



IMPACT OF TECHNOLOGY ON INSURANCE INDUSTRY

RESEARCH PAPER

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ABSTRACT

The insurance sector has historically been sluggish to adopt new technology, digitalization advances have recently upended the sector and changed how insurance companies do business. This empirical study intends to investigate how technology is affecting the insurance sector and evaluate how adopting new technologies might boost organisational performance. It also focuses on the frauds and the false claims reduction that have been made possible with the introduction of the wearables as well as other technological interventions. A thorough literature analysis and a poll of a randomly selected sample population will make up the study's mixed-method methodology. The literature evaluation will evaluate the advantages and difficulties of applying technological solutions, as well as the current research on technology adoption and its effect on the insurance business. Data will be gathered from the random sample population in the survey and also from the industry experts on their opinions of technology adoption, the kinds of technological solutions they have used, and the effects these have had on company performance. The research and the survey anticipates that the implementation of technology has had a substantial influence on the insurance sector, increasing operational effectiveness, customer satisfaction, and financial success. Additionally, the research will point out the main obstacles to technology adoption and offer suggestions for insurance businesses wishing to use technology to their advantage. The findings of this research will add to the expanding body of knowledge on how technology is affecting the insurance sector and give insurance businesses crucial information about how to deal with the possibilities and difficulties posed by digital transformation.

1. Introduction:

The growth of the insurance industry was a very evident one in the recent years where the insurance covers became a lifesaver as well as the need of the hour. These recent years witnessed the term insurance being so common and essential at the same time not just by corporates or professionals but even in the lives of the common people. Its really time to admit that the insurance industry as well as the concept of insuring risks have travelled a long way from the

stories that revolved around the old merchants who travelled in ships and from the coffee shops in the Lloyds. Insurance that was believed to only benefit people of middle and upper-classes have now started to benefit even the poorest of the poor people, which indeed is one of the major achievement in terms of marketability as well as market penetration. The introduction of government schemes has also contributed very much towards making the insurance possibilities to a reality from mere a dream for the poor and underprivileged sections of the society. So finally, insurance products have also come along those products which we can't live without.

History of Adopting Technological Inventions:

The insurance sector utilised the telegraph for the first time in 1837 to send information about ships and cargo. As a result, insurers could instantly learn the state of the ships and modify their insurance as necessary. The invention of the typewriter in 1867, which made it possible to swiftly and precisely generate insurance policies, changed the sector. As a result, the industry became more efficient and it became simpler to issue policies for more clients. The Telephone (1876): Real-time communication between insurance agents and clients and other agents was made possible by the telephone. This significantly enhanced customer service and made it easier for employees to react rapidly to client requests. The computer (1940s): In the 1940s, computers were first used in the insurance sector. As a result, insurers were able to analyse massive volumes of data more precisely and quickly. Internet (1990s): The insurance sector saw substantial transformation as a result of the internet. It made it simpler for clients to submit claims online, gave customers access to information about coverage, and helped insurers reach a wider audience. Big Data and Analytics (2000s): In recent years, the insurance business has seen a transformation thanks to the utilisation of big data and analytics. Insurers may now more effectively assess risk, set policy prices, and spot possible fraud using data from a number of sources. Artificial Intelligence (2010s): AI has made it possible for insurers to automate a variety of procedures, including underwriting, claims processing, and customer support. Moreover, AI can aid insurers in more successfully identifying and preventing fraud. The history of technology development in the insurance sector has often been characterised by a continual march towards improved effectiveness, accuracy, and customer service. It is expected that the sector will continue to adjust and enhance its procedures as technology develops.

(Technology and the insurance industry: Re-configuring the competitive landscape, A Cappiello, 2018)

Importance of Emerging Technologies:

It is not true that the need for having an insurance emerged in the recent years of hardship, the fact is that the need for insurance existed from the very beginning itself. The need for insurance as well as the exposures towards risks all existed dating back to the existence of the human race itself, but people started to feel the need for insuring against the risks that they are exposed to only when they started to sense loss. Technology has played a critical role in creating a dramatic revolution in the insurance sector in recent years. Technology has changed the business in many ways, from automating underwriting procedures and strengthening fraud detection to improving consumer experience through individualised insurance and simple claim processing. Rapid technological improvements have led to substantial changes in the insurance sector in recent decades. The business sector has historically relied on a convoluted network of manual procedures, including a significant amount of paperwork and manual data input. But as

technology advanced, the insurance sector turned towards more digital and automated operations, which enhanced client satisfaction and boosted efficiency.

The utilisation of big data and analytics is one of the most significant technical developments in the insurance sector. A lot of data can now be gathered and analysed by insurance firms from a variety of sources, such as social media, weather trends, and IoT devices. To identify possible hazards, forecast customer behaviour, and create individualised insurance plans, use this data. The way insurance firms evaluate risks and create policies has changed as a result of the use of data analytics, improving accuracy and improving risk management.

(The digital (r) evolution of insurance business models A Cappiello, American Journal of Economics, 2020)

Applications of Artificial Intelligence:

The application of artificial intelligence and machine learning has also altered the insurance sector, in addition to data analytics. Insurance companies can now automate processes like claims processing, fraud detection, and customer care thanks to AI and machine learning. Insurers can now offer better consumer experiences thanks to these technologies, which have also increased the speed and accuracy of insurance operations. As an illustration, chatbots and virtual assistants are now able to respond to consumer questions and offer support around-the-clock, cutting down on wait times and raising customer satisfaction. The insurance sector has been significantly impacted by the advancement of mobile technologies. The way clients connect with their insurance companies has been changed by mobile applications. Customers may now quickly manage their policies, submit claims, and get help using their cell phones, simplifying and streamlining the process. As another example, usage-based insurance, which lets clients pay for insurance based on their actual usage, is one of the new products and services that insurance firms are creating utilising mobile technology.

The insurance sector has also changed as a result of the development of blockchain technology. Insurance companies can lower fraud and guarantee data accuracy thanks to the safe and decentralised platform provided by blockchain for data storage and exchange. Additionally, it offers a mechanism for managing claims and settlements that is open and effective, minimising the cost as well as time associated. Although technology has been a vital component of the insurance sector for many years, its influence on the sector has grown as a result of its rapid growth. Technology is changing the insurance sector in a variety of ways, from improving operations to offering individualised consumer experiences.

(Artificial intelligence: Implications for social inflation and insurance, KH Kelley, LM Fontanetta, 2018)

Data Analytics:

Data analytics is one of the main ways that technology is changing the insurance sector. Large amounts of data have been gathered by insurance firms for years, but it hasn't been until recently that technology has made it possible for businesses to analyse this data and derive insights from it. Insurance companies are now able to swiftly and effectively evaluate massive volumes of data thanks to machine learning and artificial intelligence. They are able to do this to discover new patterns, trends, and hazards, which may help them design products, set prices, and build risk

management procedures. The claims procedure is another area where technology is having a big influence. Now that many claims procedures may be automated with the use of digital technology, insurers are able to handle claims much more quickly. Due to faster and more effective claim resolution, this can enhance the customer experience. Additionally, insurers may leverage online resources to assist clients in filing claims and monitoring their progress, providing them more insight into the claims procedure.

The emergence of insur-tech firms is also significantly changing the market. Blockchain and the Internet of Things (IoT) are two examples of emerging technology that insur-tech businesses are utilising to develop cutting-edge new goods and services. IoT devices, for instance, are being used by some firms to monitor clients' homes and offer customised insurance plans based on their particular risks. Others are leveraging blockchain to build more efficient and transparent claims procedures, which will cut down on fraud and increase the accuracy of claim settlements. The way customers interact with brands is changing as a result of chatbots and other digital assistants. Customers may now communicate with insurers around-the-clock and receive prompt answers to their queries and worries. As a result, customer support staff have less work to do and are able to concentrate more on improving customer happiness. The insurance sector is being significantly impacted by technology. Technology is drastically changing the insurance sector in a variety of ways, from data analytics to digital claims processing to insur-tech businesses. We may anticipate seeing many more changes as technology progresses, which will continue to influence the direction of the insurance sector.

The fast development of technology has caused a huge upheaval in the insurance sector. In the ensuing decades, technological development is anticipated to influence the insurance sector.

(Analytics for insurance: The real business of Big Data, T Boobier, 2020)

Increased Personalization:

As insurers continue to gather more and more data, they will be able to provide clients with insurance products and services that are more specifically tailored to their needs. This might imply that, based on real-time data gathered from sensors, wearables, and other connected devices, insurance plans will be personalised to a person's particular risks. Technology improvements have caused considerable changes in the insurance sector in recent years. The enhanced amount of personalisation that insurers currently provide to their clients is one of the most significant advances. The ability to provide individualised goods and services to clients has been made possible by technology, allowing insurers to better fulfil their requirements and expectations.

The use of data analytics is one way that technology has made it possible for personalisation to expand in the insurance sector. Insurance companies may now gather and examine a large quantity of data on their clients, including their financial and personal details as well as their habits and preferences. Insurance companies may use this information to have a deeper knowledge of the requirements and preferences of their clients and to personalise their services. For instance, vehicle insurers may now provide usage-based insurance plans that consider the unique driving styles of each client. This enables users to pay premiums depending on the number of miles they actually log on the road as well as their driving habits, such as speeding, accelerating, and braking. Similar to this, health insurers may now give customised plans that include a person's

medical background, way of life, and other aspects, enabling them to offer more focused and efficient coverage. Artificial intelligence (AI) and machine learning are two more ways that technology has permitted greater personalisation in the insurance sector. With the use of these technologies, insurers can immediately spot trends and patterns in client behaviour by analysing massive volumes of data in real-time. This can assist insurers in developing more individualised and targeted goods and services as well as more accurate risk assessments.

For instance, life insurers are now able to utilise AI to examine client data and forecast the probability of specific health outcomes, like cancer or heart disease. Based on this data, insurers may give customised plans that take the person's risk characteristics into account, enabling them to offer more comprehensive and cost-effective coverage. In general, technological developments have made it possible for the insurance sector to become more personalised, enabling insurers to better fulfil the requirements and expectations of their clients. Insurers may gain a far better knowledge of their clients and customise their goods and services to match their unique requirements by gathering and analysing enormous volumes of data. The insurance sector is anticipated to experience more innovations as technology develops, which will lead to higher levels of client satisfaction and customisation.

(Smart Underwriting-A Personalised Virtual Agent M Daultani, J Bhagchandani, S Lalwani, 2021)

Artificial intelligence (AI):

From underwriting to claims processing, AI is already having a big influence on the insurance sector. The insurance sector will likely use AI even more in the decades to come, allowing insurers to take more informed decisions. From pricing and underwriting to claims processing and fraud detection, artificial intelligence has the potential to completely transform the insurance sector.

In the insurance sector, AI has already started to become very important. It is used to automate tasks that were previously carried out manually and to evaluate huge amounts of data. For instance, to assess the risks associated with various types of insurance, insurers utilise AI to evaluate data from multiple sources, including social media. Insurers can more precisely price insurance and make more informed underwriting decisions as a result. The claims procedure is being automated with AI as well. Insurance companies may now assess claims using AI to verify their legitimacy, hence lowering the number of false claims. Virtual assistants and chatbots powered by AI can also manage claims-related questions and give clients timely, precise information about their claims.

Insurers can greatly benefit from AI's ability to spot new risks and trends. AI systems can find patterns and anomalies that people would overlook by examining vast volumes of data. This can aid insurers in modifying their underwriting and pricing methods to take account of shifting risks and remain current. Customer service is another area in the insurance sector where AI is having an influence. Virtual assistants and chatbots may offer clients immediate assistance by responding to their queries and guiding them through the claims process. This has the ability to greatly enhance customer happiness and the overall consumer experience.

There are issues that need to be resolved despite the many advantages AI has for the insurance sector. Security and privacy of data provide one of the main difficulties. Customers' data must be safeguarded and utilised responsibly, according to insurers. AI is assisting insurers in staying ahead of the curve and meeting the changing demands of their consumers by automating procedures, recognising emerging hazards, and enhancing customer service. It is expected that as technology develops further, the insurance sector will experience even more innovations that boost consumer happiness and operational efficiency.

(Artificial intelligence: Implications for social inflation and insurance, KH Kelley, LM Fontanetta, 2018)

Internet of Things (IoT):

In the ensuing decades, IoT gadgets are anticipated to have a big impact on the insurance sector. IoT devices may be used by insurers to gather information about a customer's behaviour and risks, which can then be utilised to create more specialised policies and reduce risks. A network of interconnected gadgets that can interact via the internet is known as the Internet of Things (IoT). These gadgets are capable of gathering data, analysing it, and acting on the results of that analysis. The insurance industry is one of several that the Internet of Things is altering. This article will examine how the Internet of Things is influencing the insurance industry.

Managing risk is the main focus of the insurance industry. Insurance companies determine the probability of a loss occurring and base their premium charges on that determination. By delivering real-time information on a person's behaviour, location, and activities, the IoT can assist insurance firms in more effectively assessing risk. IoT devices, for instance, may be used by insurance firms to monitor a driver's actions such as speed, braking, and acceleration. The risk of an accident may be determined using this data, and the insurance price can be changed appropriately. Similar to this, insurance firms may utilise IoT gadgets to keep track of a person's lifestyle and health, including their eating habits, exercise routines, and sleeping patterns. Based on the individual's general health, this information can be utilised to modify health insurance rates.

The usage of sensors is another way the IoT is benefiting the insurance industry. Sensors can identify environmental changes and notify insurance firms of possible dangers. For instance, sensors may identify changes in a building's temperature or humidity levels, which could signal a fire or water damage danger. With the use of this information, insurance firms may proactively warn their clients about potential hazards and provide precautions. Additionally, the IoT can assist insurance firms in processing claims more quickly. Insurance firms may more properly analyse the damage and handle the claim more swiftly by employing IoT devices to gather data about an occurrence, such as a vehicle accident or a house burglary. For instance, if an automobile has sensors that can detect an accident, the insurance provider may be contacted right once and the claim could start to be processed.

The IoT may also assist insurance businesses in developing new goods and services. Insurance firms may discover new areas of risk and create solutions that address those risks by analysing data gathered from IoT devices. For instance, based on a person's lifestyle, insurance firms can provide customised insurance solutions, such as a pay-as-you-go insurance policy for people who normally tends to drive occasionally. By supplying real-time data that can be used to evaluate

risk, identify possible issues, handle claims more effectively, and develop new products and services, the IoT is revolutionising the insurance industry. We should anticipate further innovation in the insurance sector as IoT usage spreads, as insurance providers keep coming up with new ways to use the technology to reduce risk and provide better customer service.

(Creating New IoT-driven Insurance Services T Shinge, G Nishikawa, M Araki - Hitachi Review, 2017)

Blockchain:

The efficiency, security, and transparency of the insurance sector might be greatly enhanced by blockchain technology. Insurers may use blockchain to streamline the claims process, lower fraud, and provide more accurate and trustworthy records. The adoption of blockchain technology is one of the most recent technical developments that has the potential to change the sector. A safe and open method of handling data, blockchain has been praised as the perfect tool for the insurance sector. The implications and applications of blockchain in the insurance business will be discussed in this article.

First, fraud, a serious issue in the insurance sector, may be reduced via blockchain technology. A distributed record of all policies and claims can be easily accessible and confirmed by all parties engaged in the process thanks to the use of blockchain by insurers. As a result, it is simpler to identify and stop fraudulent claims since insurers are able to follow claims in real time. Furthermore, blockchain can guarantee that only parties with permission access sensitive data, lowering the possibility of data breaches.

Second, blockchain technology has the potential to make the insurance sector more productive. The current claims method can be laborious and complicated, entailing several parties, papers, and procedures. In contrast, insurers may use blockchain to build a shared database that is available to all parties participating in the claims process. This may speed up the process and save money, while also increasing accountability and transparency.

Thirdly, blockchain technology enables insurers to develop previously impractical new products and services. Insurance companies, for instance, may design smart contracts that are automatically activated in response to particular occurrences, like the onset of a natural disaster. Additionally, peer-to-peer insurance may be developed using blockchain, allowing people to pool their risks and insure themselves instead of depending on traditional insurers.

Lastly, the implementation of blockchain technology in the insurance business might also contribute to enhanced client trust and loyalty. Insurance companies may offer a safer and more transparent service by utilising blockchain, which might boost consumer trust in the sector. Additionally, using consumer data to customise goods and services, blockchain can assist insurers in taking a more customer-centric approach to insurance. The insurance sector has benefited from and used blockchain technology in a variety of ways. Blockchain may boost consumer trust and loyalty while reducing fraud, increasing efficiency, enabling new goods and services, and reducing costs. However, there are still issues that need to be resolved, such as scalability, interoperability, and regulatory concerns. However, given the potential advantages of blockchain for the insurance sector, it is probable that more insurers will use this technology in the years to come.

(Blockchain and insurance: a review for operations and regulation, R Brophy - Journal of financial regulation and compliance, 2020)**Digital Customer Experience:**

Customer experience is growing more and more digital with the emergence of chatbots, digital assistants, and other technology. We may anticipate more insurers utilising these technologies in the upcoming decades to improve the seamlessness and convenience of the consumer experience. Any company must now prioritise the client experience, and the insurance sector is no different. The insurance business has been compelled to adjust and provide a smooth digital client experience due to the pervasive usage of technology. In this article, we'll examine how the insurance business benefits from digital customer experience.

Greater convenience and flexibility may be offered to customers through a digital customer experience. Customers used to have to go into an insurance office to buy a policy, make a claim, or pay a bill. Customers may now buy policies, make claims, and pay bills using a computer or mobile device from the convenience of their homes thanks to the development of digital technology. Customers now have a far more easy way to connect with insurance firms, saving them time and effort. Streamlining procedures and cutting expenses are two things that a digital customer experience can do for insurance firms. Insurance firms may reduce the need for manual involvement by automating many of their procedures, including claims processing and policy renewals, by providing digital services. As a result, insurance providers may see cost savings that they may pass along to clients in the form of reduced rates or improved coverage.

A digital customer experience may raise customer satisfaction and engagement. Insurance firms may develop enduring connections with their clients that increase customer loyalty and retention by providing individualised and pertinent services. Additionally, digital platforms may give clients immediate access to their insurance details, empowering them to choose their coverage wisely. A digital client experience may also help insurance businesses keep one step ahead of their rivals. Traditional insurance businesses must use digital technology to be relevant and competitive in the face of the growth of insur-tech firms. Insurance firms may set themselves apart from their rivals and draw in new clients by providing a flawless digital customer experience. For the insurance sector, a digital client experience is advantageous. It gives clients more convenience and flexibility, simplifies processes and lowers costs for insurance providers, boosts customer involvement and happiness, and helps providers of insurance stay one step ahead of their rivals. The significance of the digital consumer experience will probably only increase as digital technology develops. Therefore, in today's quickly evolving digital market, insurance businesses that focus digital customer experience are more likely to prosper.

(Managing customer satisfaction: digital applications for insurance companies, C Eckert, C Neunsinger, K Osterrieder, Papers on Risk and Insurance, 2022)**Cybersecurity:**

As insurers collect and keep a growing amount of data, cybersecurity will become ever more crucial. To safeguard sensitive client data from cyber attacks, insurers will need to make investments in cutting-edge cybersecurity systems. The protection of confidential client information, financial transactions, and policy details is under the purview of the insurance sector.

The emergence of digital technology has made cybersecurity a crucial problem for the sector. The increased risk of cyberattacks and data breaches has the potential to erode client confidence and for insurance firms to suffer large financial losses.

Cybercriminals are very interested in the large amount of sensitive client data held by the insurance sector. Personal data in this data set contains names, addresses, social security numbers, and payment card information. These details can be used by cybercriminals for financial fraud, identity theft, and other bad deeds. If the wrong people obtain this information, it might have disastrous repercussions for both the clients and the insurance provider. Due to the nature of its business, the insurance sector is a top target for cyberattacks. Due to the volume of financial transactions that insurance firms handle, they are a desirable target for hackers attempting to steal money. Additionally, insurance firms use a lot of technology, which can lead to security holes that hackers can exploit. A variety of laws, rules, and compliance specifications pertaining to cybersecurity and data protection are applicable to the insurance sector. Significant fines and harm to the insurance company's image might follow from breaking these rules. Insurance providers must thus make sure they have the necessary security measures in place to safeguard client data and adhere to all applicable laws.

There is a dearth of qualified cybersecurity personnel in the insurance sector. Insurance firms need workers with up-to-date knowledge of the most recent trends and dangers in cybersecurity, which is an area that is continually growing. Although there is a scarcity of cybersecurity experts, this might make it challenging for insurance businesses to find and keep skilled personnel. Cybersecurity is a major problem for the insurance sector. Insurance firms are required to safeguard sensitive client information, financial transactions, and policy details from hackers. They must also adhere to a number of cybersecurity-related laws and compliance standards. Insurance firms also have to cope with the rising risk of cyberattacks and data breaches. In order to preserve their operations and protect their clients, insurance firms must prioritise cybersecurity and make the appropriate investments.

The insurance sector has been significantly impacted by technology, which has sparked both innovation and upheaval. Insurance companies now have new potential to better understand their clients and provide more specialised goods and services thanks to the usage of artificial intelligence, big data, and the internet of things. At the same time, the conventional insurance sector has been challenged by the growth of insurtech firms and digital platforms, which has forced insurers to adopt new business models and technological advancements. The insurance sector has benefited greatly from technology, but it has also faced new difficulties, notably in the field of cybersecurity. In order to safeguard their sensitive data and avoid cyberattacks, insurance firms must prioritise digital security measures. The insurance sector must be on guard and adapt to new technologies as they are developed due to the rapid speed of technological development. Insurance companies that adapt to new technology and business models while putting the requirements of their clients and security first are likely to prosper in the years to come as the sector continues to change.

(Cybersecurity hiring in response to data breaches, S Bana, E Brynjolfsson, W Jin, S Steffen, 2022)

Reasons for Technology Impacting Insurance Industry:

The insurance sector is being impacted by technology improvements for a number of reasons, including:

- **Data Collection and Analysis:** Technology advancements have made it possible for insurers to gather and analyse enormous volumes of data. This information may be utilised to evaluate risk, understand consumer behaviour and preferences, and make better decisions.
- **Automation:** From underwriting to claims administration, automation has made it feasible to simplify a number of the insurance-related procedures. Costs have gone down, productivity has gone up, and customer service has improved.
- **Improved Customer Experience:** Because to technological developments, insurers can now offer a more individualised and responsive client experience. This includes having the capacity to provide digital self-service alternatives like online claim and policy administration.
- **Risk Mitigation:** Technology has improved risk assessment and mitigation for insurers, notably in the areas of cyber risk and natural catastrophes. For instance, insurers can utilise data analytics to pinpoint specific risk management plans and identify possible dangers.
- **Emergence of Insurtech:** The emergence of insur-tech businesses has upended the traditional insurance sector by introducing cutting-edge new goods and services. These businesses frequently employ cutting-edge technology, including blockchain and artificial intelligence, to offer insurance solutions that are more effective and affordable. Overall, technological improvements have had a huge influence on the insurance business, resulting in enhanced productivity, a better client experience, and the creation of fresh, cutting-edge insurance products and services.

(Insurance, credit, and technology adoption: Field experimental evidence from Malawi, X Giné, D Yang - Journal of development Economics, 2009)

2. Review Of Literature:

The impact of new direct marketing strategies, made possible by new technologies, the emergence of multinational mega-corporations as a result of corporate restructuring, and the industry's quickening globalisation are just a few of the revolutionary factors that are currently affecting the insurance sector. To put these shifts in their long-term context, this article examines current studies on insurance history. The effect of technology, the interplay between markets and organisational development, and the globalisation of insurance and its connection to economic growth are the three areas that are looked at for indications of continuity and discontinuity with the past.

(Growth, crisis and change in the insurance industry: a retrospect, Robin Pearson, 01 Oct 2010)

The expansion of the insurance industry's digitalization process can be attributed to a number of concurrent factors, including technological advancement on the one hand, as evidenced by the size and quality of Internet infrastructures, connection opportunities, and usable applications, and

customer attitude change, as seen by the entry of the generation of "digital natives" and an increasing preference for online shopping. It is also important to keep in mind that conjunctural variables have been diminishing insurers' profits and pushing them to look for ways to cut costs, including by turning to digitised processes, whether they be productive or distributive. The insurance sector is becoming more digitalized, which poses questions regarding strategy, risk, market and organisational structure, workforce, and culture. These questions ultimately call for the complete board's careful consideration. Insurers' perceptions of the effects of digitization are rapidly changing, just like the technology itself, and are destined to significantly alter the entire financial and insurance ecosystem. Impacting all points along the insurance value chain, from underwriting and risk management to distribution and claims, digitization will change the competitive environment and customer relationships. Devices for information technology are necessary for organisational structure and decision-making processes as well as for the production and distribution of goods and services.

(Technology and the insurance industry: Re-configuring the competitive landscape, A Cappiello , 2018)

Lower level (division) managers' levels of risk-taking are anticipated to vary depending on the scope and kind of diversification. Low diversification encourages management risk-taking when combined with the use of M-forms and decentralisation. Extensively diversified organisations reach a point when control loss diminishes management risk taking, notwithstanding the control system elaborations (e.g., strategic business unit [SBU] architectures) to assist information processing as firms grow diversification. In the end, this loss of control can lead to subpar relative performance, which would then lead to a takeover threat. Restructuring and more targeted diversification are encouraged by the threat of acquisition. Businesses that undergo reorganisation and narrow their varied reach may encourage management risk-taking. Hence, diverse organisations undergo periods that encourage division manager risk taking and other periods that decrease it, depending on diversification and other attributes.

(Managerial Risk Taking in Diversified Firms: An Evolutionary Perspective, Robert E. Hoskisson, Michael A. Hitt, Charles W. L. Hill, 1991)

Technology is essential to the insurance sector's progress and general growth since it not only provides value but also, to a certain extent, helps it adapt to the demands of changing time. Technology and technologies have an impact on everything from underwriting choices to streamlining corporate operations. The use of mobile devices, the internet, GPS, and other technical applications has been crucial in many ways. It has assisted businesses in a variety of ways, including market research, market penetration, business promotion, and market development, as well as after-sales service, understanding customer satisfaction, and many other things. Data gathering and analysis for insurance businesses is only now feasible thanks to a variety of software and technology.

(Impact of Technology and Innovation in Insurance Sector, Ostagar Abdul Motin, 2019)

Through changing interactions, reimagining business platforms, and extending hidden data, artificial intelligence (AI) has the potential to improve the value chain of the insurance sector. To find better underwriting risks and accurately price the risk of different insureds based on the real worth of their business risks, insurance firms will use AI to significantly improve huge data

analytics, evolve algorithms with transactional data quicker, and integrate data in new ways. This essay examines how AI will have a big influence on the workforce and jobs, as well as how job losses may widen social inequality gaps globally, causing a cultural shift and greater social inflation that will affect both the insurance sector and its clients.

(Artificial Intelligence: Implications for Social Inflation and Insurance, Kevin H. Kelley, Lisa M. Fontanetta, Mark Heintzman, Nikki Pereira, 2018)

Blockchain technology, along with other cutting-edge technologies (AI, AR/VR, IoT), has created a method to digitise all of our operations through cloud-based development. Blockchain is a sophisticated technology that represents a bold and compelling vision to develop a comprehensive answer to internet security issues. It is quickly developing into the next disruptive innovation for secure connectivity, promising profound shifts in how we work and live in the twenty-first century.

(Blockchain Technology for the Advancement of the Future, Quoc Khanh Nguyen; Quang Vang Dang, 2018)

The purpose of this study was to examine the development of wearable technology and the internet of things (IoT), as well as its present and future applications in the field of health and care. Many wearables, gadgets, applications, data aggregators, and platforms are available that enable the measurement, monitoring, and aggregation of a variety of health and lifestyle metrics, data, and behaviours. The market for health and care insurance has both potential possibilities and problems as a result of the usage and deployment of such technology and the related wealth of data that it may give. This kind of technology is already being used by insurers from a variety of industries in areas like customer engagement, marketing, and underwriting. Whilst it is obvious that technology is only a part of the answer, insurers will need to take this into account in terms of implementation and goals because on its own, it won't engage or alter behaviours. It became clear during the first few weeks of this working party's creation that the potential use of this technology, the amount of information presently available, and the rate of its advancement are nearly overwhelming.

(Wearables and the internet of things: considerations for the life and health insurance industry, A. Spender, C. Bullen, L. Altmann-Richer, J. Cripps, R. Duffy, C. Falkous, M. Farrell, T. Horn, J. Wigzell and W. Yeap, 2019)

Little portable minicomputers called wearables are used to record biometric and medical data. The insurance business hopes to gain new sales opportunities for new products using this information. We'll make the underwriting process easier. Open questions are examined as the potential of these contemporary technology is demonstrated. Future applications of big data present several opportunities for the insurance sector.

(Wearables – a new chance for private insurance companies from the underwriting view, Stephan Becher, 2016)

The essential skills and capabilities of the individuals engaged are changing as a result of the digital revolution, which is also altering how business is conducted. The number of labour roles with a high level of complexity is growing extremely quickly as a result of the insurance industry's ongoing development in automation. Due to the confluence of economic, social, technological,

environmental, political, and legal concerns, the insurance business has greater difficulties in attracting, retaining, and reskilling its human resource. Additionally, the rapid speed of company transformation poses the threat of labour obsolescence. By lowering fraud and wastage, speeding up premium pricing, and enabling self-servicing policies, big data analytics alter the insurance industry in a way that makes it simple to acquire consumer data and conduct in-depth research. By adjusting sales methods to increase earnings, minimising time wasted with policyholders, boosting per-agent and per-customer profitability, and improving overall performance for the insurance industry as a whole, data analytics help businesses run more profitably. Big data analytics and artificial intelligence have sparked a competition between traditional insurers and startups in the insur-tech space to create innovative applications along the whole insurance value chain. When it comes to storage, databases, and software, cloud computing uses pooled computer resources rather than local servers or individual devices. The phrase "cloud" is a colloquial one that refers to a service that makes use of the idea of cloud computing.

Companies rely on applications that function consistently and securely, and their costs vary based on the business's scale needs. The majority of tasks may be completed in a traditional data centre and are also available through cloud web services. Pay-as-you-go options are available for these services. Organizations may leverage computing, storage, database, application services, and deployment management tools as necessary, enabling elastic scaling up to meet client demands or swift scaling down again. With the help of the cloud, businesses can focus on growing instead of doing the labour intensive work of racking and stacking servers. Creating value that is unique for their clients. By making previously unattainable new ideas viable, this promotes creativity. The cloud enables businesses to adapt more quickly to shifting market and consumer needs while also reducing costs through increased automation and increased IT infrastructure efficiency. Using applications and services is made possible by cloud computing's ability to handle several virtualized resources.

(The effects of new technologies on the insurance sector: a proposition for underwriting qualifications for the future, DG Akkor, S Ozyukse, 2020)

Current billing models for the auto insurance premium computation and billing procedure are quite generic and not well suited for the end customers. Crucial factors like mileage, driving style, and the types of routes used are not taken into account when determining the premium. The emergence of new billing models in the motor insurance sector was made possible by the development of sophisticated information and communication systems, a considerable decline in the technological cost of ownership, as well as the requirement for market differentiation in the insurance sector. The goal of this article is to illustrate the fundamental ideas behind the technology enabling new billing models in the auto insurance sector. The actual case project that was carried out in Eastern Europe serves as an example of the possibilities of such a system.

(Telematics System in Usage Based Motor Insurance, Siniša Husnjak, Dragan Peraković, Ivan Forenbacher, Marijan Mumdziev, 2015)

For client acquisition and support, businesses are increasingly required to engage through channels including text, chat, voice assistants, websites, and mobile devices. Many consumers, especially younger ones, will switch to industry competitors that provide better digital customer experiences or they may go to neighbouring sectors that provide the service as a "add on" if a firm does not provide it. For their digitalization initiatives, the incumbent and insurance firms rely on the new wave of insurtech businesses. The need of insurance customers to communicate

with firms at any time and from any location is growing as a result of digital transformation. As a result, businesses are always looking for fresh methods to connect with customers online and in the places they choose. New perils accompany a new age. Organizations are becoming more cautious about their vulnerability to cyber risk, for instance. Due to the need for cyber risk insurance products to effectively manage cyber risks and any subsequent legal consequences from data breaches, businesses have been turning more and more to the insurance sector. Big data, cloud computing, and social media are examples of recent technologies that raise the dangers associated with cybercrimes, and these hazards are currently one of the top worries for corporate executives. Every company is susceptible to possible losses brought on by electronic data theft. Businesses seek to safeguard their consumer data and records from cyber dangers in addition to protecting their reputations and themselves. They go to insurance providers for this, who could not be equipped to assist a business in comprehending its cyber security risk profile.

(Going digital: case study of an Italian insurance company, Galena_Pisoni, 2021)

3. Objectives of the Study:

- To pinpoint the precise technologies already in use within the insurance sector and how they are put to use.
- To assess how technology has affected the efficacy and efficiency of insurance businesses' operations as well as the level of customer service offered.
- To evaluate how technology is affecting the overall competitiveness of the sector as well as the revenue growth and profitability of insurance businesses.
- To look at how emerging technologies, such as blockchain, machine learning, and artificial intelligence, might change the insurance sector and open up new business prospects.
- To recognise the difficulties and dangers of using technology in the insurance sector, including concerns about data security, privacy, and legal compliance.
- To investigate how technology has affected how insurance businesses interact with their clients, particularly how client expectations and behaviour have changed.
- To examine how technology is changing the employment market in the insurance sector, especially how the nature and needs of occupations associated to insurance are changing.

4. Research Methodology:

Research Design:

The research design used for this research study is descriptive research design.

Sample Design:

The target population of this study was undergraduate and postgraduate students, retired, unemployed and working professionals.

Sample Frame:

The sample frame chosen was Delhi NCR and Kerala.

Sampling Method:

The sampling method implemented was that of convenience sampling.

Sample Size:

The sample size consists of 109 people who responded out of the 165 people I approached to fill the form giving a response ratio of 66.06%.

Data Collection Method & Tool:

The survey method of data collection was used for collecting responses from the sample population using questionnaire as the data collection tool.

Data Analysis Tool:

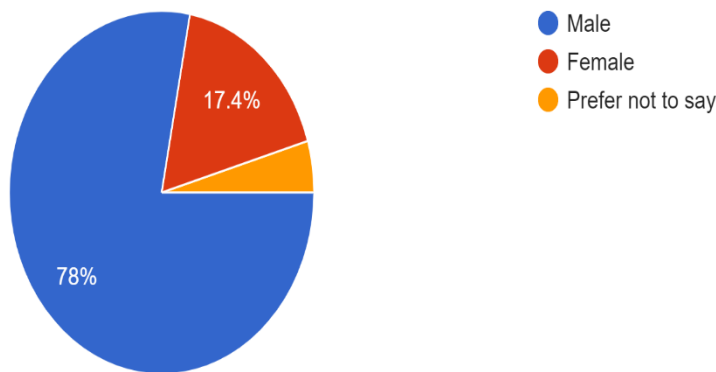
MS Excel was used for the analysis as well as the interpretation of the data.

5. Data Analysis and Interpretation:

Respondent Analysis:

1. Gender

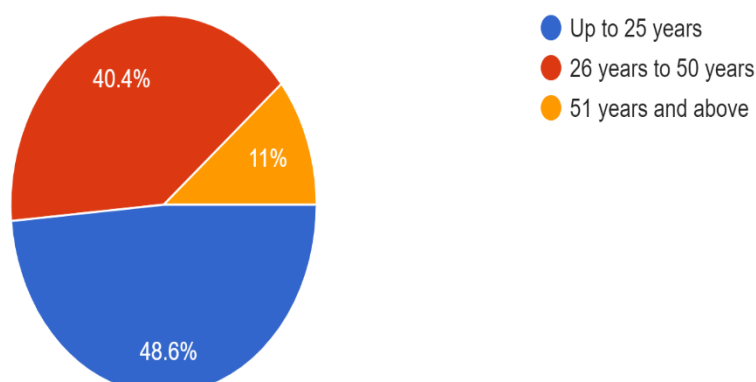
109 responses



Categorizing respondents on gender basis, we can observe that 78% of the population were males and 17.4% of the population were females.

2. Age

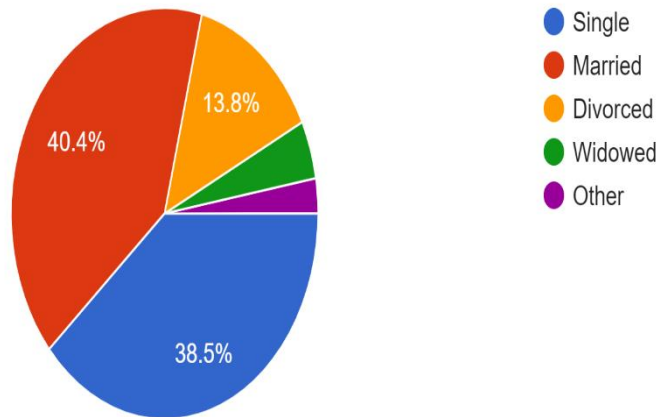
109 responses



Categorizing the respondents by age 48.6% of the population were between 1 – 25 years, 40.4% of the population were between 26 – 50 years and 11% of the population were above 51 years old.

3. Marital Status

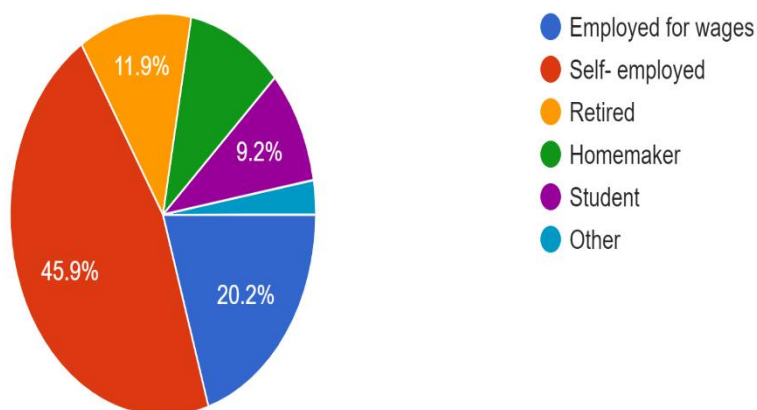
109 responses



Categorizing the respondents by their marital status, 40.4% of the population were married, 38.5% of the population were single, 13.8% of the population were divorced and 4.6% of the population were widowed.

4. Employment Status

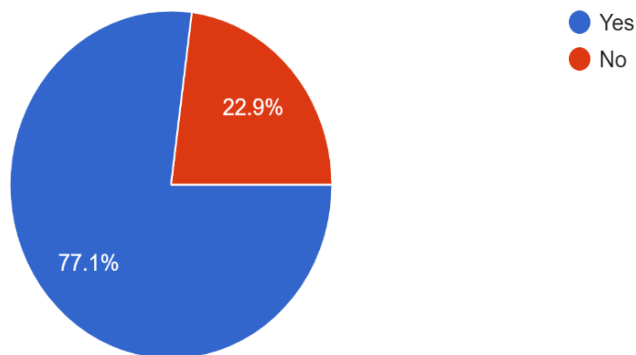
109 responses



Categorizing the respondents by their employment status, 45.9% of the population were self-employed, 9.2% of the population were students, 10.1% of the population were homemakers, 20.2% of the population were employed for wages and 11.9% of the population were retired.

5. Do you think technological advancements have helped insurance companies to better understand and price risk ?

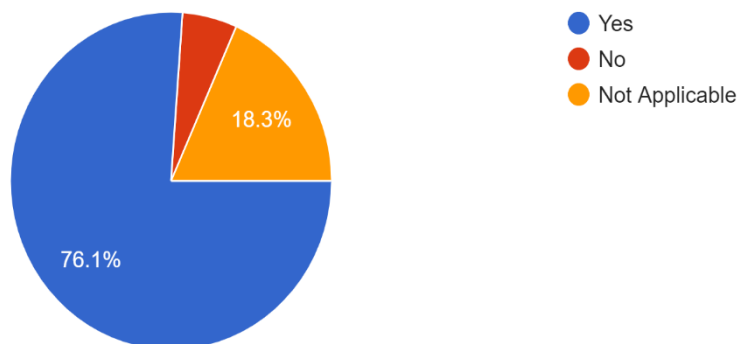
109 responses



Categorizing the respondents, 77.1% of the respondents think that technological advancements have helped insurance companies to better understand and price risk whereas 22.9% of the respondents do not think so.

6. Do you think technological advancement has a role in decreasing the fraudulent claims to an extent ?

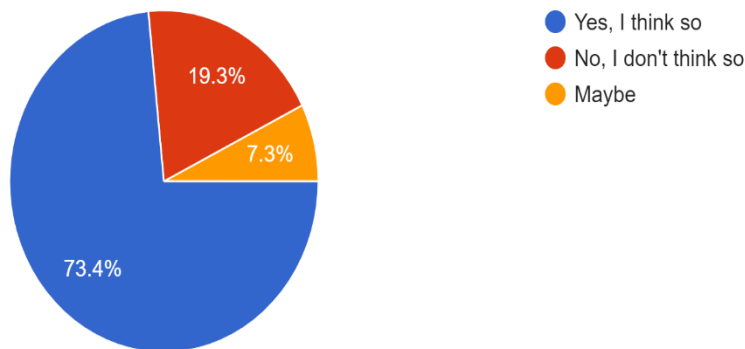
109 responses



Categorizing the respondents based on whether they think technological advancements have a role in decreasing fraudulent claims to an extent, 76.1% of the population says yes, 18.3% of the population have opted not applicable and 5.5% of the population says no.

7. Do you believe that technological advancements might lead to a decline in the job opportunities of insurance agents ?

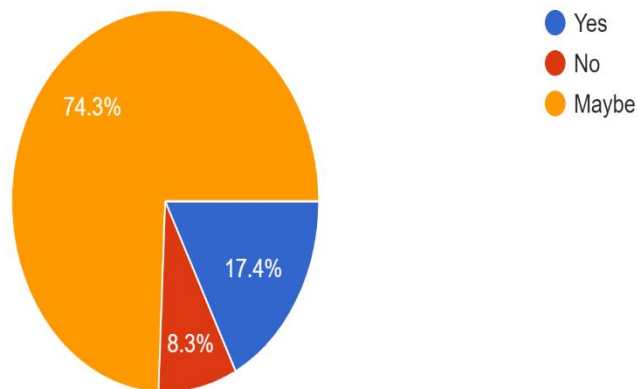
109 responses



Categorizing the respondents based on whether they believe that technological advancements might lead to a decline in the job opportunities of insurance agents, 73.4% of the population thinks it is true, 7.3% of the population is not sure and 19.3% of the population says it is not true.

8. Can a wearable device like a fitness band contribute in the underwriting process in insurance ?

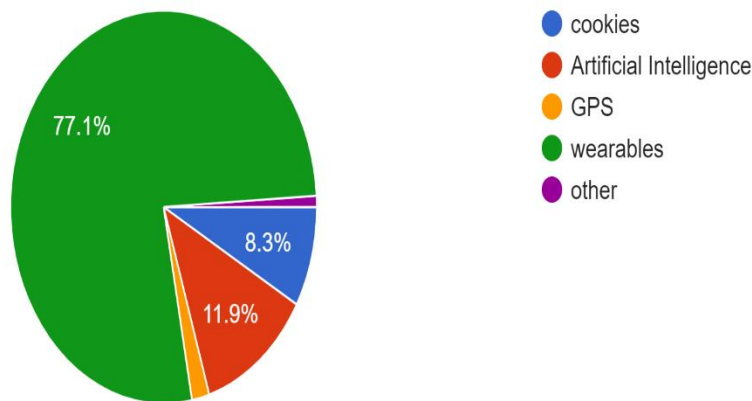
109 responses



Categorizing the respondents based on whether they think a wearable like a fitness band contribute in the underwriting process in insurance, 74.3% of the population is not sure and says maybe, 8.3% of the population said no and 17.4% of the population said yes.

9. Which technological advancement do you think helped insurance industry in pricing risks better ?

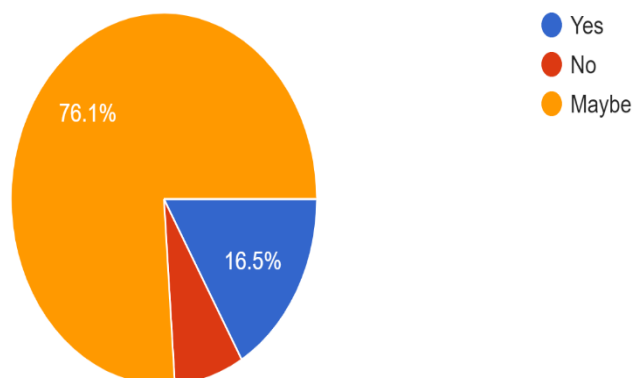
109 responses



Categorizing the respondents on the basis of their response to which advancement do they think has helped industry in pricing risks better, 77.1% of the population says wearables, 11.9% of the population claims Artificial Intelligence, 8.3% of the population claims cookies and 1.8% of the population claims GPS.

10. Are insurance companies prone to cyber threats due to recent digitalization of products and services ?

109 responses



Categorizing the respondents based on their opinion to whether insurance companies are prone to higher levels of cyber threat due to recent digitalization of products and services, 76.1% of the population were not sure and said maybe, 16.5% of the population said yes and 7.3% of the population said no.

6. Findings and Discussions:

- **Efficiency gains and cost savings:** The capacity to automate numerous procedures and save expenses is one of technology's main advantages in the insurance sector. For instance, insurers may utilise AI-powered chatbots to process claims and respond to client concerns, freeing up human agents for more difficult jobs.
- **Improved Risk Assessment:** A better way to estimate risk is through the use of technology, which can do this by giving insurers access to more accurate and up-to-date information

on policyholders. For instance, connected gadgets like wearables or smart homes may give insurers more precise information about the behaviour and habits of their consumers, enabling them to better customise plans and pricing. Moreover, it may result in more customised consumer experiences.

- Increasing competition: As new companies and digital platforms challenge established business models, technology has also increased competition in the insurance sector.
- Customer expectations are evolving as a result of the growth of digital platforms and on-demand services. Customers now want quick responses and convenience from their insurance companies. Insurance companies must change to match these evolving expectations or risk losing clients to more creative rivals.
- Possibility for preventing fraud: Data analytics and artificial intelligence (AI) can be used to identify anomalous patterns or behaviour in order to avoid fraud. Insurance companies may be able to save a lot of money by doing this because fraud costs the sector enormous sums of money every year.
- Regulators are finding it difficult to keep up with the rate of change as technology continues to disrupt the insurance sector. Insurance companies must traverse a maze of rules and data privacy requirements to maintain compliance while utilising modern technology.
- Customers may now buy and handle insurance plans more effectively and easily on their own because to the development of digital technologies, automation, and artificial intelligence, which has decreased the need for human middlemen. It is crucial to remember, though, that technology has also given insurance brokers new chances to specialise in fields where tailored advice and direction are still highly desired, such as intricate commercial insurance plans or specialist goods.

7. Suggestions:

- The insurance companies should keep up with the latest technological advancements and trends so as to remain among the top competitors and to stay relevant.
- In order to simplify operations, enhance client experiences, and boost profitability, insurance businesses should make an effort to invest in cutting-edge technology and create creative solutions.
- Businesses should make an effort to emphasise the potential advantages of utilising technologies like blockchain, machine learning, and artificial intelligence to improve underwriting accuracy, streamline the processing of claims, and lower fraud.
- To guarantee that private data is always secured, insurance firms should put a high priority on data security and privacy.
- Insurance businesses should constantly assess the effects of technology on their operational processes and revise their strategy as necessary. The insurance sector will continue to be shaped by technology, and businesses will need to change to survive.

8. Conclusions:

The insurance sector has been significantly impacted by technology recently, and this trend is anticipated to continue. Efficiency improvements and cost reductions are two of the most significant ways technology is altering the insurance sector. Insurance firms may save time and

money, for instance, by automating the underwriting and claims processing processes. The domain of customer experience is a significant area where technology is affecting the insurance sector. To enhance the client experience, many insurance firms are investing in digital tools and platforms including mobile applications and online self-service portals. In the insurance sector, the use of data analytics and artificial intelligence is also gaining importance. Insurance businesses may benefit from these technologies by having a better understanding of risk, more accurate pricing, and less fraud. The rising use of technology in the insurance sector undoubtedly has advantages, but there may also be drawbacks. For instance, the sector may lose human employment as a result of the use of technology in underwriting and claims processing. Overall, the future effects of technology on the insurance sector are anticipated to be substantial and wide-ranging. The rising use of technology has both advantages and possible disadvantages, but it is evident that technology will continue to play a significant role in the insurance industry in the foreseeable future.

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