vast amounts of data from various sources. Shift also employs optical character recognition (OCR) technology based on machine learning to extract information from any document or file. In partnership with the Azur Open AI service and the Azur AI infrastructure, Shift uses cloud-based computer vision (Azur AI Vision) to reduce the sorting of documents, claims, and insurance contracts from weeks to just days (Jones, 2025). So These technologies present the key innovative solutions developed by Shift Technology to make the insurance industry more efficient and effective.

c. The company's fraud detection programme

(AI) has numerous applications in the insurance field and within InsurTech startups. Since the chosen company specialises in fraud detection solutions, the focus will be on the role of this technology in identifying potential fraud patterns.

– **Introduction to the 'Force' Programme:**

Insurance fraud is one of the challenges facing the European, and specifically the French, insurance industry, where it is estimated that 10% of total claims expenses are due to suspicious claims. According to Shift's innovative system, over 78 million insurance claims have been processed with an accuracy rate of 75%, which is double that achieved by traditional companies in the market (European Investment Fund, 2025). The scope of fraud in the insurance industry has expanded globally in recent years, making it the industry with the highest fraud rates. Losses are estimated to be in the billions of dollars due to the emergence of social media and new banking methods that allow individuals to open accounts without verifying their identities. Consequently, there has been an increase in fraudulent attacks in the insurance sector, particularly in health and healthcare insurance, auto insurance, home insurance and life insurance. The company has therefore developed an effective solution to prevent these practices from further harming the French and global insurance industries, believing that artificial intelligence technology is the sole effective solution to this problem.

In this context, the company developed the intelligent solution "Force" in 2014. Relying on AI and machine learning, it analyses large volumes of data and identifies individual and network fraud (a form of organised crime), enabling fraud case handlers to manage operations effectively (Sullivan, 2020, p. 3). 'Force' is a fraud detection service for insurance claims. This robust Software as a Service (SaaS) solution identifies the degree of fraud in individual claims with double the precision of other solutions, achieving a success rate of up to 75% (Benoit, 2022). To accomplish this complex task, 'Force' uses a library containing hundreds of scenarios related to fraudulent practices, as well as third-party data, to identify and analyse potential fraud committed by individuals, service providers and internal staff, and to engineer future claims.

This programme can assimilate data from various internal and external sources, including internet searches such as geolocation, mapping, social media and criminal history. Based on this data, potentially suspicious claims and behaviours are identified and verified. Data scientists at Shift use historical customer data to train algorithms for various use cases, updating them continuously

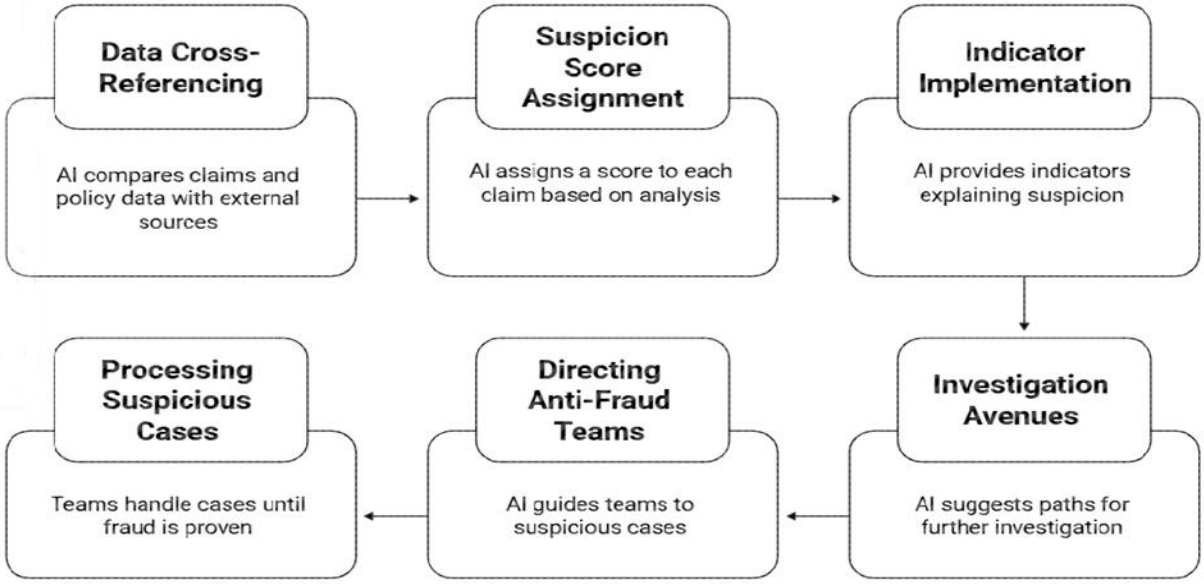
with new scenarios. Using a network link analysis tool, the 'Force' solution can detect suspicious connections between individuals, such as specific individuals appearing in multiple claims. This makes it quick and easy to identify potential fraud patterns (Sullivan, 2020, p. 4).

For instance, the solution can identify fake medical bills in the healthcare sector if AI algorithms detect identical templates, traces of image editing, treatment inconsistencies, or multiple claims submitted by a single client with slight variations in personal information.

–Stages of detecting insurance fraud:

Attempting to prevent fraud is often costly and complex as it involves sorting through large volumes of documents. Anti-fraud teams also face lengthy investigations. Moreover, fraudsters continuously try to outsmart systems and standards to avoid detection. As technologies that help to detect fraud evolve, so do the technologies that enable fraudsters to cause greater damage and pose greater risks, costing billions of dollars annually. Therefore, effective detection is a crucial step in reducing fraud. Shift startup aims to support global insurance companies in becoming more efficient at combating fraud across various insurance sectors by following the steps outlined in the following figure:

Figure 5: Stages of detecting insurance fraud using artificial intelligence at Shift Technology



Source: Prepared by the researcher based on: (FARBER, 2023)

The figure shows that Shift's core function lies in applying artificial intelligence to insurance operations. It is used to identify anomalous and suspicious cases at all stages of the insurance process. This is especially important given that losses amount to over €2.5 billion annually in France alone. Customers bear this additional burden in the form of higher premiums. The 'Force' solution detects questionable claims in real time, enabling managers to make quick decisions based on the information provided. AI matches claims and insurance policy data with external data, analysing it in a secure environment. It then assigns a suspicion level to each claim, setting indicators that specify the reason for suspicion. This procedure enables fraud teams to focus on genuinely suspicious cases and determine the necessary measures to address them, such as

requesting additional information, verifying file documents or conducting field investigations until fraud is proven (FARBER, 2023). For legitimate and non-suspicious claims, the claim amount is processed and paid immediately upon the first notification of loss (FNOL)[1].

IV. STUDY RESULTS (ANALYSIS AND DISCUSSION):

The study conducted allows for the evaluation of the "Force" solution for detecting fraud in insurance claims at the level of the Start-up Shift Technology. Considering Shift's innovative solution in the InsurTech field, the following points can be noted:

- The 'Force' solution is highly effective in detecting insurance fraud in claims submitted by customers. The company has innovatively combined artificial intelligence technology with specialised human expertise in insurance, as well as a cloud-based software as a service (SaaS) model, to provide an excellent customer experience. Customer needs are at the heart of the system, which aims to replace the time-consuming and labour-intensive methods used by traditional insurance companies to detect fraud by integrating AI into insurance document and claims management. This allows vast and varied amounts of data from multiple sources to be analysed quickly, accurately and efficiently. The company has leveraged its expertise in insurance claims and data science to proactively detect fraud in any claim, from receipt to payment and closure.
- The company's goal is not only to judge fraud, but to enable its detection and prevention in real time — something human elements have struggled to achieve.
- Regarding the success of the 'Force' solution, it has achieved a success rate of 75%, as previously mentioned, compared to an industry average of no more than 35%. This indicates its high accuracy in identifying potentially fraudulent claims, which insurance companies ultimately consider suspicious and deserving of investigation and review by fraud teams.
- The success of the 'Force' solution in reducing fraud -in various forms- means an increase in the number of global customers and an improvement in their experience, as fraud negatively impacts the customer experience through prolonged claims processes and higher insurance prices.

V.CONCLUSION:

Artificial intelligence has revolutionised the InsurTech field and changed how startups operate in this domain. It has done so by simplifying the underwriting process and risk assessment, speeding up claims processing and making it more efficient by reducing processing times and associated costs. It also enhances the customer experience, making it more personalised. In light of the findings of this research, we have reached the following conclusions:

Research findings:

- InsurTech is a fertile and highly suitable field for innovative start-ups, attracting many entrepreneurs.
- InsurTech startups are innovative companies that use the latest technologies, such as artificial intelligence, to transform the insurance industry and improve traditional insurance processes.

[1] A First Loss Notice (FNOL) is the first report submitted to an insurance company after an asset covered by an insurance policy is lost, damaged, or stolen.

- The importance of artificial intelligence in InsurTech startups companies lies in its effectiveness as a tool for detecting various types of insurance fraud.
- InsurTech start-ups are transforming the insurance industry landscape by harnessing artificial intelligence and other advanced technologies to create more efficient and effective business models.
- By integrating AI into their operations, these startups adopt a customer-centric approach, innovating easy-to-use solutions and designing highly personalised insurance documents.
- The French startup Shift offers innovative solutions based on artificial intelligence and advanced data science to identify fraudulent and suspicious insurance claims.

Recommendations:

- Maximise the use of artificial intelligence to detect fraudulent practices. This is a crucial step in automating insurance claims and processing legitimate claims immediately, thereby accelerating compensation payments.
- InsurTech start-ups should collaborate more closely with traditional insurance companies by entering into partnership agreements to improve outdated working methods, enhance efficiency and reduce operational costs.
- It is essential for InsurTech startups to understand the laws and regulatory frameworks governing insurance activities, and to keep up to date with changes by relying on legal and insurance experts to ensure compliance.
- Building a strong, cohesive and supportive team is also necessary for success. While having a good idea is crucial for launching these companies, the idea alone is not sufficient.
- InsurTech startups should develop high-tech programmes to address the ongoing increase in cyber risks and threats and thwart attempts by fraudsters to breach customer data and insurance company systems.
- Focus on attracting the best skills, talents and competencies to drive innovation and digital transformation in the insurance sector. Develop and support technological infrastructure with advanced software and hardware to expand the provision of innovative insurance services.

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