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Trends in InsurTech Development in Korea: A News Media Analysis of Key Technologies, Players, and Solutions

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Abstract: This study aims to understand how InsurTech has developed in Korea. To achieve this, we collected InsurTech-related news articles published in the Korean media over the past eight years. Using a relatedness analysis based on the TopicRank algorithm, a text-mining technique, we extracted the top keywords associated with InsurTech by year. The extracted keywords were analyzed and discussed in terms of development trends: which technologies gained prominence over time, who the key players were, and what solutions were introduced. The analysis revealed several key trends in InsurTech's development in Korea. First, regarding changes in InsurTech technology, blockchain and the Internet of Things initially garnered significant attention, but artificial intelligence and big data later emerged as more critical technologies. Second, in terms of market players, government agencies and research institutes initially created forums for discussion, such as seminars to draw social attention to InsurTech. Over time, innovative startups entered the market, general agencies specializing in insurance brokerage gained prominence in the online marketplace, and the entry of Big Tech platforms further diversified the market. Finally, in terms of InsurTech-related insurance solutions, early attention was focused on developing new products. However, the trend gradually shifted toward improving the accessibility and convenience of existing insurance services. Additionally, asset management and payment settlement services—linked to financial services beyond traditional insurance—emerged, along with new concepts such as healthcare, which reshaped the approach to insurance services. This study contributes to understanding how InsurTech has evolved by identifying key trends in emerging technologies, leading market players, and innovations in the insurance value chain. The Korean case provides insights that may help explore similar patterns in other countries.

Keywords: InsurTech; text mining; InsurTech technology; InsurTech market players; insurance solutions

1. Introduction

The insurance industry has been recognized as slow-changing due to high-entry barriers and complex product designs (Puschmann, 2017; Yan et al., 2018). Over the past decade however, advanced technologies, such as artificial intelligence, big data, and blockchain, have been introduced, changing the insurance industry (Greineder et al., 2020). The changes include introducing advanced technologies in insurance acquisition risk management, insurance contract management, and insurance claims, and resolving or alleviating problems and inefficient processes scattered throughout the existing insurance industry, such as information asymmetry, moral hazards, and inconvenience in the insurance claim process (Cappiello, 2020).

InsurTech is the innovative use of advanced technologies that improve the quality of goods and services throughout the insurance industry's value chain (Gómez & Pineda, 2023). The global market related to InsurTech is proliferating, and social interest is also growing. In 2015, the "Startup Bootcamp InsurTech", an InsurTech accelerator, was first established, and investment in InsurTech startups was promoted. According to Boston Consulting Group (2022), the global investment in InsurTech startups was about $400 million in 2012. Still, cumulative investment exceeded 15 billion USD over seven years until 2018 and grew at an annual average of 64% over ten years until 2021. In 2021 alone, approximately 14.4 billion USD was invested, representing an 87% increase over the previous year.

Although the InsurTech-related market is expanding rapidly, research on InsurTech is still in its infancy. Existing research can be classified into three main streams: first, studies on how technologies can be applied to the insurance industry (Crawford et al., 2016; Zhou et al., 2023; Juma'h & Li, 2023; Sangari & Mashatan, 2024; Kim & Song, 2018; Koh et al., 2019; Bharal & Shapiro, 2016; Turrin, 2018; Eling et al., 2022; Spender et al., 2019; Ahmad & Saxena, 2022; Catlin et al., 2018; Greineder et al., 2020; Cortis et al., 2019); second, studies on who the leading market players in the InsurTech market are (Braun & Schreiber, 2017; Capgemini & Efma, 2017; Mueller, 2018; Svetlana, 2016; Sosa & Montes, 2022; Catlin & Lorenz, 2017; Puschmann, 2017; Yan et al., 2018); and third, studies on how InsurTech is changing the insurance industry's value chain (Yao & Xu, 2019; Koprivica, 2018; Eling & Lehmann, 2018; de Andrés-Sánchez & Gené-Albesa, 2024; Zhang, 2022; Maier et al., 2020; Langenberger et al., 2023; Farbmacher et al., 2022; Zeier Röschmann et al., 2022; Sun et al., 2020; Hasnaoui & Barka, 2024). The scope of these studies is limited to individual topics, and it is difficult to find a study other than one for China (Cao et al., 2020) that explains the overall change trend in how the InsurTech-related market develops over time. Regarding the growth and development of the InsurTech market, there remains a research gap on understanding the dynamic flow of industrial growth by tracking the overall change trend of what technologies emerged, which market players led these innovations, and what innovations occurred in the insurance value chain.

To fill these research gaps, this study tracks the development of InsurTech in Korea, a country with a large insurance market and a leading edge in digitalization. Korea ranks seventh in the world regarding insurance premiums (SWISS Re, 2023b). As of 2019, the insurance penetration rate per household reached 98.2%, and the individual insurance penetration rate reached 95.1% (Korea Insurance Research Institute, 2019). Additionally, because of the measurement of the Insurance Digitalization Index by SWISS Re in 2023, Korea was ranked first (SWISS Re, 2023a). Therefore, looking at how InsurTech has developed in Korea is expected to give insight into dynamics in other countries. This study focuses on the Korean market and seeks to answer the following three research questions:

Research Question 1 (RQ1): What technologies have attracted attention in the development of InsurTech in Korea?
Research Question 2 (RQ2): Who are the key players driving InsurTech, and how have they changed?
Research Question 3 (RQ3): What solutions were explicitly developed using InsurTech, and what value did they create?

To answer these three research questions, this study adopts the same approach as the previous study (Cao et al., 2020), which involves collecting media articles and conducting text mining. Since social topics receive media attention and the public understands the topic well through the media, analyzing media articles on InsurTech over time is useful to grasp the dynamics of InsurTech's development in Korea (Holt & Barkemeyer, 2012). After collecting articles on InsurTech reported in the Korean media over the past eight years, we extracted the top related words by year through the TopicRank algorithm-based relatedness

analysis, a text-mining technique. By examining the change trends in the extracted words, we confirm what technologies have gained traction over time (RQ1), who have been the key players driving the evolution of InsurTech (RQ2), and what solutions have been developed through InsurTech and what value they have created (RQ3).

Focusing on the above three research questions, this study aims to show the InsurTech development trend in the Korean market. Although the primary analysis is of Korea, the general implications of InsurTech's development will be discussed together with the analysis results. This study enhances understanding of InsurTech's development in Korea and provides insights into strategy establishment and technology application in the insurance industry.

2. Literature Review

2.1. InsurTech: Definition and Research Perspectives

The term InsurTech is derived from the combination of insurance and technology (Marano & Noussia, 2020). However, no consistent understanding or legal definition of the term has been established (Bafin, 2022). Xu and Zweifel (2020, p. 307) have defined InsurTech comprehensively as follows: "InsurTech is a phenomenon that traditional or nontraditional market players, aimed at lowering cost, improving efficiency, or providing consumers with more service value, exploit information technology to deliver data-driven or customer-oriented solutions specific to the improvement in insurance business including marketing and distribution, risk assessment and underwriting, claims handling and value-added service provision, as well as innovation in insurance products or services, digitalized operation, partnerships and business models". This study explores InsurTech from three aspects according to this definition. In other words, we aim to understand the dynamic development process of InsurTech by focusing on which technology is used and which market players provided which solutions. Previous studies on each subject will be first reviewed, and relevant keywords will be extracted from Korean media articles to be examined.

2.2. InsurTech Technologies

Technologies such as blockchain, big data, and artificial intelligence, the Internet of Things, with cloud computing as the underlying infrastructure, can serve as key drivers of InsurTech development (Financial Stability Board, 2017; Khatwani et al., 2023). Several scholars have expressed varying expectations regarding how blockchain, big data, artificial intelligence, and the Internet of Things can contribute to InsurTech development while also discussing their limitations.

First, regarding blockchain technology, it has garnered significant attention, being recognized as one of the Top 10 emerging technologies by the World Economic Forum in 2016. Blockchain can create an immutable transaction record that all participants on the network can access by leveraging the characteristics of distributed ledgers (Furdek et al., 2021). Crawford et al. (2016) discussed the potential impact of blockchain on InsurTech and argued that blockchain features such as decentralization and tamper proofing can increase the transparency of the relationship between customers and insurance companies and improve the risk management of insurance companies.

However, the diffusion of blockchain-related fields has not been as fast as initially expected when blockchain was introduced (Ricci et al., 2019). In this situation, studies on the acceptability of blockchain in various fields such as supply chain management, accounting, and marketing have been conducted (Zhou et al., 2023; Juma'h & Li, 2023; Sangari & Mashatan, 2024), and studies on factors that increase the intention to accept blockchain have been conducted, particularly in the financial sector. Kim and Song (2018) found that economic effectiveness and security were important for the activation of blockchain-

enabled insurance services. Koh et al. (2019) found that high availability increased the likelihood of blockchain adoption.

In addition to blockchain, big data and artificial intelligence can also be key technologies driving innovation in the InsurTech industry. Big data refers to the storage of data from different sources in large volumes and speed (De Mauro et al., 2016; IAIS, 2017). In the insurance market, big data and data analytics are used in various processes, such as product offerings, risk selection, claims prediction, and fraud detection—for example, to offer customized products and enable automated underwriting (IAIS, 2018a).

Artificial intelligence is concerned with developing ways for machines to mimic human intelligence (Hull, 2021). There is a vast scope for artificial intelligence not only in a better pricing of risks but also in fraud prevention and claims handling (Bharal & Shapiro, 2016; IAIS, 2018a). Turrin (2018) stated that chatbot counseling would expand using artificial intelligence's disruptive technology, which would significantly change how insurance products are sold. Eling et al. (2022) studied the effects of artificial intelligence on the insurance value chain and risk insurability and found that both cost efficiency and new revenue generation could be realized when artificial intelligence transforms the insurance business model from one focused on loss compensation to one centered on loss prediction and prevention.

Finally, we examine the role of the Internet of Things. The Internet of Things is a network of connected objects and devices equipped with sensors and other technologies that can send and receive data to and from other objects and systems. In the context of insurance, its main applications are connected cars, advanced driver assistance systems (ADASs), health monitoring, and home monitoring (IAIS, 2018a). In fact, these Internet of Things-based services are already being applied in the insurance industry (Spender et al., 2019; Ahmad & Saxena, 2022).

In addition to discussing these individual technologies, Catlin et al. (2018) and Greineder et al. (2020) have argued that synergies in the insurance industry can be achieved when artificial intelligence technologies are fused with other technologies such as big data and the Internet of Things. In other words, artificial intelligence can be utilized in InsurTech by fusing or coexisting with other technologies.

In another perspective on InsurTech technology, Cortis et al. (2019) found that insurers spend 50–70% of their IT budgets on operational expenses rather than R&D, which makes it difficult for them to adapt to new technologies. Nevertheless, they offer a cautiously optimistic outlook for the future of InsurTech through a combination of technologies, explaining that big data, telematics, wearables, and the Internet of Things that will combine with artificial intelligence to develop personalized products for consumers and transform the insurance business.

2.3. InsurTech Market Players

Examining changes in InsurTech market players provides insight into the development of InsurTech. Traditionally, licensed insurance companies and insurance brokers specializing in sales have played a major role in the insurance industry, but the evolution of InsurTech has seen the emergence of technology-enabled startups that are disrupting the market. Studies on the evolution of InsurTech highlight its role in diversifying insurance service providers, but most focus on InsurTech startups or the adoption of InsurTech by traditional insurance companies (Svetlana, 2016; Sosa & Montes, 2022; Catlin & Lorenz, 2017; Wind, 2017).

Braun and Schreiber (2017) showed that companies that digitize the insurance industry's value chain and sell insurance products online are emerging as new market players. Capgemini and Efma (2017) described the InsurTech industry as driven by a new wave of

startup companies, most of which were less than five years old with a relatively small but growing consumer base. Mueller (2018) included insurance companies, brokers, and value chain experts that compete using advanced technologies and provide added value within the insurance industry as key InsurTech players.

Several studies have pointed out differences in how traditional insurance companies and InsurTech startups respond to the market. Svetlana (2016) found that while traditional insurers attract customers with products, InsurTech startups emphasize the process and experience of acquiring products. InsurTech startups have led the insurance industry's innovation by differentiating themselves from existing insurance companies. They have achieved success by offering customized products and enhancing communication and relationships with customers using cutting-edge technology (Sosa & Montes, 2022). Due to the success of InsurTech startups, even traditional insurance companies and insurance brokers, which were initially passive about digitization, have begun to adopt InsurTech (Catlin & Lorenz, 2017; Puschmann, 2017; Yan et al., 2018). Wind (2017) stated that although it took time for traditional insurance companies to initially integrate new technologies into their business models, two-thirds of the top 25 U.S. insurers have invested venture capital in InsurTech startups, while others have developed their own platforms and digital networks through collaborations with startups.

Key players driving InsurTech development include insurers, companies from other industries, governments, and social organizations. Most studies on key players in the InsurTech market focus on the emergence of InsurTech startups or how traditional insurers adopt InsurTech. In contrast, few studies examine the role of governments and social institutions. Additionally, limited research addresses complex industry convergence, such as companies from noninsurance sectors entering the insurance industry through InsurTech.

2.4. Insurance Solutions

The introduction of advanced technologies such as blockchain, the Internet of Things, big data, and artificial intelligence has led to the emergence of innovative insurance solutions characterized by enhanced customization, operational efficiency, and proactive services. According to Yao and Xu (2019), these insurance solutions are emerging in various aspects of the insurance industry, including product innovation, marketing, operations, customer education, and consulting. In addition, Koprivica (2018) discussed the challenges and opportunities for traditional insurance companies as InsurTech-driven insurance solutions emerge. He argued that while companies failing to adopt InsurTech solutions risk market elimination, those that adapt well can seize significant opportunities. This is because InsurTech-based insurance solutions help to reduce transaction costs, create new markets, and provide customized services to more customers (Koprivica, 2018).

Eling and Lehmann (2018) categorize InsurTech-related changes in insurance solutions and insurers' responses in three main ways. First, new technologies change the way insurers interact with customers; second, new technologies automate and standardize business processes to improve effectiveness and efficiency; and third, new technologies create opportunities to modify current products and develop new ones. Based on these three perspectives, significant changes driven by InsurTech can be observed in three key areas: customer interaction, business processes, and product development.

First, significant changes have occurred in how insurance companies interact with customers as they are driven by digital channels and automation technologies. According to a survey of 130 large insurance companies around the world by the Association for Cooperative Operations Research and Development (ACORD), a global standardization organization in the insurance industry, the proportion of insurance companies allowing customers to access insurance companies through digital means, such as websites and apps,

has doubled in 2020 compared to 2015 (Lerner, 2020). Chatbots have also become widely used for customer interactions, as shown by a survey with more than 20,000 observations reporting that 42% of customers agree on interactions with chatbots to receive advice on new products, but only approximately 15% of people felt comfortable interacting with chatbots for complex service questions (Euromonitor International Voice of the Consumer, 2024). In this context, improvements in utility and ease of use are necessary to enhance the acceptance of chatbots (de Andrés-Sánchez & Gené-Albesa, 2024).

Second, in terms of insurance business processes, big data and artificial intelligence are being used across the value chain to increase efficiency and effectiveness. In the marketing stage, customized products are recommended based on customer big data and artificial intelligence algorithms (Zhang, 2022). In the underwriting stage, existing screening results and medical data are used to predict a customer's life score (Maier et al., 2020), and in the claims stage, existing medical billing data is used to predict high-cost patients (Langenberger et al., 2023) and analyze text on bills to detect possible fraud in advance (Farbmacher et al., 2022). For example, Lemonade, a digital insurance company in the United States, utilizes big data, artificial intelligence, and chatbot technology to complete insurance enrollment in 90 s, automatically review claims, and pay claims within seconds (Jo, 2020). In contrast, less than 25% of the world's 200 largest insurance companies have achieved digitalization of their processes, and 10% have yet to adequately utilize digital technologies in their business processes (ACORD, 2022). In this situation, incumbent insurers are likely to strengthen their collaboration with InsurTech startups to transform their value chain, while InsurTech startups will focus on solving problems such as claims management as part of their B2B services rather than competing directly with insurers (KPMG, 2024).

Third, InsurTech is driving innovation in product development, resulting in new types of insurance products and services. One significant development is the rise of on-demand insurance products, which allows customers to customize the scope of coverage, maturity, and additional services online (Zeier Röschmann et al., 2022). A prominent example is Cuvva, a British company offering usage-based automobile insurance, where premiums are paid hourly based on driving distance using Internet of Things technology (IAIS, 2018b). In addition to on-demand products, peer-to-peer insurance solutions leveraging blockchain technology are also gaining traction. These solutions increase reliability and transparency in insurance transactions (Sun et al., 2020; Hasnaoui & Barka, 2024). Another noteworthy example of product innovation is the shift from postmortem support to proactive prevention services. For example, the U.S. company Beam Benefits provides a preventive service that manages dental habits through a device mounted on a toothbrush and provides a service that discounts insurance premiums when renewing insurance based on dental habit scores.[1] Since 2015, China's PingAn Insurance has established a digital medical platform, PingAn Good Doctor, and has been conducting online healthcare and telemedicine businesses (Lee & Oh, 2020).

In summary, InsurTech-driven solutions are reshaping the insurance industry by enhancing customer engagement, streamlining operations, and fostering product innovation. As technology continues to advance, insurers must adapt to these changes to remain competitive in the evolving market landscape.

3. Research Methodology

Figure 1 presents an overview of the methodology used in this study, summarizing the key steps from data collection to keyword extraction and analysis. The process begins with the collection of InsurTech-related media articles from the BIG KINDS database[2], followed by a rigorous filtering process to exclude duplicates and irrelevant content. Once the data

are refined, the TopicRank algorithm is applied, which involves three key steps: candidate extraction, word clustering, and ranking. Further details on each step are provided in the following sections.
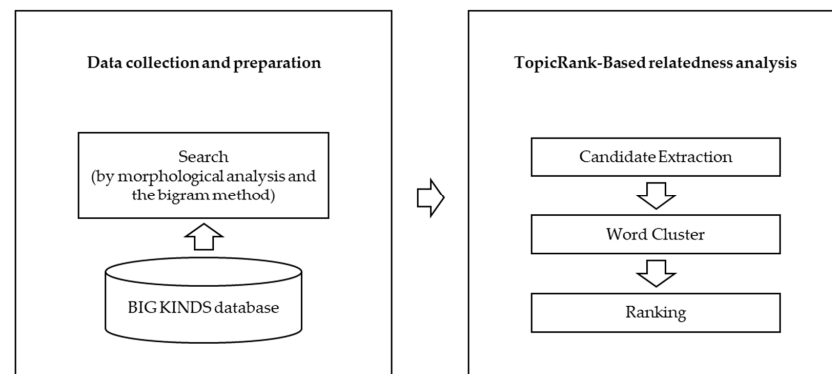

Figure 1. Overview of the research methodology for InsurTech-related media analysis.

3.1. Data Collection and Preparation

Media articles were collected from the BIG KINDS database, Korea's most extensive library of media resources operated by the Korea Press Foundation. Articles from 2016 to 2023 were collected with "InsurTech" as the search word. Morphological analysis and the bigram method were used for an accurate search. Articles considered duplicates due to high similarity were excluded. Simple informational articles such as personnel profiles, obituaries, and photos were also excluded.

Table 1 shows the change in the number of articles related to InsurTech introduced in the Korean media from 2016 to 2023. In the Korean media, articles pertaining to InsurTech first appeared in 2016, and there were only 17 articles. In 2017, the number of articles increased to triple digits. In 2019 and 2020, the number of articles exceeded 1000; it has since decreased, but it can be observed that the media's interest has been maintained as it has continued to produce more than 500 articles in 2022 and 2023.

Table 1. Number of InsurTech-related news reports in Korea, 2016–2023.

Year	2016	2017	2018	2019	2020	2021	2022	2023	Total
Number of articles	17	148	546	1163	1027	700	583	511	4695

3.2. TopicRank-Based Relatedness Analysis

We used the TopicRank algorithm to extract keywords highly related to InsurTech. TopicRank is a "Word Clustering based approach that automatically and dynamically generates an interactive Tag Cloud related to the user query where the layout of presented keywords relies on a semantic closeness metric" (Berlocher et al., 2008, p. 703).

The following procedure analyzes the relatedness between words using TopicRank: (1) Candidate Extraction. Keyword (w) candidates are first selected from documents related to the search word (K), and TopicRank (TR) is then calculated, which is a relatedness measure between each keyword and the search word:

$$TR(K, w) = (df(K, w)/df(w))^{\alpha} \, (-p(w)\log(p(w)))^{\beta}$$

where df(K,w) represents the number of documents in which both "w" and "K" appear together, df(w) denotes the number of documents containing the keyword "w", and p(w) is the probability of the keyword "w". The parameters α and β are weighting factors set to $\alpha = 3$ and $\beta = 2$ (Berlocher et al., 2008). The first part of TopicRank (df(K, w)/df(w))

is the ratio of number of times a word "w" appears with the given keyword "K" against the number of times "w" appears alone. The second part of TopicRank ($-p(w)\log(p(w))$) mitigates the overestimation effect of the first part, which is caused by the entropy of the word "w".

(2) Word Cluster. For related keywords, clusters are formed using the Complete Link Cluster algorithm. (3) Ranking. The previously calculated TopicRank is used to rank keywords in the cluster, which are ranked by the average TopicRank of keywords in the cluster (Berlocher et al., 2008).

As above, we derived keywords from the top 25 articles for each year from 2016 to 2023. Korean media articles are often written by combining Korean and English languages. For example, in the case of {Artificial intelligence, AI (in English)}, {Information technology, ICT (in English)}, {Business agreement, MOU (in English)}, {Internet of Things, IoT (in English)}, two words with the same meaning appear together in Korean and English. Looking at the articles that mix the Korean and English languages in this way, the same meaning of English is written in parentheses after writing Korean. Thus, if the Korean and English terms have the same meaning, they are unified into one, and the problem of overlapping counts occurs.

Additionally, "Insurance (in English)", "Technology (in English)", and "Compound word" often appear together in one sentence. This explains how the term InsurTech was created. For example, the word InsurTech is described as a compound word for insurance and technology. To prevent this problem, this study chose a method of adding "(E)" to the words originally used in English. Through this notation method, we aimed to distinguish two words that have the same meaning but are written in both Korean and English.

4. Results and Discussion

4.1. Overview of InsurTech-Related Keyword Analysis and Annual Trends

Table 2 shows the keywords in the top 25 articles with a high level of relatedness with the word "InsurTech" for each year from 2016 to 2023. The higher the weight value of each word, the greater the level of relatedness with InsurTech. According to the weight by word, in 2016, when the term InsurTech appeared, the weight of the keywords was generally low, and the weight value increased significantly as it continued. As the number of articles mentioning InsurTech in the media increased, the level of relatedness between InsurTech and related keywords also increased.

Looking at annual trends, technology-related keywords, such as "Artificial intelligence", "Big data", "Blockchain", and "IoT" (short for the Internet of Things), were consistently included in the top 10 over the entire period. This shows that InsurTech is an innovation phenomenon promoted by technology. Keywords such as "Debate (4th place)", "Insurance Research Institute (6th place)", "Co-host (9th)" and "Policy support (10th)" ranked in the top 10 in the keyword rankings in 2016, indicating when the social interest in InsurTech emerged and the movement to grasp its meaning began. Since 2018, the trend of diversifying topics related to InsurTech has been observed. In 2018, "Business agreement" ranked 8th, and "MOU(E)" ranked 9th. "Jikto", one of InsurTech startups, and "Rich & Co"., General Agency (GA), ranked 15th and 17th, respectively. In 21st place was KakaoPay, which is a subsidiary of Kakao, a Big Tech platform. Through these changes, the movements of various market players can be detected. Additionally, "Insurance products" ranked 11th, and "Insurance service" ranked 20th, indicating that changes in insurance solutions are starting to occur. As such, keywords can be broadly divided into InsurTech technology, InsurTech market players, and InsurTech-related insurance solutions, which are linked to research questions RQ1, RQ2, and RQ3. The results of the analysis for each research question are presented below.

Table 2. Relatedness statistics for media attention to InsurTech in Korea, 2016–2023.

Ranking	2016 Keyword	Weight	2017 Keyword	Weight	2018 Keyword	Weight	2019 Keyword	Weight	2020 Keyword	Weight	2021 Keyword	Weight	2022 Keyword	Weight	2023 Keyword	Weight
1	The 4th Industrial Revolution	7.92	Fintech	21.55	Blockchain	62.83	Insurance company	112.54	Bomap	73.99	DB Nonlife Insurance	79.6	Startup	51.32	Startup	52.21
2	Blockchain	7.83	Blockchain	19.53	Artificial intelligence	49.18	Big data	100.74	Insurance company	71.95	Business agreement	62.22	Artificial intelligence	49.52	Goodrich	40.98
3	Insurance sector	6.55	Insurance company	18.19	AI (E)	48.57	Artificial intelligence	98.1	AI (E)	62.86	Startup	54.04	AI (E)	47.73	Rich & Co	36
4	Debate	6.21	Insurance industry	15.75	Insurance company	47.83	AI (E)	88.83	Big data	49.8	Insurance company	49.14	DB NonLife Insurance	36.47	GA (E)	34.64
5	Artificial intelligence	4.67	Big data	13.08	Insurance sector	44.5	Fintech	83.78	Fintech	45.67	MyData	48.46	Differentiation	34.64	AI (E)	30.25
6	Insurance Research Institute	4.62	International seminar	12.67	Big data	39.31	Insurance sector	60.33	Artificial intelligence	43.2	MOU (E)	45.86	Blockchain	31.1	Big data	24.69
7	Big data	4.2	Internet of things	12.41	Kyobo Life Insurance	37.47	Bomap	52.21	Healthcare	38.88	Bomap	42.65	Digital insurance company	29.51	DB NonLife Insurance	24.16
8	Future	3.81	Insurance Research Institute	12.21	Business agreement	33.93	Blockchain	51.17	Insurance service	38.71	AI (E)	33.95	Customer experience	29.3	Artificial intelligence	23.09
9	Co-host	3.53	Artificial intelligence	11.93	MOU (E)	27.56	Startup	46.19	Insurance sector	37.49	Artificial intelligence	32.64	Insurance company	22.92	Fintech	20.44
10	Policy support	3.08	Compound word	11.73	Insurance industry	26.07	DB NonLife Insurance	45	Insurance industry	34.9	GA (E)	27.5	Big data	21.96	Insurance company	18.48
11	Professor In-ho of Korea University	2.4	AI (E)	10.88	Insurance product	24.36	Insurance market	38.95	Shinhan Life Insurance	29.03	Fintech	27.46	Fintech	18.14	IDP field	16.72
12	Chairman of the National Empathy Strategy Committee	2.4	Health management insurance product	10.59	Insurance (E)	23.31	IoT (E)	36.64	Insurance claim	28.49	Insurance industry	25.87	Asset management	17.09	Digitalization	16.47
13	National Assembly Future Creation Science Broadcasting & Communications Committee	2.4	Tech (E)	9.92	DB NonLife Insurance	22.92	ICT (E)	36.14	Digital innovation	28.07	Differentiation	25.76	Payment settlement	16.62	KISA (E)	16.36
14	Insurance design method	2.4	Activation	9.4	Fintech	20.22	Insurance product	33.75	Kyobo Life Insurance	26.54	Insurance claim	25.36	Naver	13.33	Upstage	13.36

Table 2. *Cont.*

Ranking	2016		2017		2018		2019		2020		2021		2022		2023	
	Keyword	Weight	Keyword	Weight	Keyword	Weight	Keyword	Weight	Keyword	Weight	Keyword	Weight	Keyword	Weight	Keyword	Weight
15	Fintech service	2	Information technology	9.23	Jikto	20.15	Insurance (E)	29.67	Goodrich	25.19	Hyundai Marine & Fire Insurance	23.92	GA (E)	13.08	Insurance business	12.63
16	Bank area	2	Kyobo Life Insurance	7.73	Technology (E)	17.76	Compound word	29.04	Compound word	24.81	KakaoPay	23.19	Accessibility	12.67	SK Telecom	12.24
17	Saenuri Party lawmaker Kim Seong-tae	2	Healthcare	7.55	Rich & Co	17.75	Insurance service	24.49	Insurance product	24.36	Compound word	22.64	Password	12.67	Healthcare	11.33
18	Conference room	1.6	Insurance (E)	7.12	KISA (E)	17.5	d.Lemon	22.11	DB NonLife Insurance	21.35	Blockchain	20.67	KakaoPay	12.63	SmallTicket	10.91
19	Information technology	1.5	Technology (E)	6.32	Insurance market	16.47	Business agreement	20.67	KakaoPay	21.09	Digital innovation	19.2	Carrot	12.12	Seungpyo Han	10.21
20	New technology	1.33	New growth engine	5.76	Insurance service	16.22	Lotte Accelerator	20.43	MOU (E)	21.09	Insurance sector	18.87	Premium	11.52	Professionalism	10
21	Expert	1	Payment settlement	5.33	KakaoPay	15.75	KakaoPay	20.06	Information technology	21.03	ESG (E)	18	Insurance industry	11.35	HabitFactory	9.74
22	Traditional insurance market	1	Leading role	4.8	Consumer	15.1	Healthcare	20	Lotte NonLife Insurance	20.88	Danger in everyday life	17.65	KT (E)	10.67	Age Customers	9.6
23	Healthcare	0.89	KT (E)	4.62	d.Lemon	14.79	Kyobo Life Insurance	19.74	Ryu Junwoo	15.79	BigTech	16.45	Insurance business	10.24	Consumer	9.59
24	Life Insurance Association	0.8	Convergence industry	4.5	Customers	12.41	Convenience	16.73	Shinhan Financial Plus	14.31	New technology	16.34	Bomap	9.92	New technology	9.23
25	Opportunities	0.8	Report	4.36	Financial services	11.32	Ideathon	16.3	Hyundai Property Insurance	13.61	Strategic investment	15.12	Insurance money	8.89	Difficulty level	8.67

4.2. Changes in InsurTech Technologies

RQ1 aims to understand what technologies have attracted attention during the development of InsurTech in Korea. Looking at the trend of technology-related keywords in Table 3, "Blockchain" was ranked second in 2016 and 2017 and first in 2018, indicating that it is the technology that received the greatest attention during the early days of InsurTech. The content of media articles from 2016 to 2017 indicates the expectation that blockchain technology could solve the insurance industry's chronic problems. For example, by applying blockchain, it was considered that insurance fraud, such as excessive treatment and duplicate insurance claims, could be prevented, and the insurance claims process could be automated to improve customer experience. Applying a blockchain-based smart contract method was also expected to facilitate new types of products such as P2P insurance. However, as "Artificial intelligence" and "Big data" gained more attention in 2019, interest in blockchain relatively decreased. This is because blockchain technology did not meet expectations, except for being partially applied to self-authentication and insurance claim simplification services provided by startups. For example, P2P insurance is provided in a joint purchase method in limited areas such as pet and sports insurance; however, there is insufficient demand to replace existing insurance products.

"Artificial intelligence", "AI(E)", and "Big Data" were the keywords that received the most attention after "Blockchain" from 2016 to 2018. Starting in 2019, they have been the highest-ranked keywords related to technology (except in 2022, "Blockchain" was ranked higher than "Big data"). As artificial intelligence is a technology that learns data and infers results, it is often mentioned with "Big data". The reason why artificial intelligence and big data consistently maintain high interest is that they can be applied to most of the value chains of the insurance industry, such as product development, product recommendation, automation of screening, insurance retention rate prediction, and insurance fraud detection, and they have visible effects.

Another technology-related keyword, "IoT", ranked 7th in 2017. This is deeply related to "Health management insurance products", which ranked 12th, and "Healthcare", which ranked 17th in the same year. In the early stages of InsurTech, many products were released that provided additional services to measure steps, blood pressure, and blood sugar using wearable devices and discount insurance premiums according to the degree of health improvement. In 2019, "IoT (E)" ranked 12th. At that time, the first digital nonlife insurance company, Carrot Insurance, was established, receiving media attention by launching auto insurance that pays premiums based on usage by installing a separate IoT device in cars. Since then, however, IoT technology has not been ranked. This is because methods that show the same effect without installing or wearing IoT devices have become common. In the case of auto insurance, insurance premiums are discounted by the number of public transportation usage or driving habit scores provided by smartphone-based navigation companies. In the case of health-promoting insurance, insurance premiums are discounted based on the number of steps measured through a smartphone app without wearing a separate wearable device. In Korea, the IoT is being applied to the safety management of homes and buildings, but the development of insurance products for fires, leaks, etc. has not been actively developed.[3]

Table 3. Changes in keywords related to RQ1 in Korea, 2016–2023.

Year	2016	2017	2018	2019	2020	2021	2022	2023
Keyword (Ranking)	Blockchain (2nd) Artificial intelligence (5th) Big data (7th)	Blockchain (2nd) Big data (5th) Internet of things (7th) Artificial intelligence (9th) AI (E) (11th)	Blockchain (1st) Artificial intelligence (2nd) AI (E) (3rd) Big data (6th)	Big data (2nd) Artificial intelligence (3rd) AI (E) (4th) Blockchain (8th) IoT (E) (12th)	AI (E) (3rd) Big data (4th) Artificial intelligence (6th)	AI (E) (8th) Artificial intelligence (9th) Blockchain (18th)	Artificial intelligence (2nd) AI (E) (3rd) Blockchain (6th) Big data (10th)	AI (E) (5th) Big data (6th) Artificial intelligence (8th)

The responses to RQ1 show that technology in InsurTech is not an end in itself, but rather a means of solving business problems. Blockchain was initially in the spotlight as a major innovation in the insurance industry, but interest in blockchain declined due to delays in the development of practical business cases compared to its potential. Studies on the intention to adopt blockchain-enabled services (Kim & Song, 2018; Koh et al., 2019) have shown that economic benefits, security, and availability are important for increasing acceptance. As blockchain services are still facing challenges such as implementation costs, technical complexity, and transaction speed (Wilkie & Smith, 2021), it is necessary to explore the possibilities through multiple experiments in the insurance value chain rather than expecting immediate business benefits.

In the case of the Internet of Things, as smartphones play a role in measuring usage and customer behavior as an alternative means, interest has also declined. Smartphones have come to play a substitute role not because the quality of IoT technology itself is poor, but because they have focused on the business value of the technology. The main applications of the Internet of Things in the insurance sector are automotive, health monitoring, and home monitoring (IAIS, 2018a). In Korea, it is concentrated on automobile and health monitoring. The Internet of Things is being utilized for the safety management of homes and buildings, but the connection with insurance for fire, water leakage, etc. is still lacking. As the smart home market is expected to continue to grow (GlobalData, 2022), it is expected to increase customer utility through the development of affordable insurance products.

However, artificial intelligence and big data have become the most notable technologies as they help solve problems practically using structured data, such as customer information and transaction details, and unstructured data, such as voice files. In fact, one of Korea's leading insurers, Hanwha Life, has reduced the time from signing up for a new contract to applying for one from up to 60 min to 5 min (ChosunIlbo, 2022), and another insurer, Kyobo Life, is achieving an average of 0.23 days from claim to payment (Electronic Times, 2023). As previous studies (Catlin et al., 2018; Greineder et al., 2020; Cortis et al., 2019) have shown, artificial intelligence is a technology that learns from data to find patterns and make inferences, so it is synergistic when combined with big data and the Internet of Things. In order to continue to realize the benefits of artificial intelligence in the future, it will be important to utilize technologies such as the Internet of Things as a way to discover and acquire the data needed to increase customer utility while developing new business cases.

4.3. Changes in InsurTech Market Players

RQ2 aims to identify how the key players leading the development of InsurTech have evolved in Korea. As shown in Table 4, in 2016, when InsurTech first began to be mentioned in the Korean media, "The 4th Industrial Revolution" topped the related keyword for InsurTech, reflecting the media's interest in the "The 4th Industrial Revolution" presented at the World Economic Forum in January 2016. The World Economic Forum emphasized that developing new technologies such as artificial intelligence, robotics, the IoT, autonomous vehicles, 3D printing, nanotechnology, biotechnology, materials science, energy storage, and quantum computing would fundamentally transform the way we live, work, and interact with one another (World Economic Forum, 2016). Korean society reacted strongly to the issue, and discussions began in the insurance industry and other sectors. In 2016, "Debate", "Insurance Research Institute", "Co-host", and "Policy support" were ranked among the top 10 keywords, and in 2017, "International seminar" and "Insurance Research Institute" were ranked in the top 10, indicating that state-run institutions led the market activation in the early days of InsurTech through discussion and research.

Table 4. Changes in keywords related to RQ2 in Korea, 2016–2023.

Year	2016	2017	2018	2019	2020	2021	2022	2023
Keyword (Ranking)	The 4th Industrial Revolution (1st) Debate (4th) Insurance Research Institute (6th) Co-host (9th) Policy support (10th)	International seminar (6th) Insurance Research Institute (8th)	Business agreement (8th) MOU (E) (9th) Jikto (15th) Rich & Co (17th) KakaoPay (21st) d.Lemon (23rd)	Bomap (7th) Startup (9th) d.Lemon (18th) Business agreement (19th) KakaoPay (21st)	Bomap (1st) Goodrich (15th) KakaoPay (19th) MOU (E) (20th)	Business agreement (2nd) Startup (3rd) MOU (E) (6th) Bomap (7th) GA (E) (10th) KakaoPay (16th)	Startup (1st) Naver (14th) GA (E) (15th) KakaoPay (18th) Bomap (24th)	Startup (1st) Goodrich (2nd) Rich & Co (3rd) GA (E) (4th)

Starting in 2018, keywords related to discussion and research did not appear. In 2018, "Business agreement" and "MOU(E)" ranked 8th and 9th, respectively, and the names of InsurTech startups appeared as keywords. "Jikto", ranked 15th, and "d.Lemon", ranked 23rd, are representative startups in the early days of the industry, illustrating that new players in the insurance industry had appeared and began forming InsurTech ecosystem by collaborating with existing insurance companies (Kim & Kim, 2019). Since then, "Bomap", ranked 7th in 2019, 1st in 2020, and 7th in 2021, has led the startup boom. "Startup" ranked 9th in 2019, 3rd in 2021, and 1st in 2022 and 2023, showing a steady rise in ranking. The startup vigor was primarily attributable to the help of the financial regulatory sandbox system implemented by the Korean government in April 2019. This system allows startups to develop prohibited services except for financial companies and test them directly in the market, receive essential work from financial companies to test them, or, conversely, entrust services developed by startups to financial companies (Fintech Center Korea, 2024). On average, startups selected for the financial regulatory sandbox raised more than twice the amount of investment compared to before (Koo & Choi, 2020).

A player of note is GA, which specializes in insurance brokerage services. In 2018, GA-related words appeared for the first time as keywords related to InsurTech. Rich and Co., a representative GA, was ranked 17th in 2018, partly in response to Rich and Co.'s release of an insurance app called "Goodrich" and promoting it through the media at the time. Since GA entered the InsurTech market, "GA" ranked 10th of the keywords in 2021 and slightly lowered to 15th in 2022, but it rose to 4th in 2023. This is because GA, which has already played a role in face-to-face sales, allows customers to compare the products of various insurance companies directly on the app in response to changes to the digital environment. "Goodrich" ranked 2nd, and "Rich and Co." ranked 3rd in 2023, reflecting Rich and Co.'s replacing its name with its service name "Goodrich" in July 2023.

Insurance-specific startups, general agencies and other players participated in InsurTech, diversifying the ecosystem. KakaoPay, a subsidiary of Kakao, Korea's leading Big Tech platform, acquired an insurance brokerage company in 2019 and launched a nonlife insurance company in 2022. "KakaoPay" which ranked 21st in 2018 and 2019 and rose to 19th in 2020 and 15th in 2021. Naver, another leading Big Tech platform company, established an insurance brokerage company in 2020, ranked 14th in 2022. In August 2020, the MyData system was introduced due to the revision of three data-related laws[4], and business operators licensed for the MyData business could provide various services by integrating financial information scattered across various financial companies with the customer's consent. Accordingly, Kakao and Naver provided services for integrated inquiries of financial information, including insurance and services for comparing and recommending financial products on their respective platforms. However, with the Financial Consumer Protection Act in effect in 2021, MyData operators were prohibited from comparing/recommending insurance products, limiting their monetization. As this became a social controversy, insurance product comparison/recommendation services were allowed again starting in January 2024 through the financial regulatory sandbox system, illustrating the blurring of industry boundaries. According to a consumer survey on MyData acceptance, 77.7% of those willing to use MyData services expressed a preference for services provided by nonfinancial companies, such as platform companies (VISA Korea, 2021).

The analysis results for RQ2 show that timely government involvement and diversification of market players can play a major role in the process of pioneering new fields and forming markets, such as the development of InsurTech. Policy institutions and research institutes under the Korean government prepared a place for social discussions in the early stages of the introduction of InsurTech. Additionally, the system was reorganized or newly established to improve the rights and interests of financial consumers. The Korean legal

system related to financial companies was in a silo state, with laws enacted by financial areas such as banking, insurance, and financial investment. The Korean government newly introduced the financial regulatory sandbox system and the MyData system to break down the boundaries between financial regions and help startups and platform companies launch financial services.

The Korean government contributed to the early development of the market by creating a forum for discussion on InsurTech. The role of the Korean government was to draw social attention to InsurTech, which lacked social recognition. In addition, the government and socially authoritative organizations conducted related research and sought policy support. These activities can contribute to the social acceptance of InsurTech by reducing uncertainty about new technological innovations such as InsurTech and enhancing social trust (Siegrist, 2000).

The government also contributed to the diversification of InsurTech market players by improving related institutional systems. Looking at the development of InsurTech in Korea, the trend of diversification of market players can be seen. In the early stages, innovative startups based on InsurTech emerged, and later, general agencies specializing in insurance brokerage began to emerge, mainly in the online marketplace. In the Korean InsurTech market in particular, Big Tech platform companies such as Kakao and Naver, which were not insurance companies, entered the insurance industry, showing the convergence of industries. This diversification of market players and the development of the industry was made possible by the government's redesign of systems such as the financial regulatory sandbox and the MyData system.

As the number of consumers, investors, and companies that use the technology increases, the related market expands and the technology spreads faster (Wüstenhagen et al., 2007), and the Korean InsurTech market is showing this trend. In Korea, direct investment by insurance companies in InsurTech startups has increased from 10.7 billion KRW in 2018 to 265.8 billion KRW in 2022 (The Insurance Times, 2024), and it was found that 53% of insurance companies are promoting digital transformation in cooperation with InsurTech startups and Big Tech companies in 2023 (Hwang & Son, 2023). Such figures suggest that the industry ecosystem is gradually being established, and the relevant market is developing as new players are entering the InsurTech market.

4.4. Changes in Insurance Solutions

RQ3 seeks to identify what solutions have been developed and what value they have created. This is the result of the keyword analysis in Table 5, which looks at changes in social perceptions of InsurTech and attempts to explain changes in InsurTech solutions under these trends of changing perceptions. In 2017, "Tech(E)" and "Information Technology" ranked 13th and 15th, respectively, but in 2020, "Information Technology" fell to 21st, and "New Technology" ranked 24th in 2021 and 2023, showing a trend of gradually decreasing the ranking of keywords that express technology itself. Conversely "Digital Innovation" ranked 13th in 2020, "Differentiation" ranked 13th in 2021 and 5th in 2022, and "Customer Experience" ranked 8th in 2022, indicating that keywords related to customer value creation were receiving increasing attention. In other words, the perception of InsurTech has changed in the direction of what solutions and customer value have been created by using technology rather than the technology itself. This shift can be linked to the accelerated digital transformation of the insurance industry following the COVID-19 pandemic that began in 2020 (Volosovych et al., 2021; Pauch & Bera, 2022).

Table 5. Changes in keywords related to RQ3 in Korea, 2016–2023.

Year	2016	2017	2018	2019	2020	2021	2022	2023
Keyword (Ranking)	Information technology (19th) New technology (20th) Healthcare (23rd)	Health management insurance product (12th) Tech (E) (13th) Information technology (15th) Healthcare (17th) Technology (E) (19th)	Insurance product (11th) Technology (E) (16th) Insurance service (20th)	ICT (E) (13th) Insurance product (14th) Insurance service (17th) Healthcare (22nd) Convenience (24th)	Healthcare (7th) Insurance service (8th) Insurance claim (12th) Digital innovation (13th) Insurance product (17th) Information technology (21st)	Differentiation (13th) Insurance claim (14th) New technology (24th)	Differentiation (5th) Customer experience (8th) Asset management (12th) Payment settlement (13th) Accessibility (16th)	Healthcare (17th) New technology (24th)

Under this trend of changes in social perception, solutions applying InsurTech first appeared in insurance products and gradually changed toward services. "Health management insurance product" ranked 12th in 2017, and "Insurance product" fell to 11th in 2018, 14th in 2019, and 17th in 2020. In contrast, "Insurance service" rose to 20th place in 2018, 17th in 2019, and 8th in 2020. This shows that InsurTech developed in the direction of increasing the convenience and accessibility of insurance services by gradually using technology, although the focus was on developing new products in the early days of InsurTech. This is supported by the fact that "Convenience" ranked 24th in 2019, and "Accessibility" ranked 16th in 2022. Additionally, since 2020, insurance services have been differentiated into specific service types, and this is appearing as a keyword. Insurance claims, a representative insurance service that customers have felt a lot of inconvenience, ranked 12th in 2020 and 14th in 2021. In fact, in Korea, a number of startups and insurance companies have launched easy claim services. According to the results of the 2022 Insurance Consumer Behavior Survey, 56.1% of those surveyed used an app or webpage to file a claim (Korea Insurance Research Institute, 2022).

In 2022, "Asset management" ranked 12th, and "Payment settlement" ranked 13th. Asset management is an area where banks and securities have strengths. However, with the implementation of the MyData system, insurance companies are also strengthening their asset management services, as they can collectively inquire about financial information held by customers in other financial areas with customers' consent. This means that the services of insurance companies, which have traditionally focused on selling insurance products, are diversifying. Additionally, "Payment settlement" is a service insurance company continuously demanding the Korean government's approval. In Korea, payment settlement services have not yet been approved for insurance companies and credit card companies due to opposition from banks and securities companies. Still, the government has a plan to expand payment settlement services, and social discussions continue (Korea Insurance Research Institute, 2023). As such, the service concentrated in a specific financial area is expanding to other financial areas systematically and technologically, competition is expected to increase, and, as a result, customers will receive better services. In the case of MyData services, Kim et al. (2022) found that when customers are satisfied with MyData services, their intention to continue using the financial company providing the service increases.

With the introduction of InsurTech, a flow of insurance companies trying to expand their business from economic support for treatment to healthcare that maintains a healthy life at all times is also captured. The fact that "Healthcare" ranked 23rd in 2016 and 17th in 2017 means that this possibility is attracting attention. In particular, in 2020, when COVID-19 broke out, "Healthcare" rose vertically to 7th place as interest in health increased. However, in 2023, the ranking fell to 17th, presumably due to the absence of medical information in the data range of the MyData system implemented in August 2020 (Yang, 2022). Since medical information is scheduled to be included in the MyData range in 2025, insurance companies' healthcare services are expected to gradually become active (Personal Information Protection Commission, 2024).

The analysis results of RQ3 indicate that improving and expanding insurance services directly affect the utility of all customers before the development of new products in a situation where the insurance industry is saturated. With new technologies, driver habits, health promotion, and P2P insurance have all been developed. These products were added as a special agreement to existing insurance products or introduced through a new purchase method called joint purchase. However, increasing the utility of the entire industry is limited to some insurance product areas.

Many InsurTech have focused on addressing inconvenient services commonly experienced by customers, with insurance claims being a prime example. According to the 2022 Insurance Consumer Behavior Survey conducted by Korea Insurance Research Institute, 74.2% of respondents cited convenience and speed as the most important factors in the insurance claim and payment process (Korea Insurance Research Institute, 2022). In response to such needs insurance companies are shifting their role from the limited role of developing and selling insurance products and expanding their services to asset management and healthcare centered on customer data, transforming themselves into comprehensive service companies along the customer's lifecycle.

This shift has two important implications for saturated insurance markets like Korea, where the insurance penetration rate is in the high 90s. First, insurers need to focus not only on supplying new products but also on enhancing the overall customer experience. InsurTech technologies can play a crucial role in making insurance more accessible to customers and significantly reducing customer frustration during key processes, such as underwriting and claims. Negative experiences with insurance can erode customer trust in both insurers and their products (Guiso, 2012). On the other hand, customers who are satisfied with the process of using insurance, such as filing a claim, are more likely to trust insurance companies and insurance products (Sung et al., 2023) and are more likely to recommend and repurchase.

Second, it is important for insurers to respond to shifting demographic trends, particularly the aging population. As Korea's population continues to age, insurers are increasingly expected to meet the growing needs of the elderly, who face rising health concerns and the need for stable retirement income. By 2025, more than 20% of Korea's population is projected to be aged 65 or older (Statistics Korea, 2024). This demographic shift explains the rising prominence of keywords such as "Healthcare" and "Asset management" keywords. By utilizing health and medical data, insurers can offer personalized products tailored to customer's specific health conditions, provide targeted health promotion content, and expand wealth management services by sharing data with other financial institutions.

5. Conclusions

5.1. Summary of Findings on Research Questions

This study collected media articles related to InsurTech from 2016 to 2023 in Korea and analyzed relatedness based on the TopicRank algorithm to understand the development trends of InsurTech. The analysis results revealed the top 25 keywords in the InsurTech industry by year, illustrating how InsurTech emerged in Korea and its major development trends. Each of the three research questions (RQ1, RQ2, and RQ3) was analyzed, and the results are summarized below.

RQ1 focuses on which technologies gained traction in the development of InsurTech in Korea. An analysis of InsurTech-related technologies in the Korea market shows that blockchain and the Internet of Things initially attracted attention, but artificial intelligence and big data have become more prominent technologies over time. Although blockchain and the Internet of Things technologies were initially expected to drive significant changes in the insurance industry, interest in these technologies waned due to delays in developing practical business cases or the emergence of alternative methods. In contrast, artificial intelligence and big data have emerged as the most notable technologies because they help address key challenges, such as product customization, reducing screening time, and detecting insurance fraud by leveraging both structured and unstructured data. Thus, from a technological perspective, the key factor in the development of InsurTech is how well a technology can contribute to solving problems within the insurance value chain and create added value.

RQ2 addresses the key players driving InsurTech in Korea. Regarding the changing landscape of market players during InsurTech's development, government agencies and research institutes played a significant role in the early stages by drawing public attention to InsurTech and facilitating discussions. Subsequently, innovative startups specializing in InsurTech emerged, while general agencies focusing on insurance brokerage gained prominence in online marketplaces. This illustrates the diversification of stakeholders in the InsurTech market. A unique feature of Korea's InsurTech development is the expansion of the ecosystem driven by leading Big Tech platform companies, such as Kakao and Naver, which entered the insurance industry. The convergence of the insurance industry with other sectors was significantly influenced by government intervention, particularly through institutional design. For instance, the financial regulatory sandbox system introduced by the Korean government provided a foundation for the creation of various startups offering insurance services. Additionally, the MyData system, which allows companies to share customers' personal information with their consent, has encouraged market players to expand their business areas. To achieve social acceptance of new technologies, it appears crucial for government involvement to be timely, ensuring social trust, while the diversification of market players should be based on a well-designed institutional framework.

RQ3 examines what insurance solutions have been developed using InsurTech technologies and the value they have created. Analysis of the changes in insurance solutions shows that new InsurTech-related products initially received significant attention, but over time, the focus has shifted toward increasing the accessibility and convenience of existing insurance services. Recently, asset management and payment settlement services, which are linked to financial services beyond traditional insurance, have shown high relevance to InsurTech. Moreover, new concepts, such as healthcare services, have emerged, fundamentally transforming the role of insurance. Traditionally, the primary purpose of insurance was to cover treatment costs when customers became ill or were involved in accidents. However, with the development of InsurTech, insurers have expanded their offerings to include healthcare services that promote healthier lifestyles. In this way, InsurTech serves as a key driving force for improving the service experience of insurance customers and expanding into new service areas beyond traditional insurance products.

5.2. Implications

5.2.1. Theoretical Implications

From a theoretical perspective, this study examines the development of InsurTech in Korea by focusing on changes in technologies, key market players, and the emergence of new insurance solutions. This study highlights complex and dynamic situations in the development of InsurTech that previous research has not fully explained. In particular, the analysis of changes in key market players reveals that the government played a crucial role in Korea by leading social discussions and providing institutional support during the early stages of InsurTech. Additionally, general agencies actively participated in online marketplaces, and platform companies, previously uninvolved in the insurance industry, emerged as significant market players. While earlier studies have described the diversification of market players in InsurTech, they primarily focused on how InsurTech startups and traditional insurance companies utilized technology. In contrast, this study contributes to the understanding of the InsurTech ecosystem by showing how major market players evolved, particularly emphasizing the role of the government and the entry of players from other industries.

This study also contributes to the development of related research in terms of research methods. By collecting and analyzing the complete set of media articles spanning eight years from the early days of InsurTech, this study minimized the risk of bias that can

arise from analyzing a limited sample. Moreover, by adopting a scientific approach to text analysis, the study sought to reduce researcher subjectivity, which is often inherent in qualitative data analysis. Media articles were particularly useful for identifying trends and key turning points, as they reflect the level of social interest in specific topics and capture changes in attention over time.

5.2.2. Practical Implications

The findings of this study have important implications for insurance practitioners. The most significant practical implication is the importance of selecting appropriate technologies. In Korea, while blockchain and the Internet of Things technologies initially gained prominence in the InsurTech landscape, they were underutilized in solving real business problems and creating added value. This suggests that when adopting InsurTech technologies, companies should prioritize their potential to address real-world issues and enhance customer utility rather than merely adopt trendy technologies.

5.2.3. Policy Implications

From a policy perspective, this study underscores the importance of institutional support in fostering the development of InsurTech. The Korean government played a pivotal role by implementing institutional improvements such as the financial regulatory sandbox and the MyData system, which helped to revitalize the InsurTech market. Based on the Korean experience, timely and flexible institutional reforms are essential to promote the growth of InsurTech in other countries.

5.3. Limitations of the Study and Future Research Directions

This study has contributed to the understanding of the complex ecosystem of InsurTech by analyzing changes from three perspectives—technologies, market players, and insurance solutions—thereby providing insights into the dynamic development of InsurTech. However, as this study focuses on the Korean market, future comparative studies involving countries with different socio-economic and regulatory environments would offer a more comprehensive understanding of InsurTech.

Globally, InsurTech is still in a growth phase, with new innovations continuously reshaping the insurance landscape. This study highlights that InsurTech is not merely a technological advancement but also a means to solve real-world problems and create value across the insurance value chain. Further research should explore more about how these innovations are changing the insurance business model.

Notes

1   https://www.beambenefits.com (accessed on 13 September 2024).
2   https://www.bigkinds.or.kr (accessed on 13 September 2024).
3   As described above, this is consistent with the results of a survey of insurance company CEOs in June 2023 (Hwang & Son,
       2023). Seventy percent of insurance companies have developed new products, services, or business models using new digital
       technologies, and 20% of insurance companies have development plans within the next five years. In particular, the use of
       artificial intelligence and big data has increased since 2020, whereas the use of the IoT and blockchain has been relatively low.
4   Personal Information Protection Act, Act On Promotion Of Information And Communications Network Utilization And
       Information Protection, Credit Information Use And Protection Act.

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