WHITEPAPER

PERSISTENT

DIGITAL TRANSFORMATION

The role of data in insurance industry

#DigitalTransformation
#DataAnalytics
#BusinessAcumen
#IntelligentAutomation
#OperationalEfficieny
#DataLakes
#LossRatio
#CombinedRatio
#CustomerCentricity
#MarketingMixModeling

Executive Summary

Potential Threat to Insurers

Profitability in insurance industry is under pressure due to low interest rates, lack of growth opportunities, rising operational expenses and increased competition from new InsurTech entrants. Incumbent insurers are facing a challenge in acquiring and retaining the most profitable customers. Born-digital InsurTech providers are disrupting the industry by offering exceptional customer experience with highly cost-effective operating models. Consequently, in order to stay competitive, incumbent insurers will need to become more customer-centric and agile by embracing digital transformation.

The need to continually grow and evolve

In order to create excellent digital experiences, insurers must unlock the tremendous business value hidden in their underlying claims and policy data. Traditionally, companies have treated IT as a cost center and as with all cost centers senior management are given incentives to keep costs under control. However, in the age of digital economy, well designed investment strategy in data management and data-driven decision making could potentially become an organization's strategic advantage. Having said that, poor data management and governance can adversely affect their aspiration to become digitally competitive.

Data to the Rescue

Given the lack of structured relevant information, business managers struggle to make strategic decisions under conditions of risk and uncertainty. To mitigate risks during decision making, organizations typically depend heavily on business intelligence generated from data warehouses for making key management decisions. Although data warehouses store large amount of data from a wide range of sources, some data sources were traditionally excluded to keep costs under control. However in the last decade, the data storage capacity has increased, while the costs have declined. Similarly, availability of on demand computing power has grown exponentially while the affordability has increased. With declining computing and data storage costs, organizations can now afford to store all data in near native format in data lakes. With the right approach, digital organizations are increasingly using data-driven insights to solve complex multidimensional problems. For example organizations can now optimize their return on investments on advertising by using the correct marketing mix modeling techniques.

Organizations will have two main advantages of storing raw structured and unstructured data in one repository;

- It will enable business analysts to improve the quality of existing reports, views and data models
- It will enable data scientists to generate highly accurate predictive and actionable insights from new data sources

Insurance – Operating Expenses

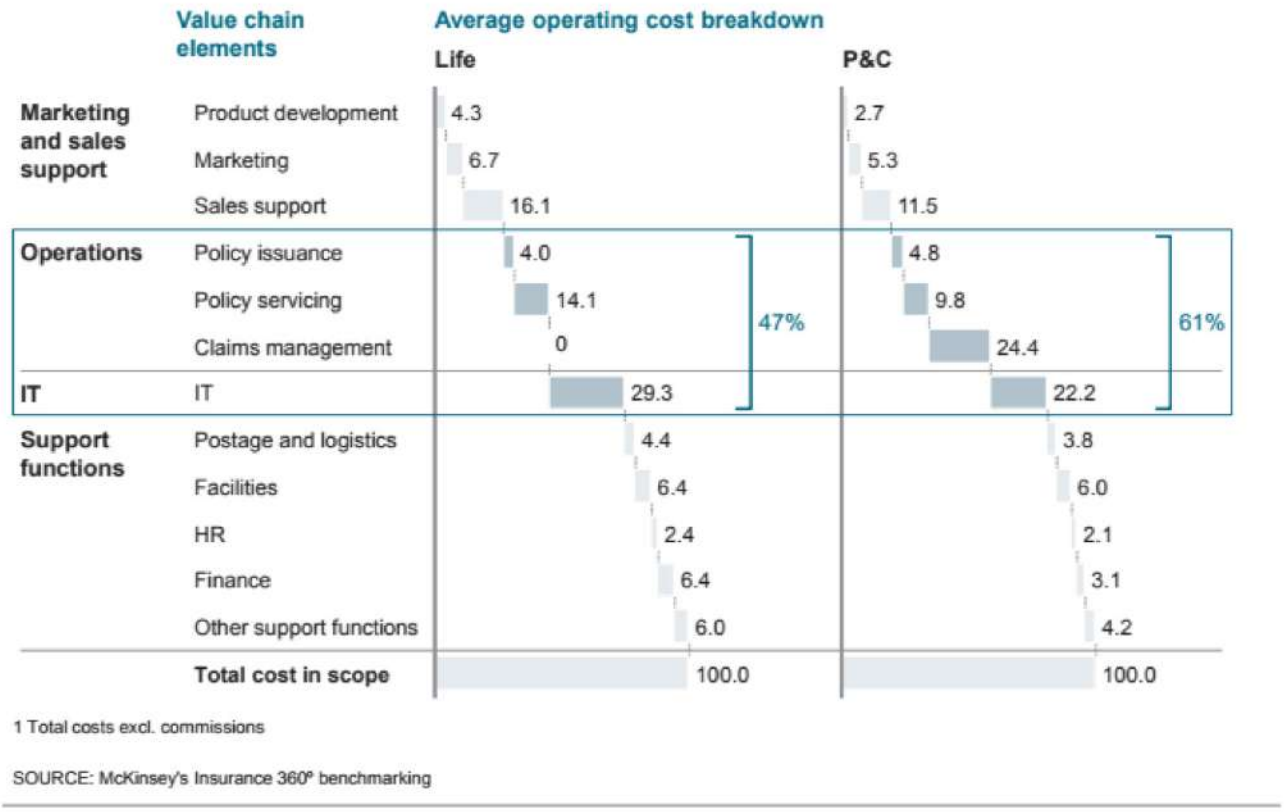
Ideally, insurers should be able to reduce cost per policy as they sign more policies – with increasing economies of scale. On the contrary, the operational expenses are rising disproportionately in comparison to the increase in revenue.

Operational efficiency of insurance companies can be calculated using Operating ratio (operational expenses divided by total revenues). Looking at the operating ratio for top insurance companies, we would notice either stagnancy or increase in operating ratio which is causing a strain on profitability.

Digitally mature organizations are now leveraging intelligent business automation to reign in their operational costs while continuously improving the value they offer.

Exhibit – Major Cost Drivers

If we were to breakdown the operating expenses from an income statement of a typical insurer, the major cost drivers will be – claims management, policy management and fraud detection and ever increasing IT costs. As per a report by McKinsey, operations and IT account together for around 50% of typical insurers cost base.

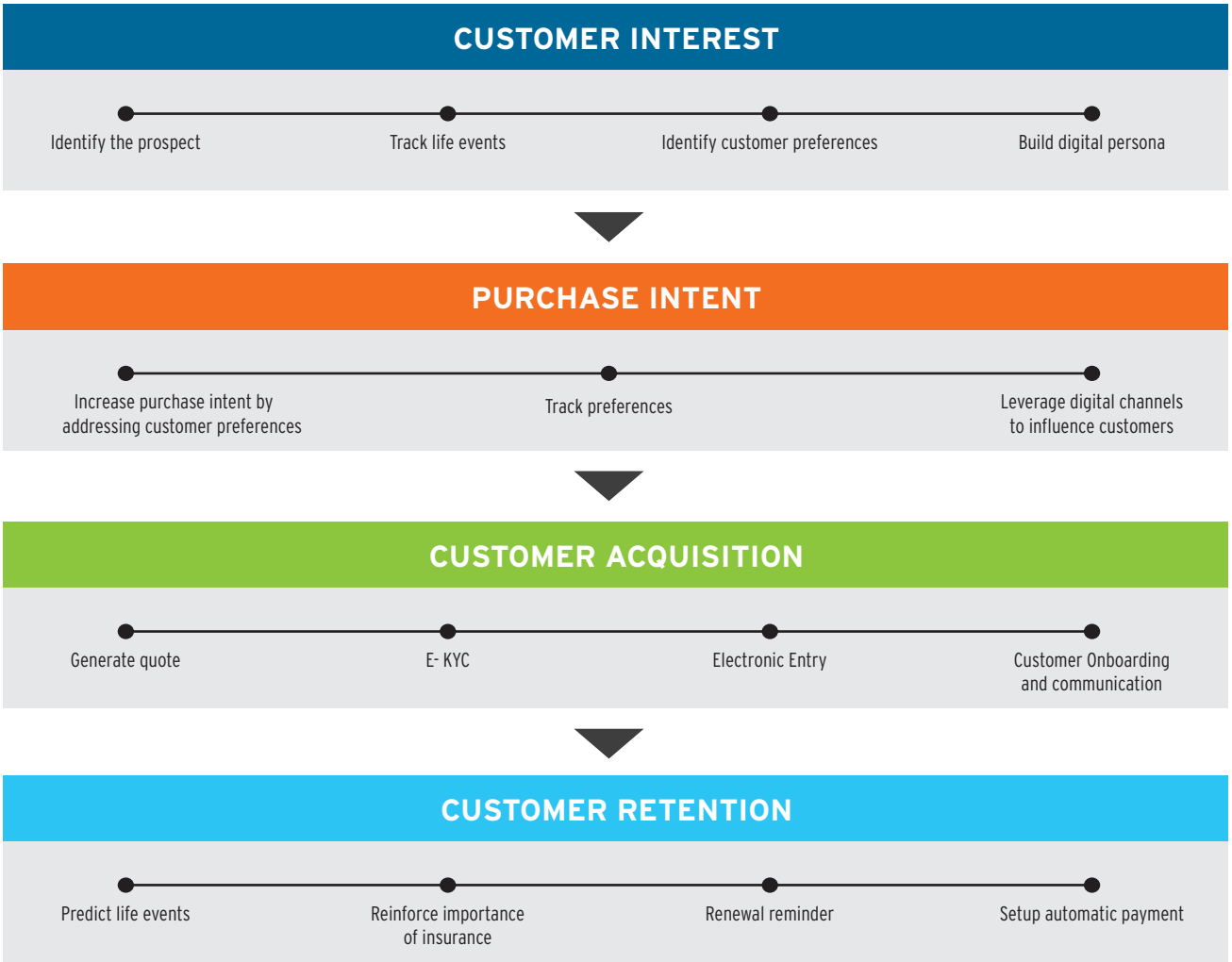


1 Total costs excl. commissions

SOURCE: McKinsey's Insurance 360° benchmarking

Focus on Data Analysis to Build Customer Journey Map

- Customers are increasingly using digital channels to purchase insurance products. As per a report by BCG and Google, three in every four insurance policies sold by 2020 would be influenced by digital channels during either the pre-purchase stage, actual purchase or renewal stages. A Bain survey also projected that insurance sales from digital channels as a percentage of total sales will continue to grow in the next 3 to 5 years
- Although leading insurers now have a strong online presence, understanding every aspect of customer journey and buying behavior will be the key factor in closing sales
- However, the sheer magnitude of digital transformation program and managing the complexity can cause skepticism in most organizations.
- Existing legacy systems handling customer, claims management and policy administration data across the organization can be leveraged to offer exceptional customer experience. So, digital transformation does not necessarily entail overhaul of core insurance systems. Similarly, real time customer insights can be generated by integrating customer data from various internal and external sources without causing a change to legacy systems
- Generating real time customer analytics can help insurers in creating a digital persona of the prospect and suggest products with high purchase probability



The problem that insurance companies face during customer acquisition –

“Who is my customer?”

The problem that customer face while making a policy purchase decision -

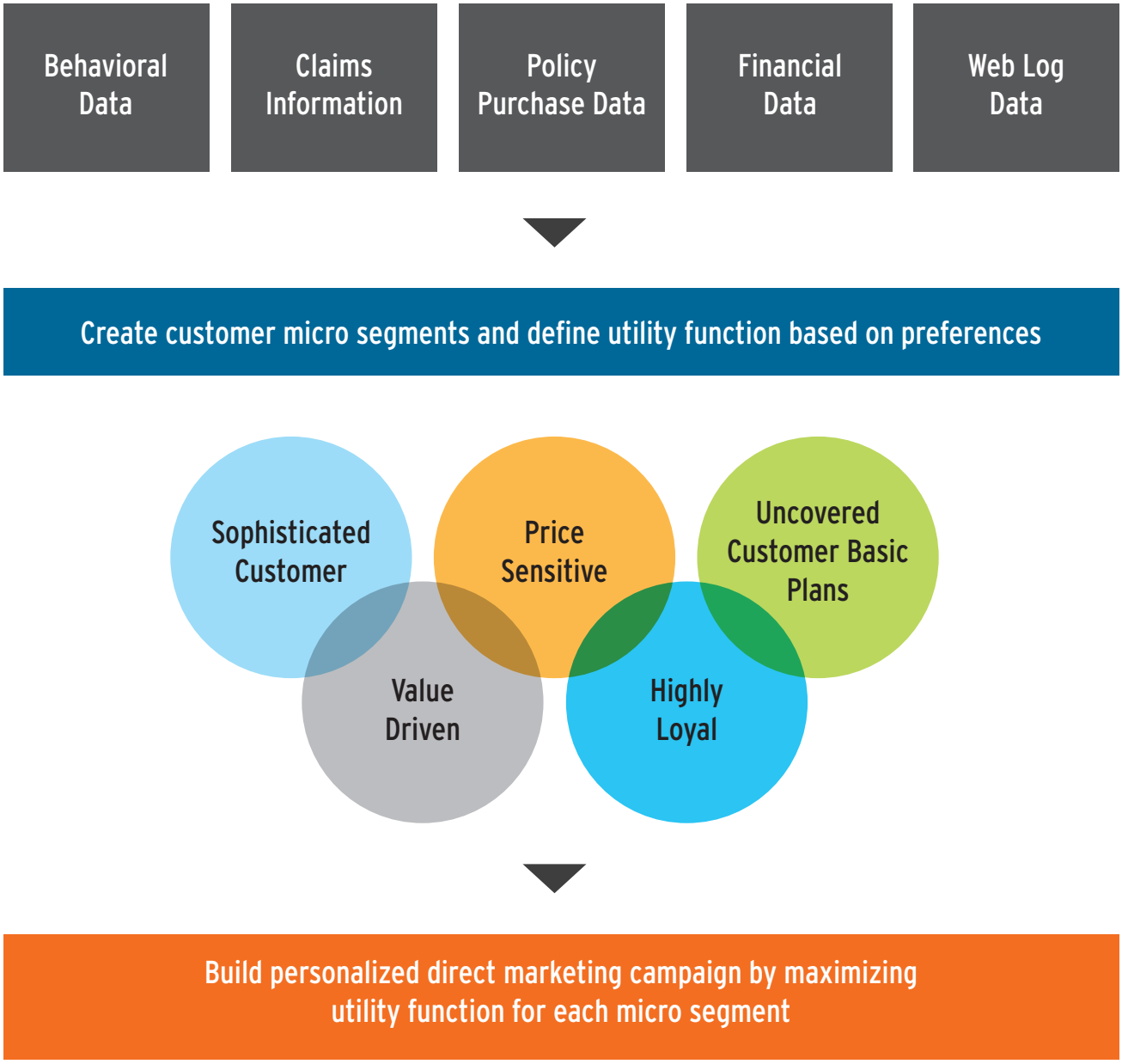
“How should I spend my money in order to maximize my utility?”

1. Improved Customer Segmentation

Every customer is unique and has a unique set of preferences. Thus, understanding the customers' preferences and building a digital persona is of vital importance to insurers. Building a complete set of customer preferences by integrating data from external sources such as financial information, credit score, social media and customers' purchase behavior can vastly improve customer segmentation and increase return on marketing investment. Each potential customer tries to minimize risk by adding riders and maximizing overall utility (low-cost policies with high coverage) by comparing policies across various online portals before making a purchase decision.

Thus, aggregating data from various sources and creating data lakes in order to unleash data analyses tools can provide multitude of benefits to insurance companies. Furthermore, the actions that need to be taken on the aggregated data can be automated based on certain business rules. For example, improving the accuracy of their fraud detection model by even one percentage point can help insurance companies save millions of dollars. Let's look at the benefits;

Given that customers are increasingly evaluating their purchase decisions on digital channels, insurers need to reevaluate their customer engagement strategy.



2. Optimized Claims Management Systems

With automated decision-making becoming more prevalent, claims management will become more efficient and reduce operational expenses by a huge margin. Additionally, self-learning claims processing system will improve customer experience by expediting the process and notifying customer at every stage from input to settlement.

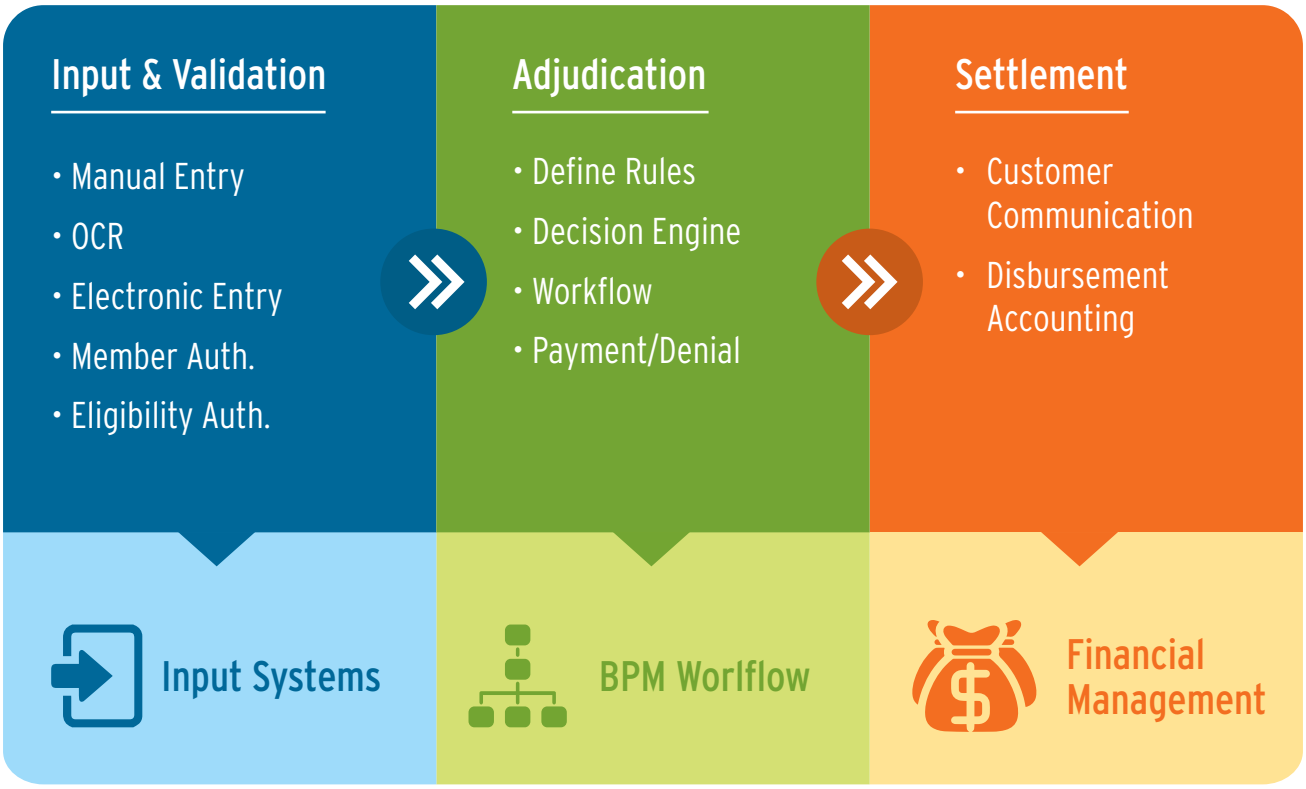
Three ways artificial intelligence and predictive analytics improves claims managements;

- **Automate low-value claims processing**

Predictive analytics and self-learning AI technology can identify low value claims with excellent accuracy. Custom rules can be defined in the claims management workflow to fast-track low dollar claims and settle them automatically. Robotic process automation (RPA) tools and low code BPM platforms provide flexibility to modify the rules and enable rapid deployment.

- **Plug claims leakage**

All insurers face the perennial challenge of claims leakage which results in a direct hit to the bottom line. In an ideal scenario, insurance companies should be able to categorize similar claims and minimize the variance in payments for such claims. However in real world scenario, inconsistencies in payments creep in as a result of complex rules in claims adjudication process left to human interpretation. Another challenge in resolving the payment inconsistencies is in connecting disparate sources of claims processing data. The most efficient approach to overcome claims leakage is to connect all claims related data sources in the organization and group the claims into clusters so that claims within each cluster are similar. An indicative settlement payment will also be associated with each cluster. A new claim that is entered in the system will be categorized into one of the cluster by the claims management workflow. The indicative settlement prices should be within 5 percent variance of any group. Any exceptions will be red flagged and handled by an assessor manually.

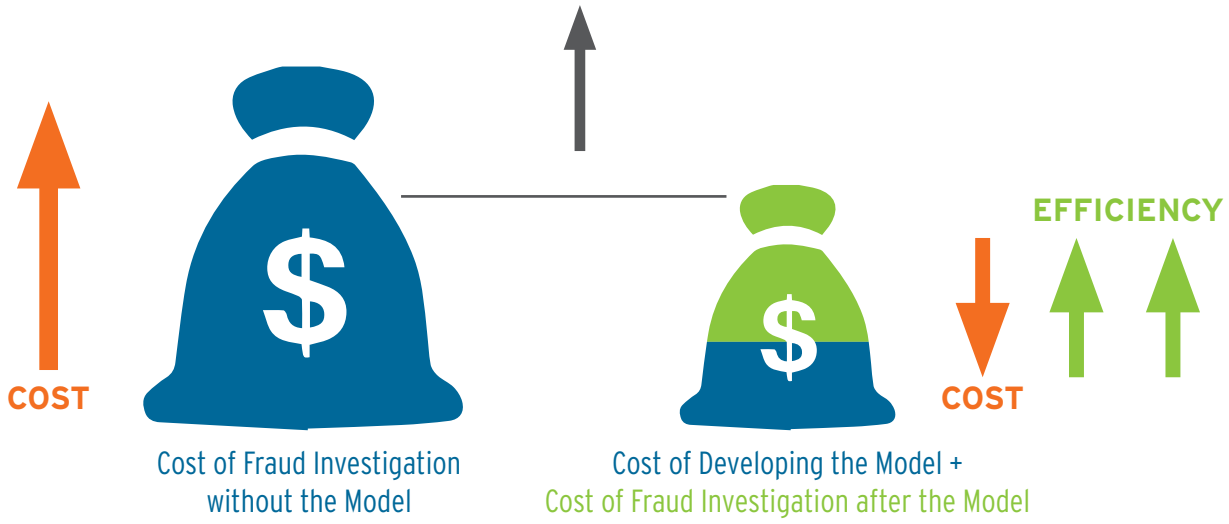


3. Improve Fraud Detection Accuracy

Reactive fraud detection can cause a drag on carriers' profitability and steep rise in loss ratio. Every year, insurance companies spend significant resources on investigation and recovery of fraudulent claims. Additionally, an average policyholder has to bear the costs of fraudulent claims in terms of higher premiums, in order to cover for cost of fraud. Developing a predictive model with greater accuracy can help insurance companies move from reactive to proactive fraud detection.

Fraudulent claims affect the insurance economy in the following ways;

- Higher premiums for individuals as the cost of fraud is factored in the pricing of the policy
- Every dollar spent on investigation and recovery of fraudulent claim impacts the profitability of the company
- Loss of interest on investment income while the claim is being investigated



Cost Savings = (Cost of Fraud Investigation without the Model) – (Cost of Developing the Model + Cost of Fraud Investigation after the Model)

For the model to be effective, the cost of investigation of claims red-flagged by the predictive model should be less than the sum of the cost of development of model and investigation and recovery of all fraudulent claims without the model.

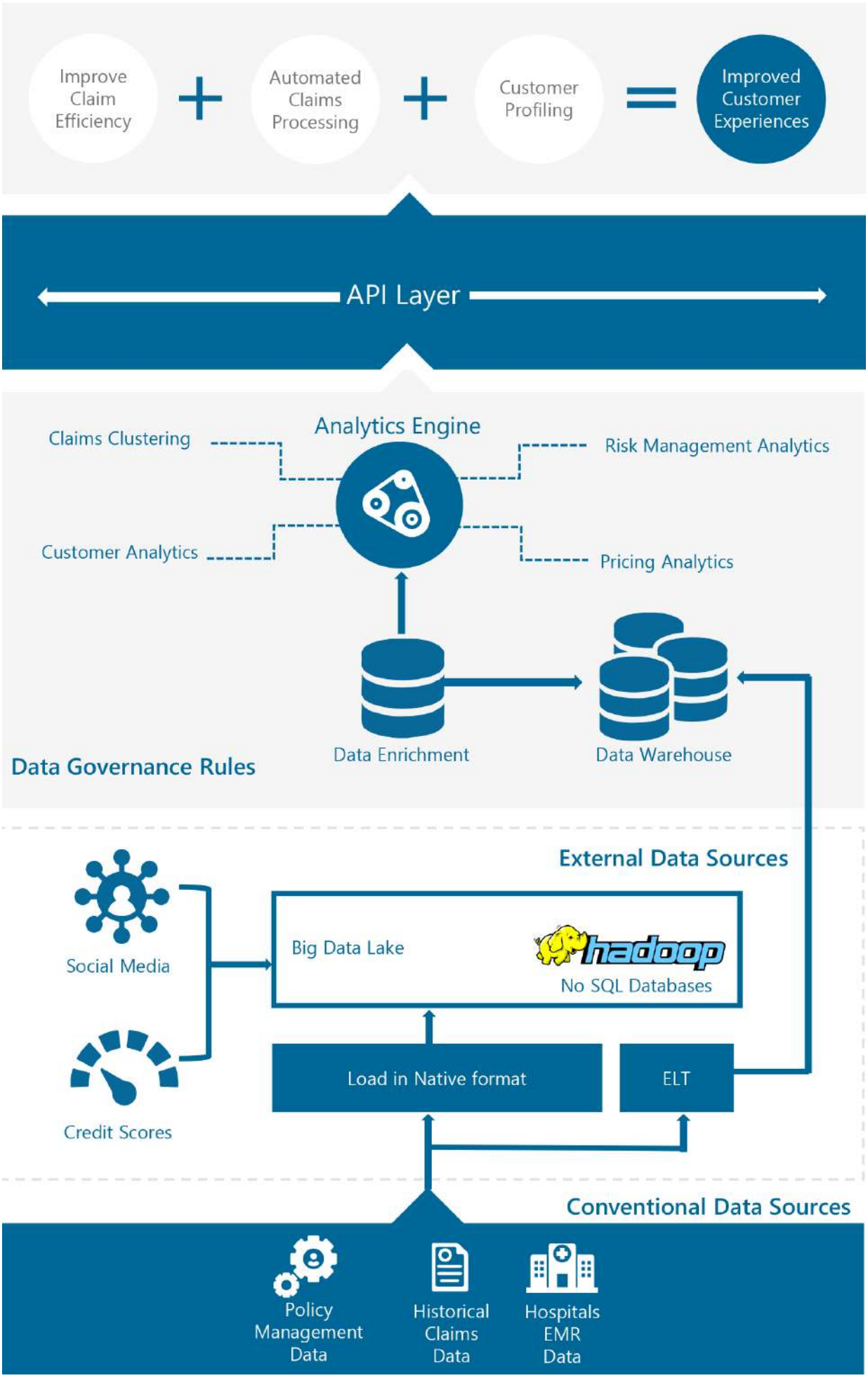
Effective data management holds the key to developing a framework that can help with early detection of fraudulent claims.

Although insurers will have existing mechanisms of identifying claims that have high likelihood of being fraudulent. However, effective integration of third party data sources can add additional independent variables that could improve the accuracy of prediction. With improved accuracy of prediction, P&C insurers can save millions of dollars if they detect even only a few fraudulent claims in advance.

The accuracy of the model can be verified by running the model on the historical claims data and finding out the probability of actual fraudulent claims. Based on the results, a threshold should be defined above which claims should be red flagged for further investigation. The model should be put into practice if it can provide prediction with higher accuracy than the existing method that is in use.

Summary

Persistent believes that effectively leveraging data insights generated from a single, centrally governed data lake will drive future business growth for insurers. Additionally, the same data will be used to drive strategic cost reduction by increasing productivity through robotic process automation (RPA) and by deploying intelligent systems for low level decision making. Additionally, leveraging predictive customer analytics for proactive risk identification will lead to decrease in claims and loss ratio for insurers and help improve profitability.



A Case in Point

Client is a leading title insurance and settlement service provider. Persistent's solution reduced the underwriting risk for the insurance provider

Background

- Store master data, transactions, interaction, external provider's data to guarantee accuracy of property titles
- Audit all changes to property data, visualize lineage
- Provide search, notification, batch reporting, analytics and data science services

Solution

- Defined deployment architecture based on Cloudera Hadoop and Azure
- Defined the data architecture based on HDFS and Hive
- Implement data ingestion and daily update processing through Impala ETL
- Ad-hoc querying with Hive QL
- Security, audit and lineage for the data through Coudera Navigator

Benefits

- Single integrated Data Platform for all analytics need
- Established methods for ingesting and managed data
- Ability to collect and store additional data for more accurate analysis

Why Data Lake

Collect Everything:
Ability to store raw data over extended periods of time as well as any processed data

Dive in Anywhere:
Enable business units across the board to refine, explore, and enrich data on their terms

Flexible Access:
Generate diverse data patterns and enable access across a shared data lake

Technology Employed

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About Persistent Systems

Persistent Systems (BSE & NSE: PERSISTENT) builds software that drives our customers' business; enterprises and software product companies with software at the core of their digital transformation. For more information, please visit: www.persistent.com

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