

A Review on Artificial Intelligence in Property and Casualty Insurance

Sharan Kumar Paratala Rajagopal

Senior Manager, Capgemini America, Inc., Dallas, Texas, USA

ABSTRACT: Property and Casualty Insurance is a larger insurance that provides coverages to property (car, home), other structures and belongings during events of theft, accidents, vandalism or more. With the technological evolution P&C Insurance Carriers are continuously using emerging technologies to increase direct interaction with customers and striving to delivery consistent service at a lower cost. One such example is use of Machine learning and Artificial Intelligence in Property and Casualty domain which has led the way to numerous use cases such as fighting fraudulent claims, making rapid business decisions, predictive analytics, improve customer experience and much more. This paper showcases the applications and adoption of Artificial Intelligence tools in Property and Casualty Insurance industry. Important considerations for Artificial Intelligence use include benefits to Insurance Carriers,

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I. INTRODUCTION

The recent adoption of AI in Property and Casualty Insurance domain is due to the reason that these carriers are moving from traditional Mainframe applications and are rapidly adapting to emerging technologies. These emerging technologies have brought a digital disruption among the insurance carriers. Insurance carriers are leveraging these emerging technologies to improve and to develop innovative insurance products, build interaction with customers and improve customer experience. Looking at the past, the insurance carriers were heavily dependent on agents and brokers. While the middlemen in these industries are not going away, the insurance industry has a challenge to offer seamless experience across channels such as agents, brokers and customers. COVID-19 has also posed wide range of challenges for insurers to maintain their operations. The key is also to build great interaction and user experience directly with customers.

As per a recent report from a Big4, the top issues insurance industries facing today are

- Customer Experience,
- Driving change through insure tech example: Cloud, AI
- Improving customer experience with data analytics
- Build underwriting talent
- Risk management etc.[1]

Some of the advantages of AI:

- Can perform repetitive tasks and thus giving more time for humans to perform important tasks
- Executes complex tasks without significant cost outlays
- Operates 24/7 without any downtime
- Can be deployed across industries
- Faster and smarter decision-making capabilities
- Reduces human errors

The utilization of artificial intelligence will bring significant convenience to humans and to industries but may not be possible for such machines to completely replace the human resource. This paper provides a discussion on the adoption and application of AI tools in Property and Casualty Insurance industry, particularly in improving insurance services with faster claims settlement, fraud prevention, underwriting improvements, policy pricing, customer experience and coverage personalization.

II. APPLICATIONS AND ADOPTIONS OF AI IN PROPERTY AND CASUALTY INSURANCE

A. *Claim Process Automation /Faster Claims Settlements:*

Processing times to settle insurance claims depends on the insurer and the type of claim. Most of the States demand insurers to settle claims in 30 days but not all states have a specific time limit. Often the time taken in processing these claims can be frustrating and unfavourable for the claimant. Claim handling is mostly a manual process that relies on various factors such as adjusters individual experience and expertise in handling customer experiences and multiple vendors involved during the claim processing. Claims processing also involves multiple business rules that are difficult to execute. Insurance carriers are investing heavily in emerging technologies to bridge this gap to build an integrated end-to-end claims processing delivering seamless experience to the customers. Artificial Intelligence can bridge this gap and build automated workflows significantly reducing the claim processing times. A US-based specialty lines insurer is using an advanced AI engine to assign claims to the representative/adjuster best suited to handle the claim[2]. Intelligent claim assignments also bring down the claim processing times significantly. Insurance Carrier Lemonade's claims bot aka A.I. Jim reviewed a claimant's claim, cross-referenced it against the claimant's policy, ran 18 anti-fraud algorithms, approved the claim, send wiring instructions to bank for the transfer of claim settlement amount and informed the claimant of the claim status. While it would have taken days to process the claim, all in all these steps took just 3 seconds by the AI Bot which created a world record for settling the claim in just 3 seconds[3]. The abilities provided by AI has led the way for Insurance carriers to adopt to "Virtual Claims Handling" and "Touchless Claims Handling" for claim automation and to deliver faster claim settlements. Touchless claims are entirely automated. No human being gets involved at all from the insurer's end. "Technology is used to report the claim, capture damage or invoices, run a system audit and communicate with the customer electronically,"[4].

B. *Fighting Insurance Fraud*

Insurance fraud occurs when a claimant tries to gain a benefit that he/she is not entitled to or when an Insurance Carrier knowingly denies some benefit/coverage that the claimant is entitled to. According to the FBI, the total cost of insurance fraud (non-health insurance) is estimated to be more than \$40 billion per year. That means Insurance Fraud costs the average U.S. family between \$400 and \$700 per year in the form of increased premiums[5]. Fraudulent claims constitute a large chunk of claims received by insurance carriers and cost billions of dollars annually and fighting these fraudulent claims has been a biggest challenge Insurance carriers face. This has made Insurance carriers to lean on technological advancements like data analytics, predictive analytics to combat or minimise fraudulent claims. With AI, insurance carriers can detect insurance frauds automatically even before the claims are paid. Property and Casualty Insurance Carriers can increase fraud savings 5-6 times. AI techniques that are used to detect fraud include, Data Mining, Expert systems (rule based), Pattern Recognition, Machine learning techniques. Artificial Neural Networks (ANN) can also be used to detect fraud by independently generating classification, clustering, generalization and forecasting that can be compared against data created from internal audits [6]. The "Coalition Against Insurance Fraud" stated that insurers who "embrace the right mix of tools, staffing, training and technologies", will see "reduced claims costs, more accurate pricing, a competitive edge and lower premiums for policyholders." In their latest study on technology in insurance fraud detection [7].

C. *Improving Underwriting Process*

Insurance Underwriting is a process which Insurance Carriers use to determine risk and exposure of potential clients i.e. policy holders. Underwriting involves measuring risk exposure and determining the premium that needs to be charged to insure that risk. This process is carried by underwriters following the set of rules that the Insurance carrier has set. Underwriter typically follows the guidelines set by the Insurance company to determine if the company should accept the risk or not. Risk evaluation of an applicant of insurance will depend on various factors such as coverages involved, credit history, motor vehicle history or driving history (in case of automobiles) etc. Based on these factors, the underwriter typically accepts or declines the risk and may provide a quotation with limited exclusions on the policy. Typical timelines to underwrite a policy is around 7-10 days and can also take longer response times due to various factors during the underwriter decision making. AI tools can help underwriters manage the workloads and provide accurate decision-making capabilities; however human judgement of an underwriter may be difficult to replace.

D. *Policy Pricing:*

Policy Pricing is determining of rates/premium by the insurance carriers. Many factors help determine the cost of an insurance, for example of an automobile insurance, driving record, usage of car, location, age, gender, the car

you drive, vehicle history, driving history, etc. contribute for the cost of the insurance policy[8]. When customers shop around for insurance, they may find different premiums charged for the cost of their insurance with different insurance companies and save a lot of money on insurance premiums, just by finding a company that is more interested in "writing the risk" [9]. Policy Pricing is one of the challenge insurance carriers face, they must be competitive in pricing or be ready to accept to lose the customers directly impacting their revenues. AI can help insurance companies deliver better pricing models. AI-based pricing models deliver significant reductions in the time required to introduce new pricing frameworks and time-to-market can be condensed from months to weeks. Incorporating AI and big data in pricing enhances pricing models with non-traditional variables such as weather data. It also more accurately assesses personal risk through context and behaviour, and even includes predictive components such as economic and political indicators[10]. Insurance carriers can reap great benefits in revenues by introducing better pricing models that are delivered by the power of AI.

E.Improving Customer Experience and Coverage Personalization

With evolution of emerging technologies, customer experience has become an important factor in the Insurance Industry. Few years ago, insurance industry heavily relied on middlemen such as brokers/agents to get business from customers. With technological evolution, customers and millennials are leaning towards online platforms for buying and managing insurance policies. About 25 percent of people who shop for auto insurance in the United States, for example, buy online directly from the carrier[11]. 32% of the Property & Casualty personal lines insurance sales advice and quotes are provided through digital channels today [12]. 84% of insurance organizations implementing or planning AI engagements cite improved customer satisfaction as a primary objective. [13]. Insurance carriers are challenged with establishing successful relationship and effective connection between insurers, agents and customers. Customer experience needs to be met and exceeded during each lifecycle of the policy, claims and billing. There are numerous ways AI can help Property & Casualty Insurance carriers to deliver great customer experience and build amazing interaction and engagement between the insurers and customers. AI can help Insurance Carriers build Personalized marketing to target customers to buy insurance policies, this is usually done by utilizing customer data, analytical tools and marketing tools built on AI. Similarly, personalization can be done with Coverages, mainly when the customer is choosing coverages during a policy quote. Insurance carriers can build targeted coverages tailored to their needs based on the customers historical data. Insurance Carriers can use AI chatbots during this process to educate the customer as well as provide custom targeted coverages, these AI chatbots also have capabilities to answer questions or doubts the customer has choosing coverages. AI can help insurers with increased customer satisfaction and customer retention and with increased trust and transparency between insurance carriers/customers and leading to better revenues to the insurance carriers.

III. CONCLUSION

Property and Casualty insurance industry is significantly adoption emerging technologies including Artificial Intelligence. The adoption of Artificial Intelligence has leaped great benefits to the insurance carriers, agents and customers. This paper provides how adoption of Artificial Intelligence tools by P&C carriers has achieved better transparency between insurance carriers/customers, underwriting improvements, fraud prevention leading to better revenues to the insurance carriers.

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