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Chapter 8: Streamlining insurance claims and underwriting processes through agentic artificial intelligence and intelligent document processing

8.1. Introduction

Insurance Technology or InsurTech is one of the most promising sectors within the FinTech industry. Artificial Intelligence technology is set to revolutionize service delivery in the industry via new digital distribution channels, Internet of Things applications, Blockchain smart contracts and cloud-based platforms offering Data Analytics and Artificial Intelligence capabilities that make it easier and less friction prone for dynamically assessing risk exposure in real-time and automatically managing risk transfer contracts on the blockchain. These embedded solutions powered by Artificial Intelligence help to streamline commercial and personal insurance workflows. Agentic AI, when combined with Intelligent Document Processing and Business Process Management automation, help streamline the commercial underwriting, claims and brokers processes, while in the personal lines, they help optimize the end-to-end journey for customers, insurers and partners across travel insurance, private auto insurance, emergency roadside assistance and cyber insurance (Ellis & Watanabe, 2025; Feng, 2025; Goldstein, 2025). Our thesis is that the insurance workflows rather than metrics or financial instruments should be leveraged for better deploying data-driven technologies to solve deep user pain points and enable better service experiences, efficiency improvements and business model innovation in claims management and underwriting in addition to using more rich and complex business data to improve the accuracy of critical business operations. We will elaborate on these workflows and make the case for specific and customized applications of the main data-driven technologies, such as Natural Language Processing, Computer Vision, Document Flow and RPA Automation, Machine Learning, Decision Support and Data Assistants, Digital Workers and Robots that can be deployed for meeting user needs in the development of new products and services, the improvement of customer service and sales execution for better user

experiences and the enhancement of operations strategy for business efficiency and operational excellence (Hassan & Liu, 2025; Ibrahim, 2025).

Despite having sophisticated technologies like rule engines and predictive models, the insurance claims process remains highly inefficient. The process is both error-prone and burdensome to policyholders. Just-in-time automation eliminates bottlenecks, reduces errors, and speeds decisions. Decisions frequently go against the payee simply because processing the case on-site requires human resources that are in short supply.

Fig 8.1: Streamlining Insurance Claims and Underwriting Processes

8.2. Understanding Insurance Claims

Insurance claims are requests made by policyholders to their insurers for compensation for a covered loss, accident, or injury. The insurance claim process starts when the policyholder notifies the insurer about the loss, followed by a review of the claim to determine if it is valid and how much will be paid. Once the insurance company approves

the claim, it will issue a settlement check to the policyholder, completing the claim process. The insurance claims process is an important part of the insurance business, and while the insurance process is based on the establishment of contracts and some modeling of risk, the actual payment of claims is what essentially transforms the insurance service into something more tangible. Without the claims process, the insurance often looks like a simple gamble and the real nature of insurance would often be poorly understood.

Insurance claims processing is the main operations function in insurance business. It refers to what happens as a claim moves through the system — how the system is designed, the processes followed by employees, and the technologies required to implement the procedures are of central importance. The claims process is responsible for the majority of an insurer's costs. As a result, improved efficiency in the claims process reduces exposure to fraud and abuse and increases consumer confidence in the insurance system. At the same time, improvements in claims processing allow an insurer to become more profitable and become a stronger contributor to the reserves of the economy. If excessive costs are placed on the claims function, this serves to increase insurance premiums and reduce state accountability in times of need and emergency.

8.2.1. Definition and Importance

The insurance claims process is a fundamental aspect of the insurance domain. Informally, as insurance is a form of risk management, an insurance claim occurs whenever an insured party asks for compensation against a loss covered in an insurance policy. A more formal definition of claims defines them as a request for payment of the benefits provided by an insurance policy or contract, usually made after a loss. After reasonable proof of loss, the insurer must pay the claim amount according to the terms of the policy. Insurance claims must follow a rigorous definition as they are legally binding agreements governed by contract law.

Insurance claims are important aspects of the insurance economy as they guarantee policyholders against the risk covered, for example, risk of health, risk of property damage, risk of life, risk of getting unemployment, etc. In some forms of insurance, claims facilitate a transfer of funds from the strong to the weak. The funds are transferred from those who have not been affected by the bad situation during the relevant period to those who have faced the bad situation. In essence, claims restore the economic equilibrium for the claimants. Hence, by providing this service and alleviating distress and suffering, insurance companies serve a social function.

8.2.2. Current Challenges in Claims Processing

Insurance is one of the oldest professions in the world. The Babylonian Empire created shipping insurance. The people of Rome had a burial insurance system. The Chinese developed the mutual fund to stay afloat against flooding and fires. In contemporary times, insurance corporations promote security and peace of mind by ensuring payouts against losses incurred from correlated risk.

Claims processing is the centerpiece of the insurance industry. For insurers, it represents their costliest function. For the insured, it is the initial trigger of the business relationship, the insurable event, upon which future renewability depends. It is also the focus of countless sub-related relationships, such as the hiring of insurance brokers or agents. In normal times, processing insurance claims takes a short while, involves proper submission and validation, and helps provide payments to the insured, helping financial liquidity during a low period.

However, with increasing interconnectedness in global supply chains and the normalization of difference, the pandemic has erupted into a crisis that has affected businesses and countries across the world. Financial losses for corporations, small and large, have been crippling, and governments are scrambling, and unsuccessfully so, to assist. With losses soaring, the need for fast claims processing is a need of the hour. And yet, from direct physical damage claims to business interruption claims, plus the related contingent business interruption claims, the time taken in assessing the loss, daunting because of the lack of historical loss and recovery severity databases, is extensive. This is compounded by the multiple-party relationships inherent in these different types of claims. Multiply this by the new forensically complicated, multi-peril coverage issues posed by seemingly common facts linking the above different classes of claims, and insurers are faced with their most unprecedented operational and financial stress.

8.3. Overview of Underwriting Processes

Role of Underwriting in Insurance At the heart of insurance is a promise of risk assumption. The insurer assumes a burden of loss for a guarantee from the insured, who pays a premium. The burden of loss may be the full cost to restore all covered property and may include legal expenses, body repair cost, medical expenses, loss of body function, or loss of life; both the amount of loss, the frequency of claims and the timing of payments depend on the insurance design. The burden of loss is assumed by the insurer not only because of premium income, but also because of the law of large numbers. Statistical observations show that if a market is developed and sufficiently large, and if adequate premiums are charged, the burden of loss will, with very small

possibility, remain within reasonable limits. These basic principles justify the establishment of an insurance organization.

When underwriting, insurance companies face difficulties in estimating risks and predicting losses. Whether it be for an organization, an individual, or a property, the risks involved are either not clearly set forth, are not determined precisely, or are inherently very uncertain. For example, a motorcycle may cause great physical injury but there is no way to know whether the rider will be liable for such consequences. The notion of liability itself is vague and its limit is difficult to interpret. Hence, this burden of loss may be allowed by others and it may instead become part of the expected loss.

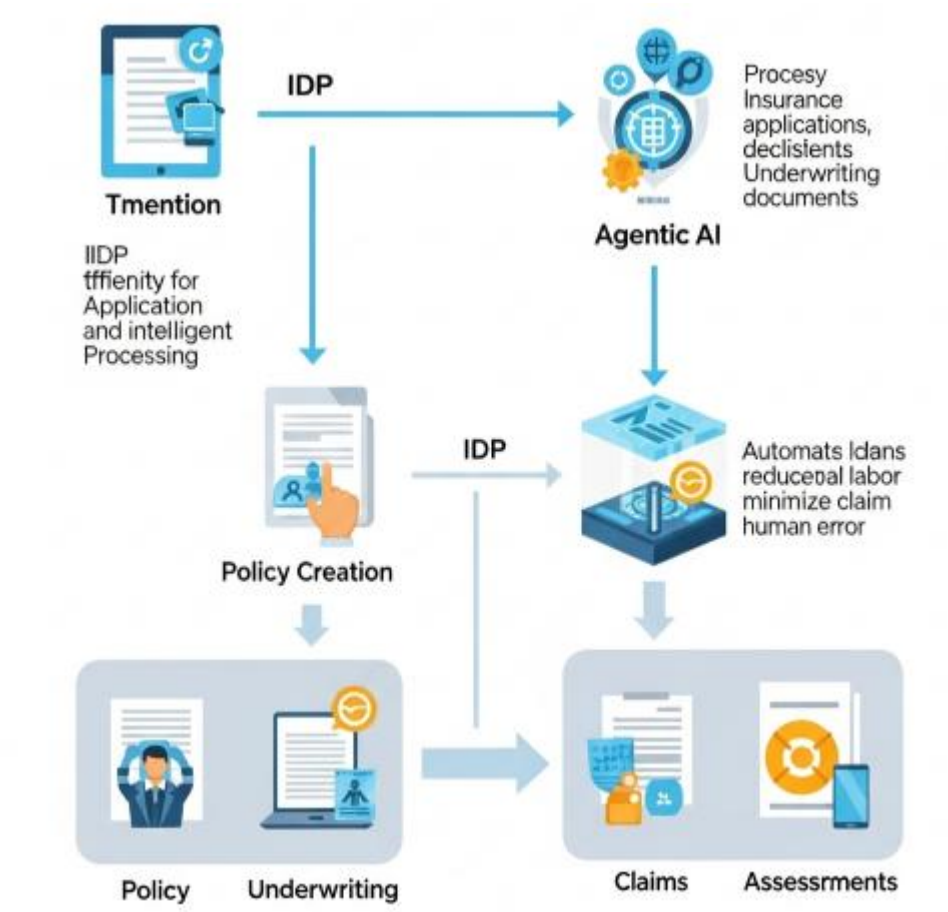

Fig 8.2: Overview of Underwriting Processes

8.3.1. Role of Underwriting in Insurance

Insurance underwriting is the process that insurance companies use to decide whether to accept or reject your application for coverage. The term "underwriting" comes from the old practice of writing your name under the amount of risk you were willing to accept for a fee. They look at your risk factors, which can include your age, sex, occupation, health history, credit score, and where you live. They also look at how much coverage you're applying for and how much it will cost. Changes in your application, like adding a new car, can also affect your premium. After gathering all this information, the officer then compares this profile to similar risks and their claim histories. The officer also compares what the applicant is asking for against what the applicant has previously requested from other insurers and what those insurers are willing to provide.

If an insurance agency can't find a similar risk and doesn't have enough information to make a fair evaluation, the request may be denied because the risk is considered uninsurable. An underwriter may advise the insurance company to decline coverage or request that the applicant provide more data. If the insurance agency does provide coverage, that does not mean that the risk is fully insurable. The company may exclude expensive, likely-to-be-claimed losses from the coverage or charge an extra premium for those losses. If the insurance agency agrees to cover the risk, the underwriter prepares a written report. This may include plans for how to proceed with the coverage, what premium should be charged, and how to keep the risk of losses under control.

8.3.2. Common Underwriting Challenges

The underwriting process is one of the most critical processes within an insurance organization. A poorly executed underwriting process can not only lead to loss of revenues but can also lead to severe reputational damage and further issues like fraudulent claims. Underwriting allows insurance companies to manage risk by assessing the potential risk factor involved in providing an insurance policy. Underwriting also plays a critical role in building the financial reserves required by an organization and ensuring that the ability of the company to pay claims is not hampered.

Despite the critical nature of the underwriting process, many organizations still face challenges in building a robust process. Some of the key challenges faced by the underwriting team are the huge volume of data that needs to be validated during the process. This data is often in different formats that require data from respective systems to be extracted, validated, and consolidated. Delay in processing is another key hurdle faced by organizations. In insurance, the sooner an application for transactions is assessed, the sooner the transaction can be moved to the book of business. Any delays in the decision-making can easily lead to duplication of effort, as a competitor may

swoop on the application and offer the potential customer a better rate on the desirable transaction. Such delays also create a poor experience not only for the intermediary but also for the end consumer, especially in an age where instant gratification is a much sought-after factor. The risk-reward equation has to be validated for all underwriting decisions. Historically, an underwriting department has relied on a single set of data. However, as the pool of insurance candidates gets more complex, the available sets of data have increased as well. Data available from social media, industry datasets, and sophisticated analytics.

8.4. Introduction to Agentic AI

An agentic AI operates at a higher level of abstraction than conventional AI. Rather than narrowly according to a trained model, agentic AI systems are explicit, more general-purpose agents, capable of reasoning and decision-making, working on goals set by human beings, and able to create intermediate artifacts to be evaluated and potentially revised by their human masters. Such intermediate outputs could be a video, a list of prospective explanation candidates for a science concept, computer code to parse some documents, or a document that describes what is in a document stack. Rather than being relegated to tool status as with conventional AI, agentic systems perform AI-enhanced work on behalf of or in collaboration with a human supervisor. By distributing cognitive labor intelligently between human and artificial collaborators, tasks that require higher levels of cognitive expertise beyond the capabilities of narrow AI decision and reasoning support can be achieved. We call this agentic collaboration of human and AI, agentic AI.

The power of agentic AI systems derives from the combination of four properties: greater generality of purpose, capable of functioning in a wide variety of domains; higher level of intelligence, capable of performance in the ballpark at expert levels; argument-based tools, providing support for evaluation and revision of intermediate outputs; and cognitive amplification, allowing the use of specialist tools, produced by expert humans, for specialist tasks. The central consequence of these properties is the opportunity to offload initial drafts of complex, knowledge-based processes or artifacts, with the domain expert supervising and evaluating the quality and suitability of the AI-generated products for specialist tasks.

8.4.1. What is Agentic AI?

The emerging paradigm of Agentic Artificial Intelligence (AI) enables organizations and individuals to pursue creative objectives and realize the resulting value by augmenting human creativity with AI. It accomplishes this by unleashing the latent creative power of workforce teams while also removing the drudgery of monotonous activities done by

both the workforce and the products and services customers interface with in their journeys through life. Important principles of Agentic AI include augmenting people, and being especially sensitive to the unique ethical, moral and consideration of the sensitive and nuanced roles people play in the unique ecosystem of a business and its customers. Airline crew members, for example, aim to make traveling joyful in accordance with the charter for which the airline was formed by its founders. Performing tasks such as simply disallowing carry-on bags that exceed the company's maximum allowable dimensions, may currently be done by an intrusive, somewhat rude and totally inflexible AI program invoked by the airline's website and mobile applications. An Agentic AI program however would put its creator in the shoes of the crew members who have their own personal methods for handling carry-on luggage violations in line with the airline's charter.

Agentic AI is composed of a complex intersection of these concepts, connecting new autobiographical memory and creativity capabilities to traditional natural user interfacing, a more common role of AI today, enabled by advancements in programs.

8.4.2. Applications of Agentic AI in Insurance

Agentic AI systems have substantial potential to streamline the insurance claims and underwriting process, creating significant efficiencies for insurers while improving service outcomes for the insured. A key differentiating aspect of insurance processing and management resides in large-scale document review of entity-based data or event-based data that relies on a diverse and disparate array of documents including claim filings, supporting statements or testimony, and, in the case of underwriting, various policies and coverages already held, prior accident or injury records, and customary and specific evidentiary requirements. In many cases, if not most, internal data isn't sufficient to carry out specific claim inquiry and evaluation—thorough review of relevant documentation is required and this is where intelligent document processing capabilities can play a large part.

But processing is only a part of the overall functional portfolio, and beyond that, agentic AI capabilities can also augment or carry out detailed reviews of claim documentation, from initial filing, statement of witness accounts, assigned investigator reports including supporting documentation, and review of documentation from third-party organizations, and identify underlying trends, processes and statements required for a specific type of claim or type of target injury or loss. These capabilities further improve processing efficiency, as agentic AI capabilities can not only carry out initial document reviews on standard or high volume claims, but also provide significant value add by augmenting and allowing human adjusters to focus on claim reviews and investigations case histories which present abnormalities compared with the typical case path.

8.5. Intelligent Document Processing (IDP)

A relatively wide umbrella term, "Intelligent Document Processing (IDP)" refers to software technologies that automatically take unstructured data and convert it into a structured, machine-readable, and searchable form. This term was primarily invented to describe the latest generation of modern, next-generation technologies that support "an AI-first approach to transforming scanned documents, PDFs, and images into structured data." More specifically, IDP refers to technology solutions that take document processing beyond the classic narrow definition of Data Capture or OCR - which can automate the extraction and data validation of only a small number of repetitive document types.

IDP allows companies to deploy pre-trained AI models that can analyze and understand a thick and diverse variety of document formats, like an experienced human. In sharp contrast to narrow-classical technologies, IDP are capable of extracting document content from a broad array of formats - such as forms and tax returns, receipts and invoices, contracts and agreements, medical records and legal filings, mortgage applications and insurance claims, corporate mail and customer communications - and populate any structured, machine-readable output, like a searchable PDF, dynamic semantic HTML, XML, JSON, CSV, or a structured database. IDP then allows software robots to use the metadata extracted from these documents to route them to downstream platforms for consumption by humans or business process automation.

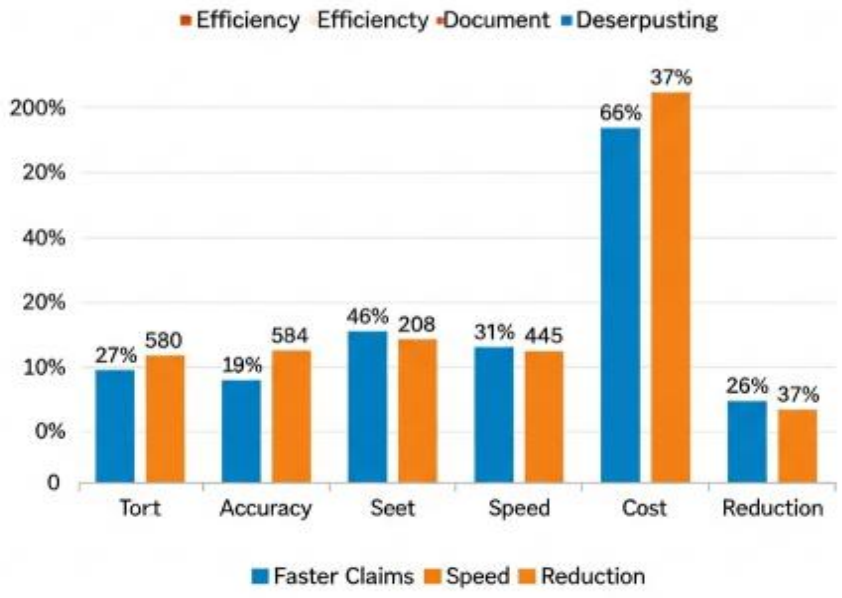

Fig 8.3: Agentic AI and Intelligent Document Processing

Most implementations cannot generate a positive ROI as their owners need human beings to spend significant time reviewing and rectifying the errors in the data captured by the technology. IDP technology solutions are different; they are also used to process fully automated, touchless workflows that completely eliminate human labor. Various platforms then use the structured output from IDP to execute end-to-end automation of document-centric business processes such as commercial loan underwriting, insurance claims processing, mortgage loan underwriting, and customer onboarding and Due Diligence.

8.5.1. Definition and Technologies

Intelligent document processing (IDP) amalgamates artificial intelligence (AI), machine learning (ML), and natural language processing (NLP) technologies with traditional data extraction technologies to accelerate and optimize the capture, classification, extraction, validation and enrichment of data contained in business documents. Documents – structured, semi-structured, or unstructured – are created at volume, velocity and variety in many organizations. Though mostly managed as inert assets, documents may embody valuable, latent organizational knowledge, insights and intelligence, which IDP enables organizations to extract, sharpen and refine, thereby elevating their document data to unique competitive advantage. As vast quantities of business data and information are contained in documents, ubiquitous IDP is increasingly important to automate input-processing-output flows which get documents into enterprise systems, applications and processes for compliance, decision making, and knowledge management, supporting an organization's goals of automation, transformation, and modernization. IDP outputs into ERPs, CMOs, DMSs, Data Lakes, Business Intelligence Systems, Knowledge Management Systems, and so on. Such ubiquitous output from IDP enables any organization to support its automation initiatives, accelerate the organization's digital transformation journeys, and reduce operational costs and risks. Organizations deliver IDP-powered solutions that are able to respond to the diverse Document data capture, extraction and output requirements of broad-based use cases, creating business benefits.

8.5.2. Benefits of IDP in Insurance

The process of obtaining and evaluating documents for information such as insurance claims, underwriting processes, and loan applications is notoriously tedious and time-consuming, often taking days – or even weeks. IDP can reduce the need for manual document processing and validating by intelligently automating most of these tasks, saving insurance companies time and money, while also freeing up workers to focus on more fulfilling initiatives rather than repetitive, monotonous work. In integration with

robotic process automation capabilities, IDP becomes a powerful, game-changing, end-to-end automation solution that can greatly speed up processes and increase productivity.

Insurance companies have to deal with large volumes of unstructured documentation from their customers, agents, and third parties: loan and claim applications, loss runs, identity verification, financial disclosure, and proprietary information documents. Even within the insurance business, substantial contact occurs with banks, including documents such as credit reports, fraud alerts, employment information, and banking service agreements. IDP technology can extract information from a digital corpus of low-frequency photo and video files faster and at a lesser cost per document than human reviewers. RPA and IDP can work together to expedite processing and improve accuracy: an RPA platform can capture the documents, then trigger the IDP software to extract information such as names, addresses, social security numbers, dates, loan amounts, and birth dates. Once those data points are extracted and validated, RPA then makes the entries into the target application.

8.6. Integration of Agentic AI and IDP

The integration of different technologies can generate key synergies that leverage the best value propositions of the component technologies and magnify their strength. Agentic AI and intelligent document processing (IDP) are two key components of digital transformation in knowledge work projects, and the integration of these three technologies would sequentially yield more powerful enterprise productivity than either of them alone.

Documents and semi-structured data are paramount. About 80 percent of all information is generated in unstructured form, 90 percent of enterprise decision making, and more than 99 percent of enterprise transactions are impacted by documents. Today's generative AI technology is reaching a new level of maturity, and capabilities are now sufficiently powerful to propel AI into a new age of unprecedented scope and scale. Text understanding and generation is the crux of knowledge work, and an array of tightly integrated Agentic AI model APIs are tightly integrated and made available in SaaS form, serving enterprises as the Uber model for Agentic AI. Similarly, IDP adopts a different approach to knowledge work. It harnesses IDP to make getting information from content faster, cheaper, and better.

This section will examine the integration of Agentic AI with IDP. In addition to providing a logical next step in the return of knowledge work to the mainstream focus of enterprise productivity, this integration is also important for practical reasons of product architecture and integration of complex systems. First, we explore the value

proposition of combining the power of these two technologies. We then explore a few examples of practical applications that are currently in use.

8.6.1. Synergies between AI and Document Processing

AI and Document Processing can certainly co-exist and enhance productivity. AI can be applied to various aspects of automation from intelligent decision-making to document understanding or verifying the right decisions are being made, or the right documents understood. Using Intelligent Document Processing, the quality, speed, accuracy, and volume of document understanding can be substantially automated. The document input can include lower-quality, hand-written trends and any document type with any input modality and tighter integration can also enable streaming, minimally-processed models – which speeds up the workflow and the ability to check the workflow regardless of which data extraction models you are executing.

Agentic AI for insurance use cases verifies the outputs of Deep Domain Document Models or Automated IDP Model Validation tools prior to decisioning and integrating data extraction with other workflows including document validation and matching. Client-side configurability allows ultimate flexibility across unique workflows including the ability to trigger different model processes or caching validation checks based on prior decisions, or other related or attached document information. Model management allows clients to manage data quality on-demand and share quality among all clients. Additionally, agentic AI workflows are entirely open. All models across the workflow are open to all clients and may be executed at any runtime. No black boxes. High quality decisioning workflows whenever it matters, for all parties.

8.6.2. Case Studies of Successful Integration

While Document Processing systems can use Document Processing Activities that are AI agnostic, a larger share of current Document Processing Activities now involves AI techniques. There is a rapidly growing demand for Integration Integrators who enable Business Process Improvements that combine multiple features, using multiple types of AI, Document Processing, and UI Automation. Some of the existing pure Document Processing systems may also be evolving to provide these Integration Capabilities.

Huatai Insurance has made several significant strides in advancing the use of AI-enhanced Automation solutions to improve both efficiency and customer satisfaction. In these projects, machine learning solutions like NLP Models and Image Classification Models were tightly integrated with core OCR technologies to automatically extract field data from various types of documents like flood claims, fire claims, and construction

certificates. The initial focus was automation based on Document Classification and Field Extraction technologies for Chinese Natural Language. Later the platform was extended to support claims in the English Language with features built on OCR capabilities. The platform now integrates Huatai's models that have been adapted for the specifics of those companies. The seamless integrations allowed for the processing of up to 80% of the inbound claims straight through without any manual input needed from the user, drastically improving the policyholder experience. Over time, the company has perfected the models through feedback loops to improve accuracy even further. Agentic AI was used behind the scenes in many of these projects.

8.7. Impact on Claims Processing

While the technology stack for document processing is generic, insurance claims processing has its own unique set of challenges, thus presenting further opportunities for innovation. The average claims life cycle lasts 48 days, during which insurers typically take about 15 to 20 minutes processing the claim. Automated document processing can significantly reduce the processing time from days to hours.

The Smart Review Assistant provides an intelligent interface for claims adjusters to view high volumes of claims more efficiently – for any vision or mission, light and dark mode preferences, on-screen layout to accommodate for eyesight and visibility needs, and saving preferences. The auto-filled documents help the adjuster focus on the most relevant parts of each claim while retaining the power of reviewing all content. Thus, the adjuster’s risk-assessment decisions are enhanced with speed and efficiency, but they also have the option of reviewing complete, accurate, and up-to-date documents prepared by the technology. In some cases, human review may not be necessary at all.

The pre-categorized claims manuscript, primary objects documented, highlighted claim events, relationships established with associated parties, and abundant insights generated contextualize each claim and serve as a starting point for the adjuster’s decision-making – enabling a data-driven prioritization of review, freeing them of administrative setup work, and enhancing the accuracy and efficiency of their final decisions.

8.7.1. Reducing Processing Time

In 2022, a total of $412.71 billion was paid out for insurance claims in the United States. The process a claim goes through before the amount is settled on, paid out, and the task is classified as closed can be quite complex. Multiple people are typically involved including the claimant, the insured, the agent, the adjuster, the claims examiner, etc. When exclusive agents and staff claim adjusters are used, the average cost per claim is

$2,168. This does not, however, factor additional associated expenses such as reports, rental and towing, loss of life, medical, and repair services which for personal automobile insurance alone could add an extra $7,319 to $14,058. It is important to trim down these costs as much as possible and with too many hands involved, the process can be severely delayed. Within any specific company, insurance claims processing time can take anywhere from 4 to 30 days based on several factors. However, if the aforementioned tasks can be expedited, it could decrease the cost and processing time significantly. If we take a look at direct company and independent agency statistics, we see that while 95% of claims submitted through independent agencies are paid out, 96% of claims submitted through direct insurance companies are paid out. That is an increase of 1% submitted through direct insurance companies but without the need for a human agent, intelligent AI can bring the processing time down to a matter of minutes or seconds instead of the days or hours a human adjuster would take.

This has much to do with how insurance agents process requests. For example, semantic segmentation of agents can greatly reduce the amount of time agents spend working with documents. For a typical request for services related to insurance, whether it's for direct or independent companies, there are various services that should be expected with it. These typically include a dissection of documents for policyholder information, specific observations, communication information, collaboration conversations, or specific forms to be filled in. Once those are processed and recognized for segmentation, specific procedures can be carried out in normal or automatic validation and checks regarding typical characteristics such as danger appeal, anomalies detected, additional costs on the application, or exceptional make-up of the specific request.

8.7.2. Enhancing Accuracy and Efficiency

The growing importance of accurate data extraction has helped the increased risk of fraud in the insurance sector. Data breaches are detrimental not only to the insurance companies but also to their insured customers, and thus there is demand for delivering a quick, efficient, and seamless onboarding and claims experience. Demanding regulatory requirements and scrutiny are forcing insurers to invest in advanced fraud detection and prevention capabilities, including sophisticated fraud detection models that leverage cloud computing and deep learning. The deployment of AI technology has helped improve the accuracy and efficiency of premium-class insurance services. Typically, both claims and underwriting processes involve hundreds of thousands of documents, and their tedious lengthy processes involve several rounds of human validation. Intelligent Document Processing with its focus on mind-to-machine communication can help in building a compliant and auditable workflow with end-to-end insight while improving speed, accuracy, and efficiency without compromising quality. An insurance

underwriting solution, powered with intelligent document processing capability, reads both structured and unstructured documents at scale, understands context, extracts relevant data fields, passes the extracted data for verification, and integrates the extracted and verified data with downstream processing workflows. With the event-driven intelligent document processing capability, both personal and business insurance policies can be processed in real time with prepopulated application and renewal forms, speeding up the time-to-quote while reducing errors and improving efficiency by at least 60 to 80 percent.

8.8. Conclusion

Insurance is a vital component of financial and risk management, making it essential that timely claims payments and insurance underwriting decisions are made accurately. Consequently, the insurance industry is rapidly adopting artificial intelligence and intelligent document processing technologies to increasingly augment human agents, making them "agentic", in the automation of both routine, mundane tasks and heuristic jobs. In this essay, we explored how insurance claims and underwriting processes are being streamlined through the implementation of agentic AI technologies, mainly focusing on ICR and document automation technologies. These agentic AI capabilities enable augmentation and automation across the insurance value chain, whether in support of agent-assisted services or in direct deployment to increase the speed and accuracy of backend processing, while also enabling the automation of formerly human-centric processes, such as handling customer inquiries, answering underwriters' questions about policies or coverage, or ensuring the correctness of amounts related to the payment of claims.

In 2023, the insurance industry began working toward the adoption of standards and best practices for the implementation of an ICR technology blueprint for agentic AI deployment. The goal of this behind-the-scenes standardization is to provide insurers with a comprehensive, proven, ready-to-deploy capability that they can update on the fly with new capabilities and languages. In the absence of realized ICR tech capabilities, insurance companies are increasingly realizing and implementing agentic assist, where latent agent augmentation functionalities are enabled in AI technologies already in play, such as machine learning, chatbots, and robotic process automation.

8.8.1. Future Trends

The use of AI, deep learning, big data, agentic virtual assistants, and intelligent document processing/conversational AI chatbots, when properly deployed, will improve customer experience close to what customers expect from the leading players. The insurance

industry has a long way to go. Most insurance industry digitization is focused on web-based business and servicing. Straight-through processing of low-complexity, simple auto and select property claims is operational and expanding.

Underwriting and adjudicating claims associated with more complex or selected higher risk and severity claims is where the exponential possibilities of AI, big data analysis, and technology integration, generally, are not only applicable but incredibly powerful. Insurers of the future will need to embrace the opportunity to integrate these capabilities to remain competitive. Digital native startups and other market entrants will put riskier books of business into the traditional CP and specialty lines businesses in the next couple of years, forcing them to differentiate themselves based on service and superior execution in a cycle where pricing and the quality of underwriting are not present in other players.

With that in mind, consider some of the major forward-looking emerging trends. Faster frequency and increased severity of the more catastrophic events and exposures will lead to a course correction with insured and uninsurable, from a property standpoint, areas. The question is how deep a course correction is. Cyber coverage will continue to expand from stand-alone coverage into attached and package coverages. It is not without risk of market penetration but will need risk management support.

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