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THE ROLE OF THE INTERNET OF THINGS IN DIGITAL TRANSFORMATION OF THE INSURANCE INDUSTRY IN VIETNAM

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Abstract

The world is entering the era of the Internet of Things (IoT), marked by the emergence of smart devices and smart homes. IoT refers to a network of interconnected objects and devices equipped with sensors, software, and other technologies, enabling them to collect and exchange data. This technology extends the benefits of the internet to all connected objects, not just computers. Once connected, objects become "smart" through their ability to send, receive, and act autonomously based on the data they process. IoT devices may include objects equipped with sensors to gather environmental data, computing units/controllers to process data and issue commands, or objects integrating both functions. This article examines the role of IoT in creating value for insurance companies.

Keywords: *Internet of Things; Insurance; Digital Transformation*

1. Introduction

Internet of Things (IoT) presents the insurance industry with transformative and groundbreaking potential. Today, IoT-enabled devices are ubiquitous, generating vast amounts of diverse data. This immense data volume offers insurance companies significant business opportunities in three key areas: customer relationships, data-driven insights, and personalization. The business prospects enabled by IoT revolve around three core factors: customer relationships (fostering direct, intermediary-free interactions and establishing partnerships), data insights (enhancing risk modeling and gaining a deeper understanding of customer behavior and needs), and personalization (customizing services, product pricing, features, and access options). Building upon these three factors, this article provides an in-depth analysis of how IoT can be leveraged to create value for insurance companies. Furthermore, it highlights how business models can capitalize on the opportunities presented by IoT adoption to generate value.

2. Content

2.1. Leveraging Telematics Data for Motor Insurance

IoT applications in auto insurance have rapidly transformed this market, offering numerous opportunities. Gaining a competitive edge requires launching innovative products and efficiently collecting, analyzing, and utilizing data.

IoT-Based Motor Insurance

An insurer offering IoT-enabled motor insurance can establish superior risk assessment models compared to competitors, emerging as a market leader in a short period. Insurers can collect data from policyholders' vehicles using electronic keys connected to the vehicle's On-Board Diagnostics (OBD-2) interface. These insurance devices contain sensors (e.g., accelerometers), GPS services, and mobile network connectivity, periodically transmitting collected data to the insurer.

For example, Dextra Technology in Switzerland employs such a solution with its Pay-As-You-Drive pricing model based on mileage. Alternatively, Swiss Re, a global leader in reinsurance and risk transfer, utilizes smartphone applications for similar purposes.

Premium Calculation Data

Once collected, insurers analyze the data to derive insights into customers' driving behavior. Supplementary data, such as weather conditions, traffic patterns, or related information, can enhance this analysis. Wearable devices like fitness trackers or smartwatches can also provide data on drivers' personal conditions, such as sleep patterns, heart rate, or physical activity. Strategic partnerships with telecommunications providers or health-tech companies could enable remote monitoring of drivers' vital indicators.

Based on this data, insurers can create personalized driving profiles for policyholders. These profiles help correlate

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driving habits with associated insurance claims. Over time, with a sufficiently large database, insurers can offer individualized premium rates.

Risk-Based Premiums

Enriched datasets allow insurers to assess risk quality within their customer base. This enables pricing differentiation: offering competitive rates for low-risk customers while charging higher premiums for high-risk profiles. For new applicants, where driver profiles do not exist, insurers may introduce new underwriting approval methods. Data from applicants' mobile devices and insured vehicles can be leveraged to ensure underwriting accuracy.

The Advantage of Being the Pioneer

The larger the available data pool, the better insurance companies can assess customers' risk profiles. Over time, high-risk policyholders are filtered out from an insurer's database, while low-risk customers are retained due to lower premiums. Consequently, high-risk customers gravitate toward competitors who lack—or have yet to develop—the ability to accurately differentiate between high and low risks. This dynamic allows insurers with low-risk portfolios to experience fewer claims, whereas competitors with a high-risk clientele see their claim volumes increase. This phenomenon reinforces data-driven advantages for the first movers among insurance companies.

Beyond Being a Commodity Provider

In addition to offering suitable coverage, customers seek to prevent accidents from occurring in the first place. Insurers can transition from being mere commodity providers to trusted partners by leveraging collected data to offer actionable safety advice. Recommendations might include driving tips or identifying safer routes through navigation apps to minimize accident risks. By following such advice, customers not only enhance their safety but also reduce their premiums. Positioning themselves as customer partners enables insurers to foster stronger relationships, increase interaction frequency, and build greater customer loyalty.

Speed and Data Literacy

Insurance companies stand to gain from IoT opportunities in two critical ways: speed and data literacy. First, early IoT adopters can develop superior risk assessment models. Second, the ability to analyze and enrich data meaningfully is essential for crafting precise risk pricing models.

2.2. Fraud Prevention Through Self-Regulation

Insurance companies rarely disclose their anti-fraud measures. However, insurers leveraging IoT can break this norm and enhance customer trust by sharing how IoT is used to protect both customers and insurers while maintaining the lowest possible premiums. Moreover, IoT-powered fraud detection insights can streamline claim verification processes, reducing customer effort. The following sections detail how IoT impacts fraud prevention and detection.

Fraud as a Significant Financial Leverage

In response to the threat posed to their business model, insurance companies have long invested substantial resources in fraud prevention and detection. Fraud can generally be categorized into two types: soft fraud, which involves exaggerated claims or deliberately caused damage, and hard fraud, typically perpetrated by organized criminals as part of a planned effort, often aimed at securing large sums of money.

Leveraging IoT for Fraud Detection

By utilizing IoT applications for fraud detection, insurers' efforts to combat fraud are no longer solely reliant on claims agents interpreting events with a mix of intuition and limited data. With the integration of smart home devices, telecommunications, and wearables into everyday life, insurers are exploring potential fraud detection and prevention methods derived from these new data streams. The possibilities appear limitless. For example, GPS data can be employed to track and validate stolen goods, while step-counting information can help identify fraudulently obtained daily insurance claims. Insurers are refining such applications through data aggregation, enabling the analysis and evaluation of potential fraud. For instance, they combine information from smart devices with weather data to detect fraudulent claims related to property damage caused by flooding. From a technical standpoint, there are few constraints on the use of IoT in detecting insurance fraud. The ever-expanding capabilities of IoT provide insurers with innovative tools to analyze patterns, enhance accuracy, and mitigate fraudulent activities effectively.

Self-Censorship and Evidence

The most significant impact of IoT will be on soft fraud, which accounts for the majority of fraud cases. Firstly, there is clear evidence of increased self-censorship. Policyholders whose driving behavior is monitored via telematics devices are less likely to attempt false reporting of car accidents (Hynd & McCarthy, 2014). Soft fraud has traditionally been the most challenging type of fraud for insurers to prove. With the assistance of more precise data on policyholder behavior, this issue has been substantially mitigated. However, technological advancements have also paved the way for cybercriminals to carry out cyberattacks and develop new methods of fraudulent behavior. Furthermore, the manipulation of IoT data used by insurers to verify claims or detect fraud highlights the necessity for insurers to remain vigilant against fraudsters.

Impact Through Innovation and Goal Orientation

To enhance customer relationships, insurers should focus their IoT efforts on areas that yield the greatest benefits through the effects of self-censorship and the ability to demonstrate clear distinctions. This is particularly relevant for the B2C market—a business model primarily utilized in e-commerce. Nevertheless, traditional insurance policies within this market have yet to fully capitalize on IoT capabilities. Insurers are thus encouraged to seize opportunities to develop new products and offerings supported by IoT. Specifically, services based on data-driven insights, requiring the necessary data-sharing agreements, can harness the advantages of personalized insurance.

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2.3. Predictive Device Maintenance to Facilitate Claims Processing

Enriching Existing Data

At first glance, the connection between predictive device maintenance and insurance products may not be immediately apparent. However, insurers can greatly benefit from enriched sensor data, enhancing underwriting capabilities and claims processing. Predictive maintenance leverages sensor data to assess the condition of operating equipment, determining the optimal time for maintenance to minimize downtime. Since sensor data enables better forecasting of future machinery failures, accidents can be prevented, thereby increasing overall safety in industrial facilities. Beyond these industry benefits, sensor data offers insurers a deeper understanding of the risks they underwrite.

Automated Claims Processing

Connected sensors continuously provide information on equipment conditions. In the event of damage, sensors promptly transmit necessary information to the insurer, which automatically triggers the claims processing workflow. This significantly improves the customer experience by eliminating the need for previous administrative paperwork. Furthermore, claims can be processed automatically due to the comprehensive information provided by sensors. Simultaneously, insurers gain greater insights into customers and their risk profiles, which can, in turn, be used to manage their insurance portfolios more effectively.

IoT as a Data Enabler

Sensor data has potential far beyond simplifying claim verification processes. Across the areas of application, sensors can provide a wealth of information. For instance, they can gather data on weather conditions, traffic patterns, usage records, or machine operational capacity, thereby enriching insurance-specific datasets. This proves particularly advantageous for insurers with a significant client base utilizing IoT products, as it enables the collection of vast amounts of cross-industry and cross-company data. When employed comprehensively, these data patterns empower insurers to better understand the scenarios that lead to risk events. Consequently, insurers can offer more effective advice to their clients on risk mitigation strategies. However, capitalizing on this business opportunity necessitates robust data analytics capabilities. Without such prerequisites, integrating sensor data with existing knowledge to accurately identify risk patterns remains unattainable.

Accessing and Enriching Data Intelligently

IoT offers insurers the opportunity to transform their business model, shifting from being mere providers of commodities to becoming strategic partners for their clients. Nevertheless, this evolution requires a step-by-step approach underpinned by two critical factors: intelligent data access and enrichment. Sensors' ability to collect data does not automatically grant insurers access to it. Therefore, insurers must collaborate with their clients to secure the necessary permissions for accessing and utilizing data.

Once access is granted, it becomes essential to develop additional competencies to process new information and derive actionable insights, which can then be used to enhance existing datasets.

3. Conclusion

The insights presented in this analysis highlight how insurers can harness the potential of IoT. However, to fully exploit this technology's capabilities, insurers must not only adapt their business models but also invest in new competencies and organizational processes. The author identifies three key competencies to achieve this: capability, speed, and safety.

Capability: Data competence is paramount. Insurers must attract talent skilled in data collection and interpretation. Becoming a data-driven organization also requires a managerial mindset shift, laying the groundwork for subsequent changes in operating models and technological infrastructure.

Speed: In the dynamic IoT market, speed holds significant relevance. A first-mover advantage can be established if a company collects data early, positioning itself as an IoT pioneer. For established insurers lacking internal IoT expertise, forming partnerships with smaller, agile startups becomes crucial for developing sustainable solutions. Similarly, partnerships with IoT knowledge providers and data-owning entities (e.g., telecommunications companies) are necessary, as is securing client consent for data sharing.

Safety: Amidst the current regulatory uncertainties in Vietnam and globally, it is imperative to handle personal data in compliance with data protection requirements. Insurers must act within the bounds of legal frameworks. Additionally, ethical considerations must be prioritized—even when data collection is lawful, unethical practices may harm the company's reputation.

In summary, IoT offers transformative potential for comprehensive innovations in the insurance industry. To seize these opportunities, the author advocates for a strategic approach encompassing the analysis, design, and implementation of IoT-driven business operations for insurers.

References

1. Claudio Stadelmann, 2020, Digital Transformation in the Insurance Industry: The Internet of Things as a Main Driver
2. Gerry Johnson, 2017; Exploring strategy; Text and Cases
3. Grand View Research, 2019Technology Market Consulting and Research Reports

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