



THE CHINESE UNIVERSITY OF HONG KONG, SHENZHEN

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FIN3210 Fintech Theory and Practice

# PROJECT 3 INSURTECH

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## 1.1 Opportunities

As the economy transitions into a stage of high-quality development and undergoes policy corrections, domestic insurance companies are moving beyond scale expansion. They are now focused on value mining, transitioning from homogenous product sales and price competition towards differentiation and specialization. Large-scale insurance companies are evolving into comprehensive, industrial chain entities with one-stop services, creating their own ecosystems and traffic portals. Conversely, small and medium-sized insurance companies are concentrating on customer segmentation and specific fields.

The need for risk protection is intricately linked to social security systems. The United Nations forecasts a demand surge exceeding 25% by 2030. Presently, residents heavily rely on social security for pensions, with commercial pensions, the third pillar, being underdeveloped. This underscores a substantial demand for pension finance within the third pillar.

Asset allocation demand is influenced by economic growth and residents' wealth. The burgeoning middle-income groups in China, coupled with a robust demand for wealth management and allocation, position insurance to play a pivotal role. The desire for enhanced financial services stems from residents' aspirations for an improved quality of life. For instance, heightened health awareness among residents is expected to propel rapid development in the insurance and health service model.

The surge in financial technology, marked by artificial intelligence, cloud computing, big data, and blockchain, has seamlessly integrated with the insurance business. Insurance technology has permeated product design, sales, insurance, underwriting, and claims settlement.

**Data Analytics and AI:** The insurance industry generates massive amounts of data. Utilizing advanced analytics and artificial intelligence (AI) can help insurers in risk assessment, fraud

detection, and customer personalization.

**Digital Platforms:** Insurtech startups are leveraging digital platforms to offer more user-friendly, efficient, and transparent services. These platforms often provide customers with the ability to purchase policies, submit claims, and interact with insurers online.

**Automation:** Electronic insurance policies and automated underwriting applications reduce costs and enhance efficiency.

## **1.2 “Pain Points”**

### **1.2.1 Inefficient Processes**

In traditional insurance companies, crucial processes like underwriting and claims processing often hinge on laborious manual operations. This not only drastically curtails work efficiency but also heightens the likelihood of operational errors. For instance, manual data entry is not just time-intensive; it's also error-prone, leading to data inconsistencies and a diminished customer experience. Moreover, such inefficient methodologies necessitate a disproportionate allocation of human resources, adversely impacting the progress in other business areas. However, this issue can be mitigated if insurance companies implement automation and artificial intelligence technologies to refine their processes. Utilizing machine learning algorithms to automate claim processing, for instance, can minimize human intervention while enhancing processing speed and accuracy. According to a McKinsey report, manual pricing and underwriting for most personal and small business products are anticipated to be obsolete by 2030 across life, property, and casualty (P&C) insurance sectors.

### **1.2.2. Insufficient Customer Service**

In today's digital era, customers' expectations for service quality are escalating, yet traditional insurance firms frequently lag in offering rapid, personalized services. Customers often

encounter extended wait times and generic responses during consultations or claims, a stark contrast to their expectations of prompt, tailored service. This gap can be bridged by deploying AI-driven chatbots for round-the-clock service, enabling swift responses to inquiries and resolution of straightforward issues. Additionally, analyzing customers' historical data and behavioral patterns allows for the customization of product and service suggestions, aligning more closely with individual needs.

### **1.2.3. Inadequate Fraud Detection**

Complex fraud schemes, involving falsified documents or obscured behavioral patterns, are often beyond the reach of traditional detection methods. However, embracing advanced data analytics and pattern recognition technologies can substantially fortify fraud prevention efforts. Cutting-edge analytical tools, such as deep learning, are instrumental in identifying intricate fraud schemes, thereby elevating detection precision. Establishing real-time monitoring systems aids insurers in rapidly pinpointing and addressing fraudulent activities, curtailing fraud-induced losses.

## **2. Insurtech's Influence on Insurance**

### **2.1 Machine Learning**

**Underwriting:** Traditionally reliant on historical data and manual assessments, underwriting has evolved with machine learning. Algorithms now analyze broad datasets, including non-traditional sources, to provide rapid, accurate risk assessments. For example, Lemonade uses AI to accelerate policy approvals and improve risk evaluation accuracy, diverging from conventional methods by deeply analyzing personal and risk data.

**Sales and Distribution:** Machine learning also revolutionizes sales and distribution, allowing insurers to tailor products to individual customer needs. This personalization enhances customer satisfaction and loyalty. Oscar Health, an American health insurance company, exemplifies this

by using machine learning to create personalized health insurance plans, making the selection process more relevant and straightforward for customers.

**Administration:** On the administrative front, machine learning has brought about significant efficiencies. Tasks that were once labor-intensive, such as policy management, customer service, and compliance checks, have been transformed. Through automation and AI-driven processes, these tasks are now executed with greater speed and accuracy. Real-life example: Metromile, a car insurance company, uses machine learning to streamline its policy management. Their AI system efficiently manages routine tasks like updating personal details and renewing policies, allowing the human workforce to focus on more complex challenges.

**Claims Processing:** Finally, machine learning significantly improves claims processing. AI rapidly analyzes, validates, and detects fraud in claims, speeding up processing and reducing manual effort and error. Zurich Insurance's adoption of machine learning for claims processing exemplifies this advancement, where AI's fast assessment and fraud detection capabilities enhance efficiency and accuracy.

## **2.2 Alternative data**

**Underwriting:** The insurance industry experiences a continuous flow of information from risk selection to underwriting and claims management. Integrating alternative data transforms processes, offering opportunities to complement proprietary information and enhance decision-making. Real-life example: Lemonade exemplifies the underwriting impact of alternative data. Gathering data on a scale 100 times larger than traditional methods. The consistent, high-volume data from websites scales up the underwriting process.

**Sales and Distribution:** Alternative data's contribution extends to creating value-added services, providing customers with personalized experiences and fostering profitable growth. Real-life example: John Hancock's Aspire program in the United States exemplifies alternative

data use. This wellness initiative, aiding individuals with diabetes, employs wearables data for coaching, clinical support, education, and rewards for healthy behavior.

**Administration:** Integrating alternative data into business operations poses challenges like database creation and reliance on AI or machine-learning technology. Real-life example: Insurers like Geico leverage alternative data for administering policy discounts. Through the analysis of data from smart home devices, insurers offer discounts to policyholders embracing IoT technology for enhanced home safety and efficiency. This aligns alternative data with evolving consumer behaviors and encourages the adoption of risk-reducing technologies.

**Claims Processing:** Claims processing traditionally relies on accurate and timely information to assess damages and determine payouts. Alternative data, enhances the speed and accuracy of claims assessments. Real-life Example: Farmers Insurance leverages alternative data from satellite imagery and weather stations to expedite claims processing after natural disasters.

## 2.3 IoT Devices

**Underwriting:** Traditional underwriting heavily depends on historical data, but IoT is revolutionizing this process. Real-time Example: Homes with IoT support can preemptively identify potential threats. Integrating IoT into risk assessment enables Hippo to offer elevated insurance rates and dramatically accelerate the evaluation of home risks, delivering faster insurance quotes to customers.

**Selling:** This strategy disrupts the traditional home insurance market, attracting those seeking enhanced home security. Real-life Example: The bundled sales model attracts individuals interested in improving home security. This not only challenges the traditional compensation-after-incident model but also contributes to Hippo's growth and expansion in the market.

**Administration:** Administration in the IoT era involves monitoring real-time data through dedicated processing centers. Real-life Example: Smart sensors installed in homes allow Hippo

to identify hazards like smoke or leakage in real time. Timely reminders reduce the likelihood of catastrophic disasters, minimizing the need for compensation payouts.

**Claims Processing:** Claims processing, benefits significantly from IoT technology. Real-life Example: IoT proves crucial in fraud prevention by assessing house structures through sensors. Rapid notifications about safety hazards prompt timely owner responses.

### **3.1 Insurtech trends and applications affecting insurance sector's value chain**

The Insurtech landscape was rapidly evolving, and several trends and applications were impacting different parts of the insurance sector's value chain. However, keep in mind that the industry is dynamic, and new developments may have occurred since then. Here are some general trends and applications affecting each part of the insurance sector's value chain:

#### **3.1.1 Underwriting**

**Data Analytics and AI:** Insurtech companies leverage advanced analytics and artificial intelligence to analyze vast amounts of data quickly. This aids in more accurate risk assessment and pricing models.

**Telematics:** The use of telematics devices and data from connected devices (such as IoT devices in cars) helps insurers better understand and price risks based on actual behavior.

#### **3.1.2 Selling**

**Digital Distribution Channels:** Insurtech firms often employ digital platforms and online channels for selling insurance products, making it more convenient for customers to research, compare, and purchase policies.

**Personalization:** Utilizing customer data, including preferences and behaviors, helps in creating personalized insurance products and experiences.

#### **3.1.3 Administration**

**Blockchain Technology:** Blockchain can streamline administrative processes by enhancing data security, reducing fraud, and improving transparency in transactions.

**Automation and Robotics:** Robotic Process Automation (RPA) is used to automate routine administrative tasks, reducing processing times and operational costs.

### **3.1.4 Claims Processing**

**Insurtech Apps:** Mobile apps and online platforms facilitate faster and more efficient claims processing. Users can submit claims, provide documentation, and track the status of their claims through digital interfaces.

**Artificial Intelligence in Claims Assessment:** AI algorithms can assess claims more quickly and accurately by analyzing data and images to determine the extent of damage or loss.

### **3.1.5 Risk Management**

**IoT and Wearables:** Connected devices like wearables and IoT sensors help in monitoring and managing risks in real-time, leading to more proactive risk mitigation strategies.

**Predictive Analytics:** Insurers use predictive modeling to identify potential risks and trends, enabling them to make informed decisions about coverage and pricing.

InsurTech continues to evolve, and the adoption of these trends varies across different regions and segments of the insurance industry. Stay updated with the latest developments to understand how InsurTech is shaping the insurance sector's value chain.

## **3.2. Challenges Confronting Startups and How they Affect the Development of Insurtech**

### **3.2.1 Capital Challenges**

The insurtech industry is facing several capital challenges that affect its development. One of the main challenges is the high cost. Startups need to invest significant amounts of capital in technology infrastructure, data analytics, and digital capabilities to stay competitive. However,



startups may not have the necessary funds or expertise to make these investments.

Another capital challenge is the difficulty in obtaining venture capital funding. VCs often prefer to invest in companies with a large market opportunity and a clear path to profitability. However, Insurtech startups may be too early-stage or too risky for VCs to invest in. As a result, many insurtech companies are turning to other sources of capital, such as seed funds, angel investors, and crowdfunding platforms.

The capital challenges facing insurtech startups also affect their ability to attract and retain top talent. Insurance technology is a highly complex field that requires expertise in areas such as data science, artificial intelligence, and software development. Startups often need to offer competitive salaries and perks to attract top talent, but this can be difficult when funds are limited.

### **3.2.2 Regulatory Challenges**

**Compliance:** The InsurTech industry is undergoing a gradual increase in regulatory oversight, necessitating startups to navigate a complex regulatory landscape to ensure adherence. For those operating across multiple markets, there is an added complexity of complying with diverse regulations in different regions. In the United States, the Federal Office of Insurance issued the "Report on Insurance Consumer Protection and Access to Insurance". In China, 《关于进一步规范保险机构互联网人身保险业务有关事项的通知》 was issued that stipulated specific requirements for companies to sell long-term life insurance products online. Presently, only 22 insurance companies meet these requirements, forcing many small and medium-sized enterprises to shift to offline sales, intensifying competition within the industry. The stringent regulations have elevated entry barriers, limiting the number of startups and potentially decelerating industry growth.

**Licensing and Consumer Protection:** Securing the necessary permits and authorizations from regulatory bodies is a time-intensive process for startups. In addition to compliance, startups must prioritize customer rights and transparency in the design of their products and services. The high costs associated with regulatory compliance compel startups to allocate significant resources to legal, technical, and other related aspects. This regulatory environment underscores the need for startups to invest in robust legal frameworks and consumer-centric practices to build trust and ensure long-term viability in the competitive landscape.

### **3.2.3 Data Challenges**

**Data Quality and Integration:** InsurTech's heavy reliance on data necessitates significant investment by startups in data management to prevent errors that could compromise the reliability of their services. The scarcity of historical samples for InsurTech startups adds to the challenge, particularly for AI algorithms. Achieving seamless data integration is further complicated by the often incomplete closed-loop data available to these startups.

**Data Privacy and Security:** Startups must adhere to regulations and ethical standards governing the collection, storage, and utilization of personal and sensitive data. Investing in cybersecurity measures, aligned with regulations such as GDPR in Europe, is crucial to safeguard customer privacy. Given the low level of trust customers have in InsurTech startups, there is a pressing need for more secure systems to establish and maintain trust.

## **3.3 Reasons Why BigTech Firms Have Been Less Engaged in Insurance**

### **3.3.1 Regulatory Requirements**

**Compliance Burden:** The heavily regulated nature of the insurance industry poses a significant barrier for BigTech firms. Navigating diverse and stringent regulations across regions requires substantial time and resources. Diverse and stringent regulations across

jurisdictions create a significant compliance burden. BigTech companies, not accustomed to the intricacies of insurance regulations, may find it challenging to manage the complex set of rules, standards, and reporting requirements imposed on insurers.

**Partnerships:** A prevalent approach for BigTech firms to navigate regulatory requirements in the insurance sector is through strategic partnerships with established insurance companies. Although this is the current norm, there is a risk of these partnerships being exploited as a means to bypass regulations.

### **3.3.2 Risk Management Challenges**

The intricate risk management procedures within the insurance sector, deeply rooted in actuarial science, pose a formidable obstacle for BigTech companies whose core competency lies in navigating data and technology-related risks. In contrast, BigTech firms are often adept at handling more immediate and technology-centric risks, such as cybersecurity threats or data privacy concerns.

### **3.3.3 Capital Intensity**

Insurance operations typically require substantial capital reserves to cover potential claims and meet regulatory standards. BigTech companies, if not prepared for the capital-intensive nature of the insurance business, may find it challenging to maintain optimal profitability while meeting the financial requirements imposed by regulatory bodies.

**Reference:**

Erk, A., Patiath, P., Pedde, J., & Ouwerkerk, J. V. (2020, October 8). *Insurance Productivity*

*2030: Reimagining the Insurer for the Future*. McKinsey & Company.

<https://www.mckinsey.com/industries/financial-services/our-insights/insurance-productivity-2030-reimagining-the-insurer-for-the-future>