

TO STUDY THE TECHNOLOGIES THAT ARE USED IN UNDERWRITING IN 2022 SPECIAL REFERENCE TO HEALTH INSURANCE

Dissertation Submitted to



THE IIHMR UNIVERSITY, JAIPUR

for the partial fulfillment for the award of the degree of

Master of Business Administration (MBA)

In

Pharmaceutical Management

by

Vijeta Rashmi

0281

UNDER THE GUIDANCE OF

Dr. Sudhinder Singh Chowhan

Associate Professor, School of Pharmaceutical Management,

IIHMR University, Jaipur



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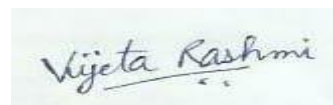
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DECLARATION

I hereby declare that the review work embodied in this project was carried out by me under the supervision of Dr. Sudhinder Singh Chowhan at the School of Pharmaceutical Management, IIHMR University, Jaipur. The extent and source of information derived from the existing literature have been indicated in the body of the project. The work is original and has not been submitted in part or full for any degree or diploma of this University.

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A rectangular box containing a handwritten signature in blue ink. The signature reads "Vijeta Rashmi" in a cursive script.

VIJETA RASHMI

MBA PM 12th BATCH



CERTIFICATE

This is to certify that dissertation titled TO STUDY THE TECHNOLOGIES THAT IMPROVE UNDERWRITING IN 2022 SPECIAL REFERENCE TO HEALTH INSURANCE is a record of the research work undertaken by **Vijeta Rashmi** in partial fulfilment of the requirements for the award of the degree of MBA in Pharmaceutical Management from the IIHMR University, Jaipur under my guidance and supervision and his/her approach to the research study has been sincere, scientific, and analytical.

Faculty Guide

IIHMR University, Jaipur

School Dean

IIHMR University,

Jaipur

Date

Date



Acknowledgment

The Satisfaction and euphoria that come along with the successful completion of any work would be incomplete unless we mention the name of the people who made it possible, whose constant guidance and encouragement served as a beam of light and crowned our efforts.

At the outset, with profound pleasure and proud privilege, I take this opportunity to express my deep sense of gratitude and indebtedness to my revered teacher and guide, **Dr. Sudhinder Singh Chowhan, Associate Professor, School of Pharmaceutical Management IIHMR University, Jaipur** whose esteemed guidance and innovative techniques resulted in genesis of this study. I am extremely grateful for the infallible determination, untiring patience, and emotional strength that has been instilled in me which made me accomplish the problems successfully.

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Above all, I thank the almighty for his benevolence.

Thanking You,

Yours sincerely,
Vijeta Rashmi

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Abstract

This study attempted to capture the current state of the Indian health insurance industry. The latest technology in the health insurance industry has been thoroughly examined and described. Underwriting technology is discussed and studied, as well as the impact of technology on insurance and underwriting. To comprehend the growth of the insurance business, some features of the future scope of insurance and the underwriting process are examined.

This study examines the impact of digital technology on insurance and considers how insurance contributes to the development of a digitalized economy. Technology and new data sources are radically altering our economy and culture, and the insurance business is set to follow suit.

As a result of digitalization, insurers' roles are expanding beyond loss indemnity to include risk prevention, mitigation, and management advice for insureds. To put it another way, new technologies enable insurance to progress from risk mitigation to risk prediction and prevention. Digital technologies could make underwriting, pricing, and other operations more efficient. However, digital technologies have created new obstacles.

Insurance plays a critical role in addressing some of society's most pressing issues. Risk pooling through insurance is expected to remain the best reaction of the industry to the financial repercussions of risk, despite the economy's increasing digitalization and ubiquitous trends to personalize more and more parts of our everyday lives.

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CHAPTER 1

INTRODUCTION

INTRODUCTION

Health insurance is a contract in which the insured receives medical coverage from the insurer in exchange for a premium payment. It covers, among other things, hospitalization, surgery, and day-care operations. Medical expenses are reimbursed, or cashless care is provided through health insurance policies.

For their own safety, all humans require insurance. When an earning member of the family died as a result of illness in the past, other members of the social circle would help the family recover financially. This donation aided the family's financial recovery. This generosity helped the family get out of financial trouble. This contribution was in the form of food, clothing, and shelter at a commercial consideration develops stronger and stronger, nucleus family expansion becomes a common practice, and those contributions and sharing began to become individualized and took the form of you. This assumes that which was previously a commodity due to will and practice. The concept of insurance is growing day by day any person who is unable to contribute or contribute lace according to earning capacity that was denied by reciprocal of help was given help in proportion to his contribution which has been contributing faithfully obedient member of society was given help in proportion to his contribution which has been contributing faithfully obedient member of a ciety.

Everyone is afraid of something. One of their concerns is whether they will be able to satisfy an excess of fundamental necessities in a proportionate manner, such as food, clothing, and housing. Humans also care about their families, ensuring that they have adequate access to these essential necessities. So, to obtain these fundamental necessities, they will attempt to acquire assets such as vehicles, real estate, jewelry, and so on. At the same time, people are concerned that this shift will be destroyed by accident or natural weather.

As can be seen, health is a vital asset, and accidents, disease, disability, and the destruction of these valued assets are all unpredictable. Because the number of accidents and the incidence of lifestyle diseases is increasing every day, insurance plays a significant role in addressing this issue.

A human being's primary source of income is the reward he receives for his efforts. If their sources of income are suddenly cut off, the family must take the following steps.

1. How can a family alter their living expenses?
2. Wife will look for a job to assist the person.
3. Due to the economic downturn, children may be forced to work instead of attending school.

These are the probable eventualities that we as humans must encounter. The primary responsibility of an insurance underwriter was to assess risk. And an insurance underwriter assesses and assesses the risk in providing insurance to consumers and businesses, determining the insurance premium pricing. To access the risk of future events that would require the insurance business to compensate and covered individuals, underwriters employ various technology, data from actuaries, and prior film history.

UNDERWRITING

Underwriting is the procedure by which a person or a company assumes financial risk in exchange for a fee.

The term underwriter comes from the practice of having each risk taker sign their name under the entire amount of risk they were/were ready to bear for a given premium.

Underwriting has the following jobs and responsibilities.

1. Examining facts on a possible client, such as age range, medical history, and business kind
2. There is an examination of possible clients using technology.
3. Choosing the appropriate insurance coverage for the possible client.
4. Calculation of premiums based on coverages
5. Finding novel ways to lower the risk of future claims.

Insurance and item usually specialized their expertise in one specific area in insurance such as properties, fire, marine, and health insurance. Underwriting in a health Insurance would analyze information related to an individual health background such as age, medical family history, and preexisting disease conditions, with the help of Machine formation underwrite wood then input the data into the technology in order to access health-related with associated with that individual and calculate how much premium need to be put if and person is saving some preexisting disease conditions then the premium should be on a higher side. When calculating premiums, underwriters also consider risk activity around the property that may cause injuries and result in an insurance claim, as well as personal information articles.

The insurance company estimates that I have a certain amount of risk each year, which can vary from individual to business via insurance transactions. The profitability of the insurance company was in some manner based on underwriting accuracy. Underwriting may also be defined as a person who assesses the risk of insuring a certain person or asset based on information about the premium that should be profitable to the insurance business. Underwriters employ technology and software to predict the likelihood and size of pay-outs over the policy's lifetime. The high-risk individual will pay a higher premium to gain protection from the pursuing low-risk individual or asset. The primary function of underwriting is to build and maintain a successful book of business for insurance companies, and it plays a critical part in their success.

Underwriting process

- After receiving the completed documentation listed in item 2, the company will underwrite as follows:
- The company may request additional information to support the underwriting decision, such as a request for an additional physical examination, a request for past medical history, and the completion of an additional questionnaire.

- The company may issue a standard premium rate policy to an Insured without further documentation request. Any extra requirements will be communicated to the potential Insured by the firm.
- Based on the current health status, past health history, and occupation, the corporation may underwrite the case with a higher premium rate policy. The corporation will respond to the proposed Insured with a counteroffer. The company will issue a policy for the proposed Insured once the proposed Insured accepts the counteroffer with an extra premium paid (if any) or a premium refund (if any).
- Once the company has underwritten and accepted the case, whether, at its usual rate or a lower rate, it will give the Insured a policy that includes a 'free look' form. The insured must check the policy for accuracy, sign the 'free look' form, and send it back to the business, should the company not receive the additional documents/requirements within a specified period, the company will terminate the application and return all premiums (if any) to the proposed Insured.
- If the proposed Insured rejects the company's counteroffer, the application will be terminated and all premiums (if any) would be refunded to the proposed Insured.
- If the company delays or rejects the application, the potential Insured will be notified by writing and will get a refund of all premiums (if any).

Underwriting Time Frames

- For a typical rate case, the company will issue a policy within 15 days of the document completion date.
- If the company requires any more documents or information, the potential Insured will be notified by letter within 30 days of the application's submission.
- If the insured obtains a policy that includes a 'free look' form and determines that it is correct, the insured must sign the 'free look' form and return it to the company within 15 days of obtaining the policy.

History of Insurance

Insurance is a well-organized economic activity that has existed in several countries throughout history.

According to records, the first 12-month temporary insurance policy was issued in London on June 18, 1583, AD for the life of William Gibbons, and the policy was sourced from Richard Martin. This policy was created by 16 people for £ 3013s4d with an 8% premium for a total of £ 3836s8d. Within a year of taking out insurance, the insured died on May 25, 1584. The insurance company declined the claim, saying that the person had been alive for more than 12 lunar months (28 days). The claim was finally paid when the issue was brought to court, and the insured was sentenced in favour.

In 1705, a "friendly society" was established with varying death benefit payments, and in 1757, a fixed amount. With the invention of life tables, life insurance has become a little more scientific (mortality per 1000 people at all ages up to 100 years). The "Just Society," established in 1762, is based on scientific data.

The History of Insurance Underwriting.

Edward Lloyd, 32 years old, and his family arrived in London in 1680. He opened Lloyd's Coffee House on Tower Street in London with the goal of reaching a market of over 3,000 coffee shops. Cafes are becoming popular as a casual and handy venue to meet friends and coworkers, as well as to use free Wi-Fi for business. Cafes have been popular since the 17th century for gathering and exchanging news, as well as offering a place for intellectual discourse among seafarers, shipowners, and merchants. By 1691, Lloyds had established a reputation for providing up-to-date shipping information and announcing maritime auction prices. Bankers have begun collecting "premiums" in exchange for taking on the transportation risks associated with stated planned routes.

The modern insurance sector is said to have begun at Lloyds. Bankers etched names on the brick plaque beneath the ship, providing precise information about cargo, crew, destinations, and weather. The term "underwriting" was coined in this way. Underwriting is the procedure by which a person or a company accepts financial risk in exchange for a fee. Credit, insurance, and investing are all examples of risk. The insurance sector has evolved into a trillion-dollar industry after more than 300 years. Lloyds of London, as it is now known, is a market for insurance and reinsurance that is still very much alive today. However, when did the concept of insurance first emerge? Babylonians developed a method allowing merchants to pay an additional amount in addition to a loan to fund a voyage across the Mediterranean over 4,000 years ago. If the ship is stolen or lost at sea, this payment ensures that the loan will be cancelled. Prices varied based on the weather at different periods of the year. Babylonians established what future generations consider risk-based pricing, the foundation of insurance, in a short period of time.

Indian insurance in a global context

India is ranked 10th in the world in terms of life insurance. In 2019, India held 2.73 percent of the global life insurance market. Life insurance premiums in India climbed 9.63 percent year over year, while global demand for life insurance premiums increased 1.18 percent.

India is ranked 15th in the world for non-life insurance. In 2019, India had a 0.79 percent share of the global non-life insurance market. Non-life insurance premiums in India rose 7.98 percent year over year, while global non-life insurance premiums rose 3.35 percent.

In 2019, life insurance business accounted for 46.34 percent of total insurance premiums, while non-life insurance premiums accounted for 53.66 percent. However, India's life insurance sector accounts for 74.94 percent of the country's total insurance business, while non-life insurance accounts for 25.06 percent.

Insurance Penetration and Density

Insurance penetration and density are two indicators that are often used to assess a country's level of insurance development, among other things. Insurance density is determined as the ratio of premiums to the population, whereas insurance penetration is calculated as a proportion of premiums to GDP (premium per capita).

In 2001, the rate of insurance utilization was 2.71 percent, and it has progressively increased to 3.76 percent in 2019. (Life 2.82 percent and non-life 0.94 percent). In the same year, insurance penetration rates in Malaysia, Thailand, and China were 4.72 percent, 4.99 percent, and 4.30 percent, respectively. In India, the insurance market share increased from 11.5 USD in 2001 to 78 USD in 2019. (Life 58 USD and Non-life 20 USD).

Malaysia, Thailand, and China have comparable figures of \$536, \$389, and \$430 for the same time. In 2019, underwriting and underwriting for the life segment are 3.35 percent and \$379, respectively, and 3.88 percent and \$439 for the non-life sector.

Health insurance market 2022

In India, the health insurance business has changed dramatically during the last few years. Consumer perceptions of this category and the need for health insurance have shifted dramatically.

The epidemic has made everyone more conscious of life's uncertainties and their vulnerability in the face of any health calamity. Health insurance premiums have been the main driver of the non-life insurance business since the inception of Covid. Despite the long period of nationwide lockdown, the healthcare sector grew by 34.2 percent year-to-date (year-to-date) in July 2022, compared to 9.9 percent since the beginning of fiscal year 2021 in July. While the health insurance business has experienced fast expansion, some key shifts and patterns have emerged to watch over the coming year are:

The speed and trajectory of growth will continue as the health insurance sector has piqued consumer interest. The focus has steadily switched from health insurance to health insurance because of a major shift in consumer perception of the business.

The rising expense of hospital visits is driving this shift, making consumers recognize the importance of health insurance. Consumers are also realizing that purchasing comprehensive coverage is a better option because it provides more comprehensive health care with broader coverage against disease, medical availability, and even cancer. As a result, many consumers have begun to view health insurance as an essential investment in providing healthy health coverage.

Chapter 2

BACKGROUND

Background.

In the modern world of investment alternative companies, making insurance investment judgments is usually tough. It required investors to be well-informed and sensitive when it came to the insurance industry. People with a lot of money, are confused about how to invest their hard-earned money effectively because so many insurance investments are presented in such a short period.

The procedure through which an organization or a person assumes the financial risk for a fee or at a present cost is referred to as underwriting. In most cases, this risk is assumed in the form of loans, insurance, or investments. The term underwriter is used in conjunction with the phrase underwriting, and it refers to the person or institution that signs their name beneath the whole amount of risk that they are prepared to assume in exchange for a certain amount of money or premium.

The mechanics have evolved throughout time, but the underwriting process remains important and is regarded as a crucial function in the financial industry. An underwriter's main responsibility is to examine the risk of the insurer's company before approving the insurance amount. Underwriting has proved to be useful in determining reasonable loan borrowing rates, determining suitable premiums, and generating a market for securities by appropriately pricing investment risk.

When a business files for an IPO, the underwriting process is used to assure that the firm will raise the necessary funds and that the underwriters will receive the agreed-upon premium or profit in return for their services. Investors gain from underwriting since it assists them in making educated investment selections.

The insurance business, which formerly had poor profit margins, is now facing growing competition in terms of pricing and service time. Insurers utilize cutting-edge technology (such as sophisticated analytics, natural language processing, and digital twins) to provide better service to clients at a cheaper cost. Customers like this strategy since 85 percent of the desire to rapidly obtain insurance coverage. How will insurers be able to keep up?

To stay up, insurers are reorganizing their underwriting divisions to better price risk and do it in less time. We explain why insurers need to rethink their underwriting strategy and highlight four essential technologies that might help them do so.

Chapter 3
AIM AND OBJECTIVE

AIM AND OBJECTIVE

Aim- "TO STUDY THE TECHNOLOGIES THAT ARE USED IN UNDERWRITING IN 2022 SPECIAL REFERENCE TO HEALTH INSURANCE"

Objective-

1. To study Insurance and health insurance.
2. To study insurance underwriting.
3. To study the impact of technology on insurance and insurance underwriting
4. To study about advance technology available for insurance and insurance underwriting

Chapter 4
LITERATURE REVIEW

LITERATURE REVIEW

The health sector's share of India's national budget remains one of the lowest in the world, with health care spending mostly out of pocket. Currently, funds are being set aside to expand health insurance coverage as a means of minimizing healthcare inequities and lowering rising costs. The ethnographic case studies could greatly enhance existing health services and policy research by providing a deeper understanding of the life cycle and insurance program from the perspective of both the insurance holder and the health care provider.

The current technology in the Dena health insurance business has been analyzed and described in detail how underwriting, preauthorization, and clean settlement are interdependent procedures that can be streamlined with the use of technology. The health insurance industry provides medical benefits that may be of financial assistance to ordinary people.

For the existing insurance business model, digital transformation is becoming increasingly important. It will serve as ivories and challenges, with a focus on how artificial intelligence and cloud computing can be leveraged to revolutionize the insurance industry.

Good health is necessary for human growth and development in society. The cost of high healthcare is practically out of reach for the poor people of India. Display the inch According to the IRDA, low consumer awareness and insufficient health care in the procedure are the two biggest barriers to expanding healthcare insurance coverage in India. The Indian government implemented a major initiative to address the problem of healthcare in both rural and urban areas. Health insurance is more complicated since a severe problem comes from adverse selection moral hazards and unavailability of information gap. At health insurance, policy creation, plane settlement, and assessment are all multiplayer tasks. The insurance industry benefits the country's economic development through utilizing technology. The healthcare market in India is growing rapidly, thanks to new insurance products and the entry of private enterprises into the industry. It plays an essential part in the country's insurance market growth.

LIMITATIONS OF THE TECHNOLOGIES

The digitalization of small insurance firms, which is difficult for small insurance companies to do on a global platform, is one of the limitations of the above technologies in the insurance sector. Because technologies are costly, digitization of insurance companies, particularly small insurance companies, is hampered. The second restriction is enhancing the analytical data quality, which is critical because the analytical data must be shared on a cloud platform so that anybody may access it. This necessitates the enhancement of analytical data quality. The technologies' promises. The above technologies have the potential to bring innovation to the insurance industry, allowing for hassle-free insurance provision. With the usage of the above technologies, the insurance process has been

simplified because the technologies have been effective in removing the obstacles in the complete insurance process. The term "insurtech" refers to the technology that has steadily altered the insurance process.

Advantages of technology for insurance industry, insurance customers, insurance companies and insurance regulators

The implication of Technology in benefit of the insurance industry

The insurance business will gain from the adoption of these new technologies since pre-authorization and claims management will be simplified, as well as the other processes involved. The use of technology in the insurance sector will also help to reduce fraud, misuse, and waste management. The main advantage of technology in the insurance industry is that the numerous personnel involved in the insurance process may work from anywhere.

The implication of Technology in benefit of the insurance customers

Customers will be able to access their profiles from anywhere with the help of the technologies, which are kept in the cloud and are simple to use. Customers may be enrolled in an insurance plan that covers both their lives and their health. The technology will make the procedure of paying insurance premiums and receiving the policy amount easier.

The implication of Technology in benefit of the insurance companies

The firms will benefit from the creation and adoption of technologies because the technologies will enable the companies to give risk management to the people, allowing people in countries where health insurance is not available to obtain insurance and health care.

The implication of Technology in helping the insurance regulators

By extending insurance and health coverage to all Indian homes, technology assists the insurance regulation. Because India is a country where most people do not have access to health insurance or coverage, insurance will become a household name once the technology is integrated. The insurance regulator may gain from the inclusion of numerous clients in the health insurance programme to give risk management protection.

Latest technology used in the health insurance sector

The digital switch is a digital platform in the health insurance sector that covers all the customers' needs and wants while lowering operational costs and improving customer satisfaction. Transparency, simplicity, customer interaction, personalization, and convenience are all advantages of using digital switches to regulate operational activities and explore global business. Block chain, the Internet of Things (IoT), Artificial Intelligence (AI), Machine Learning (ML), and insurance management are examples of

sophisticated technology. Machine Learning (ML) improves claim procedures while also automating the entire process of analysing digitized material. It also assists insurers in detecting fraudulent activities and guiding them through the claim management process using intelligent underwriting.

Block chain is a Distributed Ledger Technology that uses computational power and cryptography to speed up transaction verification and store all transactions.

Usage of technology in underwriting

Medical insurance coverage medical underwriting is the process through which a health insurer evaluates a patient's medical history to determine whether to offer them coverage and what terms they must include in the policy documents. The following are the several types of underwriting methods: -

Fully pooled

The underwriter, usually a health insurance firm, assumes all the risk and charges a premium for the insurance. The renewal of health insurance will not be based on the length of the plan under the pooled model, but rather on the pool of consumers the health insurance business has. The technology that is commonly utilized by insurance companies for underwriting is a cloud-based solution that provides underwriting and premium determining solutions for health insurance companies.

Prospectively experience rated

The underwriter takes the risk and determines the premium rates for health insurance policies based on information such as historical claims and demographic data. Most medical insurance papers are written using an experience-based method. Although the claims for these benefits are limited, they are numerous. Medical insurers can use the program to manage their billings and claims. Experience might also be fed into the system, which would create medical insurance paperwork and premiums.

Retention Accounting

Previous claims, combined with trend variables, demographic, and inflation considerations, are used in retention accounting or refund accounting to forecast future claims, and reach a premium. More specifically, if premiums exceed costs, surplus may be used to refund plans, but if costs exceed premiums, loss may be recovered through higher premiums. While the policy may be terminated, the underwriter risks being left with a loss. The retention accounting team is made up of people who have both personal and shared experience.

Administrative services only

A third-party handle claims against service payments, and the cost can be budgeted based on the amount of coverage. Furthermore, the monthly service charges will be billed to the plan sponsor; nonetheless, it has some advantages, such as long-term disability and out-of-country hospitals are essentially insured, as claims for benefits can be large.

Administrative Services Only (ASO) allows the plan sponsor to save money while claims are low because the health benefit is often self-insured.

Self-administered and Pooling limits

By taking all risks, the plan sponsor selects all administration functions, which include all claims-related payments. As the group size grows, claim variations may reduce; yet few large insurance organizations may consider self-insuring long-term disability. Pooling limits can help minimize the risks of non-recurring medical claims and claims made outside of the country.

CHAPTER -5
RESEARCH METHODOLOGY

RESEARCH METHODOLOGY

Research methodology

Study type

The studies are based on a secondary data. Who conduct the search, chose the relevant database, publication with the help of literature review?

Study variable

- The insurance market in India
- Health Insurance market in India
- History of insurance and underwriting
- The approach of effective underwriting

Outcome variables

- Advanced technology used in health insurance and insurance underwriting
- Future of insurance and insurance underwriting.
- Effective use of technology in a risk assessment of Insurance.
- Creating awareness about new technology in the underwater
- Manual underwriting vs Technology underwriting

Methodology

Data was collected from various sources and several websites.

- Various search engines

Different search engines like PubMed, Google scholar, Web of science, research gate and various insurance services like IRDA, GIC.

- Various publication

Several articles, journals, and publication done by the different publisher which is published.

- Reviewed publication

After proper literature review of articles, journal and different publication help to build existing report on the " Importance of technology in insurance with reference to insurance underwriting "

Analysis and evaluation of publication

The data is connected from month February and May 2022 from various publication was reviewed and based on different categories of publications they were selected most recent one from year 2014 to 2022 which provide different perspective about " Importance of technology in insurance with reference to insurance underwriting "

CHAPTER -6

RESULT

RESULT

Manual Underwriting

1. Customer Experience

- Manual underwriting provides the comfort of a personal touch, which can help you attract more clients. However, it is a lengthy procedure. Underwriting accuracy and speed aren't as trustworthy as they would be in an automated system.
- Customers avoid manual Underwriting because of extensive manual form fills, complex fine print, errors and omissions in Underwriting, long response times, higher premiums, lack of product customisation, and predictive services. Even in the most efficient manual underwriting-based systems, preparing and transmitting commercial insurance quotations to clients can take up to 2-3 days.

2. Pricing and Risk Management

- Each application introduces a new set of risk variables that are getting increasingly difficult to analyse and account for precisely.
- Manual underwriting suffers from wasteful pricing, poor quality, and the possibility of procedural errors. The loss ratios of the top and bottom quintiles of performers differed by 23-28 percent. In developing risk profiles or calculating the amount of risk required for everyone, manual underwriting is prone to errors.

3. Underwriting Efficiency

- For the most high-value customers, the manual underwriting procedure takes weeks to receive a quote post-application, making it one of the most time and resource-intensive operations in the insurance client life cycle. Furthermore, the manual nature of the task has a negative impact on productivity.

4. Operational Costs

- Underwriting costs can range from \$50 to \$130 per hour, multiplied by headcount in some lines of business, and the underwriting process can take days to weeks.
- Furthermore, scaling up with manual underwriting entails significant fixed expenses as well as higher operational overheads. Because employees are expensive, insurers swiftly turn to digitization to boost efficiency and cut expenses.

5. Business Growth

- In comparison to algorithmically generated pricing judgments, manually generated insurance quotations are slow. When clients have to choose

between the two, they'll go with the one that takes the least amount of time to process and is available 24*7

- The time-consuming and inconvenient process leads to customer churn, tarnishing the insurer's reputation in the market.

Automated Underwriting

1. Customer Experience

- AI-based underwriting technologies enable insurers to provide a better customer experience during the sales process and establish client loyalty from the first point of contact. It automates low-complexity procedures, allowing underwriters to focus on more complex customer interactions. After that, insurers can concentrate on developing a long-term retention strategy based on tailored account servicing and profitable pricing models.
- Given the possibilities, leading insurers have already been working to upskill their underwriters so that they can take on more sophisticated duties and adapt to highly gratifying and work-enabling digital platforms.

2. Pricing and Risk Management

- Artificial Intelligence is used in Automated Underwriting to evaluate an application against billions of data points. Using big data and accompanying algorithms, underwriters gain visibility into the most relevant risk indicators connected with customer profiles.
- An AI-powered underwriting solution helps underwriters quantify both unstructured and quantitative data points. In Underwriting, AI-driven automation provides total risk visibility into a case. As a result, it assists underwriters in recommending the best possible premiums and coverage.

3. Underwriting Efficiency

- AI-assisted When it comes to underwriting efficiency, underwriting is the clear victor. Underwriters can focus on complex activities and ultimate decision-making by utilising RPA and incorporating intelligence into the system for light and repetitive jobs.
- For example, AI-driven underwriting systems can assist underwriters in issuing a quote for high-value customers on the application date in a matter of seconds without requiring manual work.

4. Operational Costs

- By accelerating the rise of automated underwriting, insurers and insurance firms can save considerable amounts of money on operating costs. It establishes a smooth workflow centered on Machine Learning models that can self-train and adapt to the system's patterns and nuances without incurring additional scaling costs.

5. Business Growth

- AI-based Underwriting improves profitability by supporting underwriters in achieving better loss ratios, a lower churn rate, more conversion-friendly quotations, and ultimately optimising the underwriting function's total resource use.
- Companies can now achieve improved expenditure ratios and employee experience thanks to the underwriter's increasing role as a business creator and digital manager in an AI-first insurance organisation.

The technology used in Underwriting-

1-Machine learning and advanced analytics

On structured data, advanced analytics

Advanced analytics approaches enable insurers to determine the best portfolio strategy while allowing for quick and accurate pricing. Interpreting data about a candidate policyholder's background is the best approach to price risk. In order to determine the premium for health insurance, insurers can use statistics such as:

- Applicant's age
- Smoking cigarettes
- Consumption of alcohol
- Dietary regimen
- Unhealthy fat ratio
- Medical examination report (sugar, blood pressure etc.)
- Workout regimen
- Threat to his or her working environment
- Medical records of the applicant (does he or she have any chronic illnesses)
- Medical records of the applicant's relatives

Each variable has a unique link with the likelihood of an insurance company incurring a cost. Insurers utilize AI/ML models to precisely calculate each coefficient in a short amount of time. These models have a lot of processing capacity and are good at predicting loss from past data.

Insurers can also use advanced analytics to execute portfolio strategies. Mean-variance analysis is the foundation of a good portfolio strategy, and investors have been using advanced analytics models to optimise their portfolio strategies with robo-advisors for a while. Insurers have used similar technologies to diversify their own portfolios.

Insurance businesses can benefit from behavioural analytics to conduct effective underwriting. Customers' browser history, clicks, location, and other factors are analysed

to assess their likelihood of committing fraud in the future. Insurers can avoid charging all clients for fraud and instead reward their loyal policyholders.

Natural Language Processing (NLP)

NLP offers similar advantages to advanced analytics, except insurers can use text and voice data to optimise pricing.

NLP is an AI/ML technique for extracting meaning from text and voice. Many charts and texts must be assessed in the insurance industry. When we follow up on a health insurance case, for example, the customer fills out questionnaires and doctors' reports, which all contain textual data. NLP algorithms can extract information from these documents, classify it, and look for correlations between claims and risk factors.

Optical Character Recognition (OCR) / Handwritten Character Recognition (HCR)

Insurers can use HCR/OCR to read unstructured text documents and extract more data for sophisticated analytics and natural language processing.

Documents are one of the ways that companies and individuals communicate. Insurers must process papers to better understand their potential consumers. This is supported by two technologies:

Optical character recognition (OCR) is a technology that extracts meaning from printed texts.

Handwritten Character Recognition (HCR) assists insurers in deriving meaning from still-in-use handwritten papers.

Insurers can use OCR and HCR to automate data entry. According to Accenture, underwriters spend more than half of their time doing repetitive duties like data input.

As a result, automating such operations can help insurers make better use of their workers.

1. Digital Twins

Digital twins are computer-generated replicas of any natural object, such as humans, buildings, or automobiles that help running simulations.

Simulations are beneficial for insurers for two reasons:

They can assess whether their portfolio strategies (diversification) are ensuring their longevity. If they do not, companies can renew their diversification strategies by targeting new locations, insured groups, insurance objects, etc.

As mentioned above, insurers use historical data. However, for certain cases, there is a lack of historical data. For example, Mount Vesuvius in Italy has not erupted on a major scale since 1944. However, this volcano is known for destroying the Ancient Roman city of Pompeii. Insurers may want to predict the cost of such unlikely but catastrophic events. Another example is the magnitude 7 or greater earthquakes that strike California about once a decade. By predicting the cost of such catastrophic events insurers can set premium prices that ensure their long-term profit.

2. Internet of things (IoT)

The Internet of Things expands the amount of data available to insurers.

The analytics technologies were linked to insurers having more processing capacity. However, computational power is useless without data. The Internet of Things (IoT) is a collection of smart gadgets that share data about their surroundings in real time. As a result, IoT increases the amount of data that AI/ML models can comprehend, allowing insurers to make more accurate risk assessments.

It's crucial to look at whatever variable's insurers have added to their menu in addition to the usual ones they've looked at. Smartwatches-smartphones, smart cars, and smart factories-will be the primary data sources for health insurance, auto insurance, and commercial insurance, respectively.

IoT can motivate people to be more responsible. Individual tracking can be used to help people improve their behavior. A driver who drives his car less frequently, for example, will pay less for car insurance. The price of pay-as-you-drive insurance is determined by the policyholder's driving behavior. Health insurance firms, likewise, have begun to compensate subscribers who take care of their health.

It's worth noting that the fast use of smart gadgets raises the potential of hacks. As a result, cybersecurity insurance may become the most significant type of insurance in the future.

3. Application Programming Interfaces (APIs)

For insurers, the Internet of Things is extending their database and data variability. The computer power required to interpret data is provided by AI/ML models. APIs are software gateways that allow external data to be transferred to insurance underwriting systems.

To undertake technology-driven underwriting, insurers use their own hardware or use cloud computing. APIs assist insurers in extracting data from external databases to meet their specific requirements. Insurers can save money on data storage and transit by adopting APIs. Data can be stored in remote locations and retrieved through APIs. APIs assist cloud users reduce cloud costs and improve overall business efficiency.

4. Blockchain

Some data that may be valuable to insurers in assessing risk may be personal data, making it difficult to share such data with third parties due to restrictions such as GDPR. Customers may also be hesitant to disclose such information with third parties or fear that insurance firms will sell it to unauthorized individuals. This is especially true for health insurers, who must protect patient information.

Insurers may take patient data from doctors and turn it into smart contracts without knowing who the customer is because the blockchain is capable of cryptographically preserving data securely. If the criteria of the specified smart policy are met, policyholders can profit from health insurance.

Underwriting in Reliance General Insurance-

- Sales persons receives a request on Call desk.

Call desk is an application where Client fills their Request form for Quote and their details and provide required documents.

- Salespersons generate a ticket for every proposal on Savion for underwrites to quote the premium with required terms.

Savion is an application from where underwriter can receive proposals details, documents required and proposal identification no. i.e., ticket no. After quoting a premium underwriter close the ticket with outcomes on this application.

- Applications used by underwriter for quoting a premium-
 1. OTC calculator and IR pass- These softwares are used to quote OTC (over the counter products) and used to give quotes to fresh proposals with very small groups and for small Sum Insured.
 2. Qlik view- This application is used to analyze data for risk assessment.
 3. Excel- This application is used by underwriter for calculating the premium.

Traditional Advantages of Excel Based Underwriting

Tremendous Flexibility

Microsoft Excel's flexibility is unrivalled by any web application. The ability to adjust formatting, add rows, columns, and sheets (along with a slew of other options) gives the user complete control.

Asset Specific Analysis

Commercial real estate transactions are not all the same. Many businesses have suffered significant losses because of their failure to recognize the impact of physical aspects on performance. Excel Underwriting lets an underwriter to perform in-depth asset-specific analysis and provide the results in an easy-to-read and understand style.

Emailable

Simply email the model to someone else if you need to send it to someone else. When you merely want to ask them if they're interested in bidding on a loan, there's no need to go through a lengthy process of granting them access to secure internal systems. Excel is only a file that can be given to the relevant person.

Versionable

There are numerous different structures that can be used to make a deal work. You can make branched clones in Excel to investigate all of the many possibilities.

Speed

Excel is designed for speed, and a skilled user may breeze through it in no time.

Offline Usage

You may need to board a plane or wish to take your work with you on the train at times. When you have a robust, consistent, and secure internet connection, there is no reason to limit your work capacity. There is no such restriction in Excel.

Traditional Disadvantages of Microsoft Based Excel Underwriting which no longer apply

Portfolio Level Reporting

Classic Excel: With offline Excel spreadsheets, portfolio-level reporting is practically impossible. Excel is wonderful for analysing loans as you make them, but it's very impossible to roll up to a portfolio level cleanly and automatically. In most cases, this forces businesses to use several Excel spreadsheets and then a centralised system. Everything gets double-entered because of this. This is not only a waste of time, but it also leads to errors when data is updated on one side but not on the other. With today's technology, this constraint is ridiculous

Integrated Excel: This is no longer an issue thanks to Rockport's multimillion-dollar investment in integrating Excel technology. Rockport has developed technology that connects its models to its central system, allowing users to examine loans in native Excel and store data automatically (and vice versa, pull updated information into the Excel model). All loan and portfolio information is kept up to date in real time as a result of this.

No Ability To Render Into Other Formats

Classic Excel: An Excel underwriting model is useful, but how does it translate into an ASR, a Borrower Commitment Letter, or a Pipeline Report? The most common response is that a corporation relies solely on the Excel underwriting model. They do double entry into the word file or whatever other format(s) the data needs to go into if they need it in another format. This is a huge loss of time, as it leads to a series of fragmented, manual operations that are both error-prone and a waste of human resources.

Integrated Excel: Because the data is kept up to date by integrating the Excel model with the system, all system reports (such as Asset Summary Reports, Pipeline Reports, and so on) are kept in sync automatically. The ability of Rockport to export reports to PDF, Word, and Excel formats means that these files may be generated with a single click and modified to meet the demands of a specific client.

Database Versus Confusing Local Files

Classic Excel: A modern company cannot afford to have hundreds, if not thousands, of offline excel models that go misplaced and aren't located when they're needed. What is required is a centralising mechanism that allows all these files to be stored, organised, and their data to be incorporated into a centralised system.

Integrated Excel: The Rockport user can save not just their data from the underwriting model, but also copies of the model itself into the system's document repository

throughout the underwriting process. This means that a user can store all the many versions of an underwriting in one location for future records.

Lack Of Audit Trails/Control Mechanisms

Classic Excel: The ability to audit the history of a piece of data is both logical and necessary for compliance. When was the interest rate adjusted to 5%, and who made the change? "I swear it used to say 6%!" says the narrator. Excel has a bad reputation for this and has little or no capability in this area.

Integrated Excel: With an integrated system, all data changes are recorded back into the system, and a comprehensive audit trail is maintained. You obtain more power by combining the two (Excel and System) than by using Excel alone.

Inability To Cleanly Handle Complicated Deal Structures

Classic Excel: The majority of excel models are created by one or two persons in a company and gradually evolve over time. But what about a property that is a different property type, or a multi-property with six hotel properties, or an A/B1/B2/Mezz/Equity structure? It is extremely difficult to appropriately organize diverse style transactions unless a firm has a different template for each permutation of these (and maintains them).

Integrated Excel: The system generates each model to represent the credit characteristics of each deal using Rockport's own underwriting approach! This means that the hugely intelligent system will work out every single formula (out of thousands) that goes into these kinds of complicated models for you.

CHAPTER -6
DISCUSSION

Discussion

Modern insurance in India

In 1912, the government began to regulate the insurance industry by establishing the "Insurance Act." In 1938, this Act was completely modified and approved as a New Act to regulate investment, expenditure, and management. The Controller's Office was founded. This Act was revised once again in 1950.

In 1955, India had 170 insurance offices and 80 P.F. Societies registered companies providing life insurance. Because of an increase in malpractices in the Life Insurance company, because of high illiteracy and a lack of desire to penetrate/ spread the business, the Government of India nationalised it in June 1956, and the LIC Act went into effect on January 1, 1956.

Similarly, in 1972, general insurance (which deals with non-life industry, including as property insurance) was nationalised by merging 55 Indian and 52 non-Indian enterprises into four general insurance organisations.

While liberalising the Indian economy, the Indian government also saw the need to liberalise the insurance sector due to lesser insurance penetration compared to the Indian population and size, as well as other developing countries. In 1993, the government established the Malhotra committee to investigate whether the insurance market could be opened to private firms. The group suggested that the insurance sector be liberalised, privatised, and globalised (LPG). The Insurance Regulatory and Development Authority was established in 1999 under the IRDA Act 1999.

Life and general insurance monopolies were broken after 44 and 27 years, respectively.

Insurance business liberalisation will surely help the Indian economy, government, industry, employees, consumers, and society in the following ways:

Benefits to Economy

- Quick investment
- Improve Life Quality (New Risk Coverage)
- Consumer-friendly products will emerge from the competition
- Large-scale fund mobilisation
- Major Projects Insurance and Reinsurance Facilities
- Domestic projects are covered

Benefits to Government

- Long-Term Infrastructure Funding
- Long-Term Debt Market Instruments Available
- Increased Employment and Compensation Opportunities
- Financial Burden of Rural, Social, and Backward Classes Reduced
- Disaster Relief Contributions (Sharing of Social Responsibilities)

Benefits to Industry

- Technical expertise transfer
- New products and pricing options
- Better Prospects for National Corporations
- Domestic industry will embrace technology and provide loyal customer service.
- Customers will benefit the most from a market-driven economy.

Benefits to Consumer

- Higher quality at lower prices
- More product options
- World-class customer service
- Increased Insurance Penetration

Benefits to Society

- Insurance companies serve as defenders in a variety of ways:
- Risk coverage for large industry, trade, and property is provided in accordance with the law Environmental risks are reduced
- Compensations for hits and runs
- Crop insurance to protect against natural disasters such as poor rainfall.
- Shared societal responsibilities
 1. Education
 2. Medical
 3. Health
 4. Accident

The insurance business, which formerly had low profit margins, is now facing growing competition in terms of pricing and service time. Insurtechs use cutting-edge technology (such as advanced analytics, natural language processing, and digital twins) to provide better service to clients at cheaper costs. Customers like this strategy since 85 percent of them desire to obtain insurance coverage more rapidly. How can insurance companies keep up?

To stay up, insurers are updating their underwriting departments to properly price risk in less time. We explain why insurers need to rethink their underwriting strategy and highlight four essential technologies that can help them do so.

Effective underwriting systems:

- Underwrite risk at a profit-maximizing price.
- Ensure appropriate diversification.
- Operate at customer-acceptable speeds.

Insurers use underwriting to determine the likelihood of a loss affecting homes, automobiles, businesses, or persons. Then, for losses that meet certain present conditions, insurers sell an insurance policy (i.e., an indemnity guarantee). In other words, by paying a specific sum, policyholders lower their risks. To maximize profit, the underwriting procedure tries to determine this amount as precisely as feasible.

Effective underwriting, on the other hand, is more than just risk evaluation. The time required to price the risk and a portfolio plan are the other two critical components.

Future of insurance

From distribution to underwriting and pricing to claims, AI and associated technologies will have a seismic impact on the insurance sector. Distribution and underwriting are already being influenced by advanced technology and data, with policies being priced, purchased, and bonded in near real-time. An in-depth look at what insurance might look like in 2030 reveals significant shifts throughout the insurance value chain.

Distribution

The experience of acquiring insurance is quicker, with less active participation on the side of both the insurer and the customer. With enough data on individual behavior and AI algorithms developing risk profiles, cycle times for buying an auto, commercial, or life insurance policy will be lowered to minutes or even seconds. As telematics and in-home Internet of Things (IoT) devices proliferate and pricing algorithms improve, auto and home insurance carriers will continue to refine their capacity to issue coverage promptly to a wider variety of clients.

Many life insurance companies are testing simplified issue plans, although most are limited to only the healthiest applicants and are more expensive than a comparable fully underwritten product. We will witness a new wave of mass-market quick issue products as AI pervades life underwriting and carriers can identify risk in a much more granular and sophisticated way.

Blockchain-enabled smart contracts instantly authorise payments from a customer's bank account. In the meantime, contract procedures and payment verification are either removed or simplified, lowering customer acquisition costs. Experts predict that by 2025, there will be one trillion connected gadgets. The acquisition of business insurance is also accelerated, as a mix of drones, IoT, and other publicly available data gives enough information for AI-based cognitive models to provide proactive quotes.

Usage-based insurance (UBI) plans that are highly dynamic and tailored to the behaviour of individual clients are becoming increasingly popular. As product options adapt to an individual's behavioural patterns, insurance moves away from a "buy and annual renewal" approach and toward a continuous cycle. Furthermore, products are disaggregated into micro coverage elements (for example, phone battery insurance, flight delay insurance, and different coverage for a washer and dryer within the home) that consumers can customise to their needs, with the ability to compare prices from multiple carriers for their individualised baskets of insurance products in real time. New items are being developed to address the changing nature of living situations and travel.

By 2030, the role of insurance salespeople has shifted considerably. As active agents retire, the number of active agents decreases, and the surviving agents rely significantly on technology to boost productivity. Agents' roles shift from process facilitators to product educators. The agent of the future can sell almost any sort of insurance and offers value by

assisting clients in managing their insurance portfolios across experiences, health, life, mobility, personal property, and residential. Agents utilise AI-enabled bots to locate possible transactions for clients and smart personal assistants to streamline their jobs.

Because each engagement will be personalised to the exact current and future needs of each individual client, these solutions enable agents to handle a far bigger client base while making customer encounters (a combination of in-person, virtual, and digital) quicker and more meaningful.

Underwriting and pricing

For most personal and small-business policies in life and property and liability insurance, underwriting as we know it now will be obsolete by 2030. Most of the underwriting is automated and backed by a combination of machine and deep learning models embedded into the technological stack, reducing the underwriting process to a few seconds. Internal data, as well as a diverse range of external data obtained through application programming interfaces and third-party data and analytics providers, are used to power these models. Data from devices provided by mainline carriers, reinsurers, product manufacturers, and distributors is gathered in several data repositories and data streams. These data sources allow insurers to make ex ante underwriting and pricing choices, allowing for proactive outreach with a bindable quote for a product bundle customised to the buyer's risk profile and coverage requirements.

Regulators examine AI-enabled, machine learning-based models, a process that necessitates a transparent way for assessing a score's traceability (like the rating factor derivations used today with regression-based coefficients). Regulators look at a variety of model inputs to see if data utilisation is appropriate for marketing and underwriting. They also create test policies for providers to use when setting prices in online plans, ensuring that the algorithm's outputs are within acceptable limits. Access to some sensitive and predictive data (such as health and genetic information) is restricted by public legislation, which reduces underwriting and pricing flexibility and increases ant selection risk in particular segments.

Consumers' primary consideration is price, but carriers are innovating to reduce competition. The impact of AI on the future of insurance pricing in 2030. Customers and insurers are connected through sophisticated proprietary systems that provide customers with unique experiences, features, and value. Price competition is increasing, and razor-thin margins are the norm in some areas, while unique insurance offers provide margin expansion and uniqueness in others. The speed of pricing innovation is quick in jurisdictions that accept change. Pricing is offered in real time and is based on consumption and a dynamic, data-rich risk assessment, giving consumers control over how their activities affect coverage, insurability, and pricing.

CHAPTER 8
CONCLUSION

CONCLUSION

InsurTech companies appear to be establishing business models that may better address policyholder insurability by leveraging technology to streamline the contracting process and adapting policies to their specific needs. Insurance can also adapt to broader shifts in economic activity, such as the sharing economy and the big millennial generation. The ethical and environmental factors that many InsurTechs include into their business models are another distinguishing feature. Many InsurTechs strive to improve the openness of contracting and claims management processes, including fraud detection, by offering better insight into where premiums are spent, which could have an impact on the insurance sector.

There also appears to be a growing awareness that the fine print of an insurance quotation is laborious to read and does not provide much insight into the policy's actual coverage for retail clients. Sites are being established that simplify policy coverage information and attempt to clarify premium levels while also adding peer pressure for risk mitigation. The risk assessment is usually carried out using an algorithm based on a few questions, which may possibly include the usage of external data sources.

These technologies offer the potential to provide better and more tailored insurance coverage to a wider range of people, including those with lower incomes, as well as increased financial security. Furthermore, the new distribution models have the potential to streamline the insurance process and deliver insurance to underserved populations. However, if they strive to develop their business, InsurTech will have to comply with insurance regulations as well as broader data protection and cyber security obligations.

The creation of innovation centres and regulatory sandboxes provides a nurturing environment for new technologies and breakthroughs, as well as the opportunity for a better understanding of their market impact. However, more clarity on the right level of regulation in such platforms, as well as how they progress to full regulation, is needed to strike a balance between the need for innovation and the requirement for proper policyholder protection.

Market conduct and internal controls are the key areas where InsurTech would face regulatory scrutiny, and while such rules are technology-neutral, their practical impact requires further investigation. Internal controls that assure compliance with laws and regulations, as well as fair treatment of consumers and policyholders, will be critical.

It's uncertain what impact big data and algorithms will have and how regulators will evaluate them. The complexities involved have ramifications for both how regulators organize themselves and how the spirit of regulation is implemented. Firms should be expected to demonstrate, to the extent practicable, that their data use is appropriate and bias-free. RegTech could play a role in ensuring that this is carried out in the future.

Impact of technology in underwriting

The following were the five areas of underwriting where technology had the greatest impact:

- Ability to handle larger amounts of business
- Speed to give quote
- Ability to access information
- Workflow simplicity
- Risk rating and pricing ability

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