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Digitization and it's Impact on Insurance Industry

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EDITORIAL

In the fifties a two storied building was required to house a computer, which could at best do a fraction of things which is possible now. More convenient versions in the form of desktops came in the 80s, which increased the reach of computers to individuals. Their capacity was low and was used for limited applications. The 90s and later into the early decades of this century, computers have become sleeker, smaller and capable of doing greater things.

If these things were happening on the hardware, side software was growing at a much faster pace. We are well into the digital age where almost everything is governed digitally. Avenues and applications are being found everywhere, and this has already changed the way things are done in most sectors.

A lot of activity is also happening to increase the digital footprint in the insurance sector. Insuretech has grown by leaps and bounds and is promising to go on to higher levels at a rapid pace.

AI is the latest buzzword. A considerable amount of work is being done in this field. Governments are also looking at it closely and monitoring it to ensure that it is put to good use. As AI is gaining traction and being used, there are already statements by senior persons engaged in the field about how AI will soon be dwarfed by newer things emerging.

It's exciting, times and this issue is devoted to the theme 'Digitalisation, and its impact on insurance industry. A number of erudite articles find their place in this issue. We trust that you would find value in these.

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Digitization and its impact on Insurance Industry

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Abstract

The insurance industry is experiencing a major transformation, driven by advancements in digital technologies such as artificial intelligence (AI), machine learning (ML), blockchain, big data, cloud computing, and the Internet of Things (IoT). Traditionally risk-averse, insurers are now integrating these tools to improve operational efficiency, enhance customer experience, and meet evolving regulatory standards. In India, digitization in insurance is especially promising, with a digitally engaged consumer base supporting market growth to a projected $250 billion by 2025. This shift enables insurers to refine risk assessment, personalize products, and streamline claims, but it also brings significant challenges. Key obstacles include cybersecurity risks, regulatory compliance, updating legacy systems, and the need for skilled talent. Despite these challenges, the future of insurance looks to expand further into data-driven practices, hyper-personalization, and fraud prevention via AI and blockchain. With strategic integration, the industry is positioned to enhance service delivery, build resilience, and improve customer satisfaction.

Keywords

Digital Transformation in Insurance, Artificial Intelligence (AI) and Machine Learning (ML), Blockchain and Data Security, Operational Efficiency and Risk Assessment, Internet of Things (IoT) Integration, Predictive Analytics and Big Data, Cloud Computing Solutions, Telematics and Usage-Based Insurance, Customer Trust and Data Transparency.

Introduction

The insurance industry, traditionally viewed as conservative and risk-averse, is undergoing a profound transformation. Driven by rapid advancements in digital technology, insurance companies are reimagining how they conduct business, interact with customers, and manage risks. Digitization—the integration of digital technologies into all areas of business—has become a critical factor in the industry's evolution. Technologies like artificial intelligence (AI), machine learning (ML), blockchain, big data, and the Internet of Things (IoT) are reshaping not only insurance operations but also customer expectations and regulatory frameworks.

As one of the oldest and most essential sectors in the financial services landscape, insurance has often lagged in adopting cutting-edge technology. However, increased competition, regulatory pressures, and rising consumer demand for seamless digital experiences are catalyzing the industry's embrace of innovation. Insurance companies now face the imperative to digitize their processes, reduce operational inefficiencies, and build more resilient systems to adapt to an increasingly complex market landscape.

In India, the shift toward digital transformation has been particularly striking. With a growing population of digitally savvy consumers, the Indian insurance sector is uniquely positioned to leverage technological advancements for enhanced customer engagement and streamlined service delivery. According to recent reports, India's insurance market, which is projected to grow to nearly $250 billion by 2025, is expected to see accelerated digital adoption,

driven by both public and private sector initiatives. This trend is also influenced by regulatory bodies such as the Insurance Regulatory and Development Authority of India (IRDAI), which supports initiatives aimed at integrating digital processes to increase transparency and improve customer trust.

Understanding Digitization in Insurance

Digitization in the insurance industry represents a shift from traditional, paper-based processes to advanced digital systems that enhance efficiency, accuracy, and customer satisfaction. At its core, digitization integrates innovative technologies such as artificial intelligence (AI), machine learning (ML), big data, blockchain, cloud computing, and the Internet of Things (IoT) to create a connected and automated operational environment. Each of these technologies plays a unique role in reshaping the insurance value chain, from underwriting and claims processing to customer engagement and fraud detection.

1. Artificial Intelligence (AI) and Machine Learning (ML)

AI and ML have revolutionized data analysis in insurance, enabling insurers to process vast amounts of structured and unstructured data in real time. Through machine learning algorithms, insurers can analyze customer behavior patterns, predict risks, and tailor insurance products to individual needs. For example, ML models can assess data from various sources, such as social media and purchasing behaviors, to predict customer profiles and identify those who are more likely to need specific types of coverage. Reports suggest that AI-enabled systems can increase underwriting efficiency by up to 30%, reducing the time it takes to process applications and issue policies.

The rapid advancements in AI technologies are reshaping the future of the insurance industry. AI encompasses a suite of tools, including but not limited to machine learning (ML), natural language processing (NLP), and image recognition (IR), which supports insurers' capabilities and revolutionizes their operations:

ML empowers insurers by providing invaluable insights from vast data sets. Using ML-enabled predictive modeling can strengthen the accuracy of behavior forecasting and risk assessment. It supports proactive measures like anticipating customer needs and providing personalized recommendations.

NLP facilitates seamless customer interactions. Chatbots and virtual assistants swiftly address inquiries and improve service. NLP also streamlines underwriting processes by quickly processing unstructured data from policy documents and emails.

IR expedites claim assessments by analyzing visual data from accident scenes or property inspections. It is another potent AI application that reduces processing times and enhances overall satisfaction.

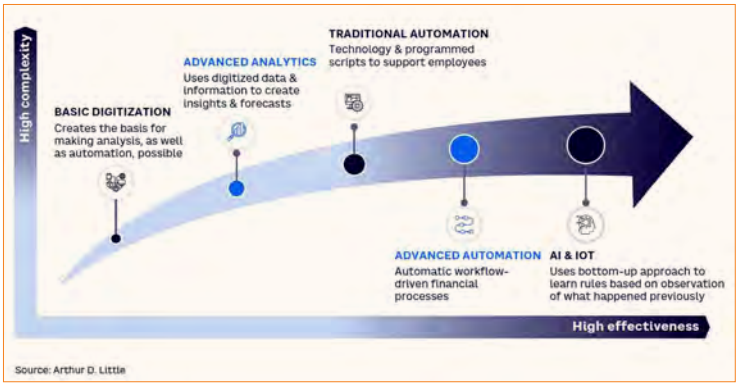

Figure: Evolution of insurance through digitalization and AI

AI is transforming insurance by boosting efficiency through advanced analytics and predictive modeling. For example, AI facilitates proactive fraud detection, individualized service, and more precise underwriting — all of which positively impact both pricing and claims cost.

The future of insurance hinges on integrating data and AI technologies effectively. With strategic implementation, insurers can optimize their operations, elevate customer experiences, and stay at the forefront of the dynamic insurance landscape. To maintain a competitive edge, insurance companies must prioritize robust data governance and ethical AI practices to ensure responsible use and build trust while meeting regulatory requirements.

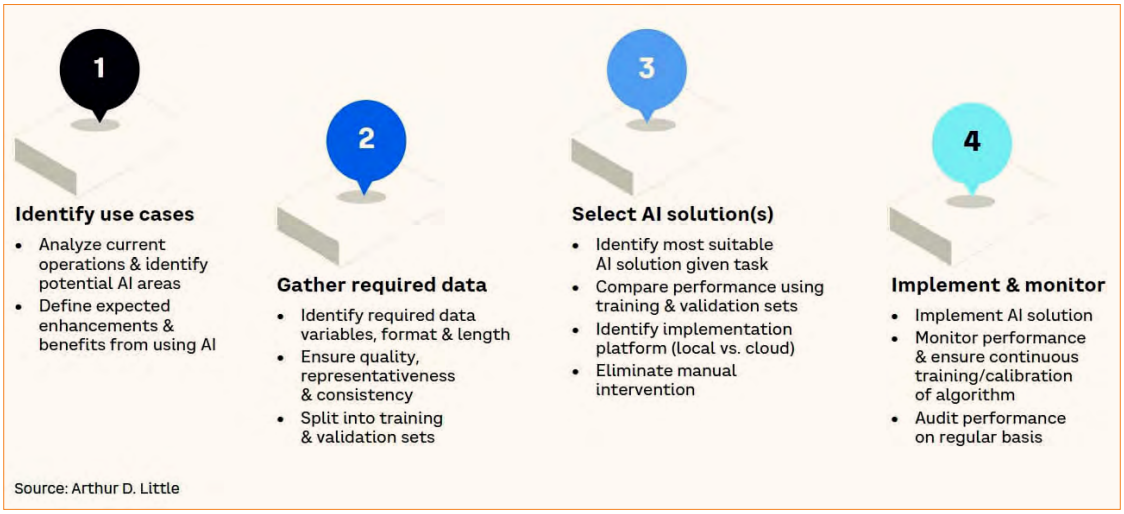

Figure: Deploying AI insurance applications

AI impacts the insurance customer journey by giving personalized support, streamlining underwriting processes, and expediting claims processing. Integrating AI technologies can enhance satisfaction, reduce operational costs, and improve the overall competence of insurers. As the industry continues to evolve, embracing AI becomes essential if insurers intend to remain competitive, deliver exceptional customer experiences, and drive business growth.

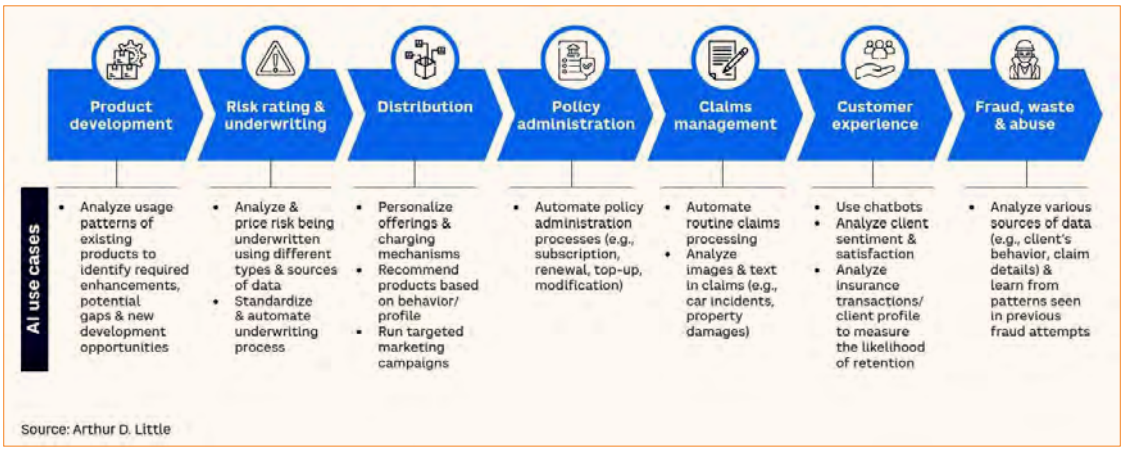

Figure: AI use cases across the insurance customer value chain

2. Big Data and Predictive Analytics

The insurance industry relies heavily on data to make informed decisions, and big data has significantly expanded the scope of information available for analysis. By leveraging big data, insurers can improve risk assessment models, refine customer segmentation, and enhance pricing accuracy. Predictive analytics, a subset of big data analytics, allows insurers to anticipate trends and proactively address potential risks. For example, historical claims data combined with external data sources—like weather patterns for property insurance—enables insurers to predict the likelihood of certain events and adjust premiums accordingly.

In health and life insurance, predictive analytics can also be applied to create personalized wellness programs and incentivize healthier

lifestyles, thereby lowering claim incidences. According to McKinsey, predictive analytics can reduce claim costs by up to 15% through proactive risk management strategies.

3. Blockchain Technology

A blockchain is a structured sequence of data units, known as blocks, which are linked together through a series of connections referred to as chains. Each block within this system stores specific pieces of information, and the chains create a cohesive network that ensures these blocks are interconnected. This technology enables the creation and maintenance of a publicly accessible ledger that records transactions transparently and securely.

So how is blockchain technology currently being used in the insurance industry?

- According to a report by Accenture, Jim Bramblet, Senior Managing Director and FS Midwest Lead, writes: "Providing a single source of truth allows friction in business processes to be drastically reduced, using solutions such as smart contracts to facilitate and automate Distributed Ledger Technology (DLT) networks."
- Data reconciliation is made easier, accuracy is improved, and time spent uncovering information is eliminated, allowing for transparency, efficiency gains and cost reductions throughout a value chain.
- What's more, shared industry tasks and automation generate more seamless processes and lower total cycle times. The aggregate improvements in speed and accuracy can also create more positive customer experiences.
- To automate claims processing and payouts, reducing manual intervention and speeding up settlements. This ensures that payouts are automatically triggered based on verified claim events, eliminating the need for human oversight. By providing an immutable record of transactions, blockchain reduces fraud by maintaining a transparent and unalterable history of each claim, preventing multiple claims for the same incident and ensuring data integrity.
- Blockchain can simplify data sharing between insurers and reinsurers, ensuring accurate and verifiable data exchange:
- Claims processing can be streamlined through the automation and validation of claims via smart contracts, reducing fraud and ensuring quick and fair settlements.
- Policy management can benefit from the use of blockchain, allowing for real-time updates, increased accuracy, and reduced administrative costs.
- Blockchain can enhance risk management by providing immutable records of transactions and data, which improves the accuracy of risk assessments and underwriting processes.

One of the most explored applications of blockchain in the insurance industry is smart contracting. In this approach, contract terms are managed on the blockchain, and payments are automatically triggered without manual intervention when specific conditions are met. The payment records are securely stored on the blockchain, ensuring that the execution of the contract is tamper-proof and transparent.

The primary advantage of smart contracts is the elimination of manual intervention, with all actions executed as per the contract recorded immutably on the blockchain ledger. This makes it impossible to forge any records. The most common smart contract a typical person might use is related to decentralised finance (DeFi) platforms. These platforms allow users to engage in financial activities such as lending, borrowing, and earning interest on their assets without the need for traditional banks or financial institutions. For instance, platforms like Compound and Aave use smart contracts to automate these financial services, making them accessible to anyone with an internet connection.

Blockchain is emerging as a transformative technology in insurance, particularly for enhancing transparency and reducing fraud. A decentralized, immutable ledger, blockchain enables secure and tamper-proof recording of transactions, making it ideal for validating claims and preventing duplicate claims. For example, blockchain can create a shared record of claims that all stakeholders (e.g., insurers, reinsurers, and

policyholders) can access, ensuring that all parties have consistent information. Blockchain's potential for reducing administrative overhead is significant: studies estimate that blockchain-based solutions could save the insurance industry up to $10 billion annually in fraud-related costs.

4. Cloud Computing

Cloud computing has paved the way for scalable and flexible operations, allowing insurers to store, manage, and analyze data without relying on costly, on-premises infrastructure. Cloud platforms provide insurers with the agility needed to adapt to dynamic market demands and rapidly deploy new applications and services. Furthermore, cloud-based solutions facilitate collaboration across different locations, ensuring that insurers can maintain business continuity and data accessibility. Approximately 75% of insurers globally have now integrated cloud solutions, significantly improving response times and customer satisfaction rates.

5. Internet of Things (IoT)

The IoT ecosystem, encompassing devices such as smart home systems, wearable health trackers, and connected vehicles, provides insurers with real-time data on customer behavior and risk factors. For example, auto insurers increasingly use telematics devices in vehicles to monitor driving habits and offer usage-based insurance (UBI), where premiums are tailored to individual driving patterns. Similarly, wearable health devices enable health and life insurers to monitor policyholders' physical activity, rewarding healthy behaviors with premium discounts. According to a PwC report, over 50% of insurers plan to incorporate IoT data into their pricing and underwriting models, anticipating a more than 20% increase in customer engagement and retention rates.

Benefits of Digitization in Insurance

Digitization offers a range of benefits that are transforming the insurance industry, from enhancing customer experience to improving operational efficiency and enabling more accurate risk assessment. These changes are not only streamlining internal processes but also aligning the industry with the modern, technology-driven expectations of policyholders.

1. Enhanced Customer Experience

In an era where customer expectations are shaped by digital-first companies, insurance providers must deliver seamless and personalized interactions to remain competitive. Digitization enables insurers to offer self-service portals, mobile apps, and online chatbots, allowing policyholders to manage their accounts, submit claims, and receive support with minimal friction. According to a survey by Accenture, over 80% of insurance customers value self-service options, with 60% preferring to handle policy-related inquiries through digital channels rather than traditional call centers.

Personalization is another significant benefit. By leveraging big data and predictive analytics, insurers can customize policies to suit individual lifestyles and needs. For instance, an analysis of lifestyle data might lead to customized wellness recommendations or policy discounts for health-conscious customers, increasing customer engagement and retention. McKinsey reports that personalized insurance experiences can improve customer satisfaction by up to 20% and reduce policy churn rates by 10-15%.

2. Operational Efficiency and Cost Reduction

One of the most immediate benefits of digitization is operational efficiency. Automating routine tasks, such as data entry, policy administration, and claims processing, reduces manual labor, cuts down processing times, and minimizes the risk of human error. This efficiency not only accelerates internal workflows but also enhances customer satisfaction by reducing the time required for policy issuance and claims settlement.

For example, AI-powered claims processing platforms can automate large portions of the claims lifecycle, from initial reporting to settlement. These platforms use machine learning algorithms to analyze data and predict claim outcomes, expediting approvals for straightforward claims and flagging potentially complex or fraudulent cases for further review. Studies have shown that automated claims processing can reduce settlement times by up to 50% and reduce processing costs by 30%, translating to substantial savings for insurers.

Digitization also reduces overhead expenses by minimizing paper-based processes and enabling remote work.

Cloud computing and document management solutions eliminate the need for physical records, providing a more sustainable and cost-effective approach to managing information. According to Deloitte, insurers that have digitized core processes report cost reductions of 10-20% on average, with potential savings increasing as digital integration deepens.

3. Improved Risk Assessment and Underwriting

Risk assessment and underwriting are central to the insurance industry, and digitization has significantly improved accuracy in these areas. By incorporating real-time data from IoT devices, AI-driven models, and predictive analytics, insurers can now make more informed underwriting decisions. For example, wearable health devices and telematics systems in vehicles provide a continuous stream of data that allows insurers to assess real-world behavior rather than relying solely on static historical data.

Predictive analytics tools further enhance the underwriting process by analyzing patterns in historical data to anticipate future risks. In property insurance, for example, analytics models that incorporate climate data and geographical information can forecast weather-related risks, allowing insurers to adjust premiums more accurately. According to EY, data-driven underwriting models have been shown to reduce insurers' combined ratios by up to 5%, representing a significant improvement in profitability.

4. Fraud Detection and Prevention

Fraud is a costly issue for the insurance industry, with an estimated $40 billion in losses each year in the U.S. alone, and a significant proportion of claims suspected to be fraudulent in India as well. Digitization offers insurers the tools needed to combat fraud through advanced data analytics and AI-powered fraud detection systems. By analyzing large datasets to detect suspicious patterns—such as unusually frequent claims, inconsistent data points, or improbable incidents—insurers can flag potentially fraudulent claims for closer investigation.

Machine learning algorithms continually improve their ability to detect fraud as they are exposed to more data, adapting to new fraud tactics and becoming more precise over time. Blockchain technology, by creating an immutable record of transactions, also enhances fraud prevention by ensuring the authenticity of claims records. Insurers that have implemented AI-based fraud detection report up to a 30% reduction in fraud-related losses, demonstrating the substantial impact of digitization on combating fraud.

5. Regulatory Compliance and Transparency

Digitization has also made it easier for insurers to comply with evolving regulatory requirements, as digital records improve traceability and transparency. Insurers can use digital solutions to maintain comprehensive audit trails, which simplify reporting and ensure compliance with regulatory standards. For instance, automated compliance management systems can track regulatory updates, flag potential non-compliance issues, and generate required reports, reducing the burden on human teams.

Moreover, digital channels enable insurers to communicate more transparently with customers about their policies, fees, and coverage terms. The enhanced transparency fostered by digital platforms not only helps insurers adhere to regulatory standards but also builds trust with customers, particularly important in markets where regulatory compliance is a key determinant of customer loyalty.

Challenges of Digitization in the Insurance Industry

While digitization offers substantial benefits, it also presents a range of challenges for the insurance industry. These obstacles can hinder the implementation of digital technologies, and insurers must address them to fully capitalize on digital transformation. The challenges include data security concerns, adapting legacy infrastructure, regulatory compliance, workforce training, and building customer trust.

1. Cybersecurity Risks and Data Privacy Concerns

One of the most critical challenges in digitization is ensuring the security and privacy of sensitive customer data. As insurance companies collect and store more personal data, including health, financial, and behavioral information, they become prime targets for cyberattacks. A data breach can result in severe financial and reputational damage, as well as

potential regulatory fines. According to a report by IBM, the average cost of a data breach in the insurance sector can exceed $4 million, with the cost often increasing in markets with stricter data privacy laws.

Moreover, insurers must comply with data privacy regulations such as the General Data Protection Regulation (GDPR) in Europe or the Data Privacy and Protection Bill in India. These regulations mandate strict data handling and security protocols, often requiring companies to invest in advanced cybersecurity measures. Despite these efforts, the constantly evolving nature of cyber threats means that insurers must continuously update their security systems and protocols to stay protected.

2. Legacy Systems and Infrastructure Limitations

Most insurance companies rely on legacy systems that were not designed to handle modern digital workflows, creating a significant barrier to implementing new technologies. These outdated systems are often incompatible with digital applications, making it challenging to integrate advanced solutions like AI, blockchain, or real-time data analytics. Additionally, migrating data from legacy systems to digital platforms is often a time-consuming and complex process, requiring careful planning to avoid data loss or inaccuracies.

For example, transitioning from a legacy claims processing system to an AI-driven solution requires insurers to consolidate and standardize data formats, which can be both costly and labor-intensive. According to a McKinsey survey, over 60% of insurance companies cite outdated technology as a major impediment to digital transformation, with many companies facing challenges in achieving a smooth transition to digital infrastructure.

3. Regulatory and Compliance Challenges

The highly regulated nature of the insurance industry poses unique challenges to digitization. Insurers must adhere to strict guidelines around data privacy, anti-money laundering (AML) policies, and consumer protection standards, which vary widely across regions. This regulatory complexity can delay the adoption of digital technologies, as insurers often need to obtain approvals and meet compliance requirements before rolling out new solutions.

Moreover, regulatory bodies are increasingly interested in monitoring digital activities, adding to compliance responsibilities. For example, the Insurance Regulatory and Development Authority of India (IRDAI) has established guidelines for insurers implementing digital processes, such as the mandatory use of e-KYC (Know Your Customer) verification for onboarding customers digitally. While these regulations are intended to protect customers, they can impose additional costs on insurers and restrict the flexibility to experiment with new technologies.

4. Workforce Training and Adaptation

Digitization requires a workforce that is skilled in handling digital tools and technologies, a challenge for many traditional insurance companies. Employees accustomed to manual processes may struggle with the transition to automated and digital workflows, leading to resistance and slower adoption rates. The need for reskilling and upskilling is critical, as insurers must equip their workforce with the skills needed to operate digital platforms, interpret data analytics, and understand emerging technologies like AI and blockchain.

Moreover, training programs often require significant investment, both in terms of time and resources. A Deloitte study highlights that companies can spend up to 15% of their digital transformation budgets on training initiatives to ensure their employees are prepared for the new technology landscape. Insufficient training or reluctance to adopt digital solutions can limit the effectiveness of digital transformation efforts, reducing the return on investment in these technologies.

5. Customer Trust and Data Transparency

Digital transformation brings with it concerns around data transparency and trust, especially as customers become more aware of data privacy issues. Customers are increasingly wary of how their data is used, and insurers must navigate these concerns to maintain trust. This is particularly relevant in insurance, where sensitive health and financial data are involved. Building transparency into digital platforms, such as providing clear information on data usage and offering customers

control over their data, is essential to foster trust.

Furthermore, customers may have concerns about interacting with automated systems instead of human representatives, particularly for complex processes like claims. This can create a trust gap, as customers may feel that they are not receiving the personalized service they are accustomed to. To address this, insurers need to strike a balance between automation and human interaction, ensuring that digital channels are supported by human oversight when necessary. Research by PwC found that 45% of customers are hesitant to use fully automated processes for claims and policy management, suggesting a need for hybrid approaches that integrate both digital and human elements.

6. Cost of Digital Transformation

While digitization ultimately leads to efficiency gains, the initial investment required for digital transformation can be a significant barrier, especially for smaller insurers. Implementing advanced technologies, transitioning legacy systems, and training employees all require substantial financial resources. For large insurance companies, digital transformation can cost millions of dollars, while smaller companies may struggle to secure the capital required for comprehensive digitization efforts.

This financial burden is often compounded by uncertainty regarding the return on investment (ROI) for certain technologies. Emerging solutions such as blockchain, for example, are still evolving, and insurers may be hesitant to invest heavily in technologies without a clear understanding of their long-term value. According to Gartner, around 50% of digital transformation projects in insurance face delays or adjustments due to cost-related constraints, highlighting the importance of strategic planning and cost management in the digitization process.

Case Studies: Successful Digitization in Insurance

To better understand how digitization is reshaping the insurance industry, examining real-world case studies of companies that have successfully implemented digital transformation initiatives can provide valuable insights. These examples highlight the practical benefits of digitization, as well as some of the challenges faced during implementation.

Case Study 1: Lemonade – AI and Chatbots for Streamlined Customer Experience

Lemonade, a U.S.-based insurance company, has gained recognition for its innovative use of AI and chatbots to automate key aspects of its customer experience. The company offers renters, homeowners, and pet insurance and uses its AI-powered chatbot, Maya, to handle everything from onboarding to claims processing. By integrating chatbots and machine learning algorithms, Lemonade can process claims in as little as three seconds, significantly reducing wait times for customers and setting new standards for efficiency in the insurance industry.

After launching the company signed up more than 14,000 customers within its first six months. In the same period, Series A and B funding rounds generate a further US$48m in investments to expand the company.

At a time when 73% of millennials prefer to shop online using their phones (the figures are 2x higher for Zoomers, or Generation Z), Lemonade has perfectly tapped into this target market. The traditional process for getting insurance information requires the user to contact an agent, fill out a form, and wait for a quote. With Lemonade, the process is streamlined to be much faster and more convenient. The system's built-in AI (Maya the chatbot) provides personalized service without the user having to talk to a live agent.

A Data-Driven Approach:

Source: Lemonade is disrupting insurance. The incumbents will have to respond Lemonade vs Traditional Insurance Companies: Customer Experience

Lemonade claims that it collects 100x more data points per customer compared to other companies. In a blog post, Lemonade describes how collecting and studying data are helping to improve its loss ratio. This is the ratio of losses to premiums.

What really sets Lemonade's customer service apart is the way it seamlessly transitions customers from one function to another. A new user is presented with information tailored to their buyer persona as they see comparisons of data so they can choose the best service. They can just as easily access claims processing when needed. All of this is automated, without the need to wait on hold or fill out complicated forms.

Fast Payments: Another distinctive customer experience feature of Lemonade is guaranteeing fast payments without any paperwork. As with the application process, customers can complete everything online. Claims are approved in seconds.

Easy to Switch: Lemonade targets customers who already have insurance as well as people buying it for the first time. Their "Check Prices and Switch" guides users through the process. As with other tasks on the site, Maya the chatbot guides users through a series of questions to highlight the advantages of switching to Lemonade.

Mobile Apps: Speed and convenience are supported by mobile apps that customers can download. Customers can set up and manage their policies on their mobile devices.

Active on social media: Another way Lemonade taps into its millennial customers is by providing news and policy information on social media. Their twitter account is frequently updated. They're also active on Facebook and Instagram. Social posts aren't simply ads for insurance, but links to news items and timely blog posts.

The chatbot interface has also allowed Lemonade to reduce its operational costs by automating customer support, claims handling, and policy management. This level of automation not only enhances customer satisfaction but also enables the company to offer lower premiums. However, Lemonade has faced challenges in ensuring its AI is accurate and unbiased in its decision-making processes, especially for complex claims where human judgment is still necessary.

Case Study 2: ICICI Lombard – Leveraging IoT and Telematics for Usage-Based Insurance

ICICI Lombard, a leading Indian general insurance company, has introduced telematics-based vehicle insurance policies that allow customers to pay premiums based on their driving behavior. Through a telematics device installed in the customer's vehicle, ICICI Lombard collects real-time data on metrics such as speed, braking patterns, and distance traveled. This data enables the company to offer usage-based insurance (UBI), where customers who drive safely and travel less benefit from lower premiums.

ICICI Lombard is leveraging the use of Telematics in transportation solutions to minimize marine cargo loss during transit of goods. The technology is used for the benefit of customers who are covered under the marine insurance policy (transporting goods by land or sea). It enables real time tracking of goods during transit to ensure that the carrier doesn't deviate from the course. In case, there are any unscheduled stops, they get reported real time thus reducing incidents of hijack, cargo theft, pilferage and accidents. ICICI Lombard has been tracking the usage of these cargo trucks in real time through embedded devices.

Geo-fencing is defined in the system so that the cargo can be instructed to stay on a particular road to align with the routes that are planned. If the cargo deviates from the defined route or gets delayed beyond logical limits, the insurer is notified about the deviation. Various triggers are configured each of which generates alerts by SMS and emails. There is a response protocol defined for each of these triggers, which has to be acted upon by dedicated response team. This includes coordinating amongst the drivers, transporters, insured's logistics personnel, claims team, investigation team and the police. In case of hijacks, quick action implies a higher probability that the cargo is recovered.

There have been multiple incidents where ICICI Lombard has been able to prevent possible hijacking incidents. In one such case, the driver was being tracked by suspicious people and was about to enter a lonely stretch in the evening. The tracking team guided the truck driver to the nearest police station from where it was taken to safety during the night and released on the subsequent day. Such proactive risk management has resulted in reduction of claims for such high level anti-social incidences. With the

usage of telematics, ICICI Lombard is able to proactively reduce incidents of cargo theft. Quite prevalent in the Western world, telematics is now beginning to gain a toehold in India.

Case Study 3: Ping An Insurance – Big Data and AI for Health Insurance Personalization

Ping An, a Chinese insurer, uses AI to tailor insurance products with the aim of increasing loyalty and increasing overall sales. The company has developed an AI-powered system called "OneConnect" that uses ML algorithms to analyze data and develop personalized insurance recommendations. These algorithms also customize offerings to match the client's needs, which has greatly enhanced the efficiency of insurers' internal analytics and campaign teams. They have also achieved a high level of automated but personal interaction, significantly improving productivity. Integrating AI and ML has revolutionized how Ping An engages with customers, enabling seamless and individualized experiences at scale.

They have invested heavily in big data and AI to personalize health insurance offerings and improve customer engagement. By analyzing data from medical records, wearable devices, and lifestyle information, Ping An's AI system can assess individual health risks and offer customized health recommendations. The company also provides a platform for policyholders to monitor their health data, book appointments, and access health coaching services.

The personalized approach not only improves customer satisfaction but also helps Ping An manage risks more effectively by encouraging healthier lifestyles among its customers, potentially reducing claim rates. One challenge Ping encountered was integrating data from various sources into a unified platform. To overcome this, the company invested in robust data management solutions that ensured seamless integration and compliance with Chinese data privacy regulations.

Case Study 4: AXA teams up with Shanghai's GRE for blockchain insurance

AXA Lab Asia and Global Risk Exchange (GRE) are developing a blockchain-based parametric insurance solution to equip agriculture producers to fight against extreme-weather risks.

The platform will use distributed ledger technology (DTL) to connect insurance providers and policyholders to a community of actuaries. Claims will then be triggered automatically via smart contracts during extreme weather conditions. The premiums stay on the 'chain' and provides a pool from which any claims can be immediately paid out and insurers can claim their premiums once the policy expires.

The business model caters to small premium products in the P&C space and helps insurers to service customers at an affordable rate. The service has been rolled out to farmers in Southeast Asia. The service can also be extended to car insurance companies.

How AXA's Global Parametric insurance works

AXA plans to participate as both a primary insurer and a reinsurer on the platform to bolster its blockchain activities in addition to furthering its ambition to grow in the reinsurance space.

Frank Desvignes, Shanghai-based founder of AXA Lab Asia has said of this effort: "Blockchain platforms like GRE provide better protection to the underserved and lowers insurance costs."

It appears Axa intends to use this platfrom to introduce agriculture risk products whilst assessing which other markets to target.

Future of Digitization in Insurance

As digital transformation accelerates, the insurance industry is expected to undergo profound changes driven by technological advancements and evolving customer expectations. The future of digitization in insurance will likely involve more sophisticated applications of AI and data analytics, greater personalization, and the adoption of technologies like blockchain, IoT, and the metaverse. This evolution aims to create a customer-centric industry that is not only efficient but also adaptive to changing risks and market dynamics.

1. Advanced AI and Predictive Analytics for Hyper-Personalized Policies

In the coming years, AI and predictive analytics are expected to enable hyper-personalized insurance policies tailored to individual needs and behaviors. With deeper insights from big data, insurers will be able to customize policies based on real-time information from multiple sources, including social media activity, spending habits, and health data from wearables. This personalized approach will allow insurers to assess risk more accurately and offer policies with flexible pricing models based on the policyholder's behavior.

For example, health insurers may increasingly use real-time health data to create dynamic policies that adjust premiums based on a policyholder's health improvements. This model aligns with the rising demand for value-based, individualized services and could boost customer engagement and retention. A report by Gartner predicts that hyper-personalization could reduce churn by up to 20%, as customers appreciate more relevant, responsive services.

2. IoT and Telematics Expansion for Proactive Risk Management

The Internet of Things (IoT) and telematics devices will play a larger role in proactive risk management, allowing insurers to prevent losses rather than simply respond to claims. As the cost of IoT devices continues to decrease, insurers will likely expand the use of smart devices in homes, vehicles, and workplaces. For example, sensors in homes can detect water leaks, smoke, or even structural weaknesses, automatically alerting the policyholder and the insurer to prevent damage.

In auto insurance, telematics will further evolve to include real-time insights into driving behaviors and vehicle health. This will lead to even more refined usage-based insurance models and may eventually encourage safer driving habits by rewarding low-risk behavior with lower premiums. Additionally, commercial insurers will employ IoT in the workplace to monitor equipment health, helping prevent downtime and workplace injuries. PwC predicts that by 2030, over 80% of global insurers will offer IoT-based policies, signaling a shift towards a proactive, preventive approach in insurance.

3. Blockchain for Greater Transparency and Automation

Blockchain technology is expected to move beyond pilot projects into broader adoption across the insurance industry. As more insurers recognize blockchain's potential for ensuring transparency and reducing fraud, we may see blockchain-based ecosystems that provide a shared, secure ledger accessible to all relevant parties, including insurers, reinsurers, and customers. Blockchain will enable smart contracts for more efficient claims processing, as they can automatically trigger payouts based on predefined conditions, reducing processing times and errors.

In the future, blockchain could also help insurers comply with regulatory requirements by providing an immutable record of transactions, simplifying audits and regulatory reporting. A Deloitte report estimates that blockchain could reduce administrative costs in insurance by up to 15%, allowing insurers to allocate resources more effectively while improving compliance.

4. Expansion of the Metaverse for Immersive Customer Engagement

The concept of the metaverse, an interconnected virtual environment, holds significant potential for the insurance industry. Insurers are expected to explore this virtual space for customer engagement, claims processing, and even virtual policyholder education. For instance, virtual reality (VR) simulations could allow insurers to visualize damages, risks, and scenarios for quicker and more accurate assessments.

Insurance companies may also use the metaverse for immersive

customer education, providing policyholders with VR tutorials on insurance products, risk prevention, and safety measures. Additionally, some industry experts envision a future where insurance policies are offered for digital assets in the metaverse, expanding coverage to new forms of digital property and transactions. While still in its infancy, this emerging trend could provide insurers with innovative ways to engage digital-native customers and explore new revenue streams.

5. Greater Integration of Machine Learning for Fraud Detection and Claims Automation

Machine learning (ML) will play an increasingly critical role in automating fraud detection and enhancing claims processing accuracy. As ML algorithms continue to evolve, insurers will be able to detect complex fraud schemes by identifying subtle anomalies in data that traditional systems may miss. The adoption of deep learning models and natural language processing (NLP) for analyzing unstructured data, such as social media posts or customer reviews, will further improve fraud detection accuracy.

Claims automation will also advance, with ML-based systems capable of making real-time decisions for straightforward claims. This will help insurers allocate human resources more effectively, allowing claims agents to focus on more complex cases. According to Accenture, ML-driven claims automation could reduce processing times by up to 40%, leading to faster payouts and improved customer satisfaction.

6. Rise of Ecosystem Partnerships and Insurtech Innovations

To keep pace with rapid technological changes, traditional insurers are increasingly forming partnerships with insurtech startups and tech companies. These collaborations allow insurers to access specialized technology and innovation without needing to build it from scratch. In the future, insurers may adopt open insurance platforms, creating a more interconnected ecosystem where customer data flows seamlessly between insurers, healthcare providers, financial institutions, and other stakeholders.

Insurtechs will continue to drive innovation, focusing on areas like parametric insurance, which offers automatic payouts based on preset conditions, and AI-driven underwriting solutions. These ecosystem partnerships enable insurers to offer a wider range of products and services, providing customers with comprehensive, integrated solutions. A Capgemini report suggests that ecosystem-based insurance could account for 30% of total insurance revenue by 2030, as insurers move towards holistic customer offerings. TJ

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Factors Associated with Adoption of Artificial Intelligence (AI) in Insurance Sector: An Empirical Study in India

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Abstract

Purpose: The aim of the paper is to explore the factors associated with adoption of AI in insurance sector in India

Methodology: On the basis of cross-sectional survey, 228 employees were selected through convenience and snowball sampling. The study has applied exploratory factor analysis (EFA), confirmatory factor analysis (CFA) and structural equation modelling (SEM). The population of the study includes employees working in insurance companies in National Capital Region (NCR), India

Findings: The results indicate that organisational factor emerge as influential predictor followed by technological factor, environmental factor and individual factor in adoption of AI in insurance sector. However, the study found insignificant association between environmental factor and adoption of AI in insurance sector.

Originality: In the last decade, most of the studies exploring the factors influencing the adoption of AI in insurance have been conducted outside India i.e. Slovakia, Serbia, Germany, etc. with limited studies conducted within India. Therefore, the current study fulfills this gap. This paper is possibly the first attempt to redress such gap using "Technological-Organisational-Environmental-Individual" (TOEI) framework.

Keywords

Insurance Sector, Artificial Intelligence, Technological Factor, Organisationl, Environmental Factor.

1. Background

All over the world, economies depend upon the insurance sector for financial security and risk mitigation for both consumers and companies. Due to development of technology and change in consumer needs, there is digital transformation in this sector. Slobodník (2023) define digital transformation as, "use of technology to build new strategies, processes, software, and systems that result in increased profitability, enhanced competitive advantage, and greater efficiency." Traditional insurance companies are now focusing towards digitalisation. Now, insurance companies are integrating new technologies like Artificial Intelligence (AI) and collaborating with digital partners in order to provide better customer services and better client communication. Cappielo (2018) study highlighted that technological factor has influenced the sales and distribution of insurance sector. Slobodník (2023) study also found that adoption of technology resulted in improved interaction with clients, online negotiations and online claims reporting. Adoption of emerging technology in insurance sector also resulted in better product portfolio, enhanced customer experienced and low cost of operation.

In the last 5 years, most of the studies exploring factors influencing

the adoption of AI in insurance sector have been conducted outside India i.e. Slovakia (Slobodník, 2023); Serbia (Stanković et al, 2022); Germany (Eckert et al., 2021). The implementation AI in this sector in India is at initial stage. In India, this sector is now focusing on integrating data ecosystem to enable the implementation of AI in the companies. Limited studies using "Technological-Organisational-Environmental-Individual" (TOEI) framework have been conducted in emerging economies such as India (Pathak & Bansal, 2024; Gupta et al., 2022).

The current research paper is presented as follows. In the second section, the review of literature is done and hypotheses are proposed for testing. The third section explains the proposed conceptual framework based on "Technological-Organisational-Environmental-Individual" (TOEI) framework. Fourth section explains quantitative study. Then, section fifth explains results and hypotheses testing. Sixth section gives conclusions and implications. In the last, section seventh explains shortcomings of the study and future directions.

2. Review of Literature and Hypotheses Formulation

2.1. AI in insurance sector

Aghion et al. (2017) define, "AI as the capability of a machine to imitate intelligent human behaviour". Tussyadiah (2020) defined AI as, "a process that can think humanly, act humanly, think rationally, or act rationally".

2.2. "Technological-Organisational-Environmental-Individual" (TOEI) framework

In the previous studies, various models have been employed to study the adoption of AI in insurance i.e. "Technology Acceptance Model" (TAM), "Innovation Diffusion Theory" (IDT), "Unified Theory of Acceptance and Use of Technology" (UTAUT) and "Technological-Organisational-Environmental" (TOE) framework developed by (Tornatzky et al. 1990). Most of the previous literature supports the adoption of TOE framework in exploring factors influencing adoption of AI in insurance sector (Gupta et al., 2022; Slobodník, 2023). The current study employed an extended version of TOE framework i.e. TOEI (Pathak & Bansal, 2024). This model considers four factors i.e. technological factor (TF), organisational factor (OF), environmental factor (EF) and individual factor (IF). Therefore, the current study has taken an extended version, with additional factor i.e. individual or human factor (IF). Thus, the study provide a a better understanding of how these four factors together impact the adoption of AI in insurance sector in India.

2.3. Technological factor (TF) and adoption of AI in insurance sector

Abed (2020) define, technological factor as, "the attributes of new technologies that may accelerate or inhibit their adoption in organisations". The features of the new technology i.e. AI have a high influence on organisations and to what extent it will be useful or harmful for the insurance companies. There are various dimensions of TF that influence its adoption in the organisation like technological perceived usefulness, technological challenges, compatibility and knowledge of perceived benefits. Gupta et al. (2022) showed the importance of knowledge of advantages of AI for implementation in an organisation. Various previous studies validated the positive association between technological perceived usefulness and adoption of new technology i.e. AI (Al Wael et al., 2023 and Thottoli et al., 2022). Studies found that adoption of AI improves quality (Omonuk & Oni, 2015); reduces operation cost (Schaefer et al., 2021); enhances performance (Al-Hiyari et al., 2019). However, Yang et al., (2024) findings reveal three main issues with adoption of AI i.e. "black box problem, biases and computability issues". Majchrzak & Markus (2012) define, "technological complexities as a way in which an individual or organisation can be held back from accomplishing a particular goal when using a technology or system". Schaefer et al. (2021) stressed upon role of compatibility of the AI with organisation's IT infrastructure in determining its adoption. Therefore, on the basis of previous review, the study proposes first hypothesis:

H_{1A}: TF positively influences adoption of AI in insurance sector.

2.4. Organisational Factor (OF) and adoption of AI in insurance sector

Management support is essential in order to bring transformative changes

in an organisation. The support is essential for implementation of new emerging tools like AI (Müller & Jugdev, 2012). Management support involves leaders with the authority to make decisions and foster an environment for innovative initiatives implementation (Chaubey & Sahoo, 2021). Organisation factors also include competent staff (Al Wael et al., 2023). Staff with high technology knowledge can avail the benefits of AI (Gupta et al. 2022; Lutfi & Alqudah, 2023). The readiness of an organisation also enhances the adoption of AI (Gupta et al. 2022) Therefore, on the basis of previous review, the study proposes second hypothesis:

H_{2A}: OF positively influences adoption of AI in insurance sector.

2.5. Environmental Factor (EF) and adoption of AI in insurance sector

Adoption of AI is dependent upon environmental dimension i.e. regulators who set standard (Seethamraju & Hecimovic, 2022). The adoption of AI creates competitive advantage for organisations in the market environment (Gupta et al., 2022). Support from technology partners also influences the adoption of AI in an organisation. Therefore, the study proposes third hypothesis:

H_{3A}: EF positively influences adoption of AI in insurance sector

2.6. Individual Factor (IF) and adoption of AI in insurance sector

Apart from above three factors, the current study has incorporated fourth factor i.e. individual factor or human factor. The ease of use of technology and its perceived advantages influences the adoption (Dora et al., 2022). Individual trust in AI technology is also important for the adoption (Wong et al., 2023). Lastly, individuals' privacy factor also affects adoption of AI (Song et al., 2022). Therefore, the study proposes fourth hypothesis:

H_{4A}: IF positively influences adoption of AI in insurance sector

3. Conceptual Framework Development

On the basis of previous literature, the current research model has been developed. In the present study, technological factor (TF), organisational factor (OF), environmental factor (EF) and individual factor have been considered. Figure 1 presents proposed model related to factors enabling adoption of AI in insurance sector.

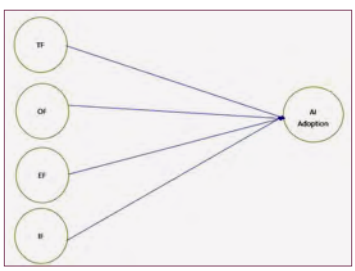

Figure 1: Proposed Research Model

4. Research Methodology

4.1. Target Population and sampling

A questionnaire was designed using various sources (Pathak & Bansal, 2024; Nguyen et al., 2024 and Gupta et al., 2022). The questionnaire is divided into three sections. Section A contained questions related to demographic profile; Section B showed the statements related to total four factors with i.e. technological factor, organisational factor, environmental factor and individual factor and the last section contained statements related to adoption of AI in insurance sector.

Approximately, 300 employees working in insurance companies in NCR, India were contacted. The study was carried from July, 2024 to September, 2024. Out of these responses, 72 questionnaires were not returned. Therefore, 228 responses were received. KMO measure of sample adequacy value comes equal to 0.866 i.e. more than 0.60 and Bartlett's test of sphericity is also significant ($p = .000$ which is $< .05$).

4.2. Measurement of constructs

The present study includes five constructs. Section B comprises 19 statements i.e. TF which include 5 statements, 4 statements on OF, 5 statements on EF, 5 statements on IF and Section C comprises 3 statements adoption of AI in insurance sector. A 5-point Likert scale from 5 "strongly agree" to 1 "strongly disagree" was used. Using varimax rotation and 22 statements, five factors have been extracted on the basis of communalities, eigen values and %age of variance explained. Table 1 shows communalities of statements.

Table 1: Communalities

Communalities		
	Initial	Extraction
TF1: We use AI technology to improve our work.	1.000	.759
TF2: We use AI technology to increase our speed and completing task.	1.000	.750
TF3: Using AI technology increases our productivity.	1.000	.786
TF4: AI technology is compatible with existing organisation's infrastructure.	1.000	.671
TF5: Training of employees for AI technology increases cost.	1.000	.833
OF1: Competent staff is available for AI adoption.	1.000	.723
OF2: Insurance company is financially competent to implement AI in organisation system.	1.000	.726
OF3: Top Management support the implementation of AI system in organisation.	1.000	.692
OF4: Resources are available for AI implementation.	1.000	.667
EF1: Government provides regulatory standards for implementation of AI	1.000	.774
EF2: Adoption of AI is imperative to remain competitive in market.	1.000	.673
EF3: Technology related partners are available in the market.	1.000	.588
EF4: Support from insurance authorities is available for AI implementation.	1.000	.680
EF5: Insurance authorities organise awareness programs related to AI adoption.	1.000	.683
IF1: It is not easy to trust cloud servers as data of client is confidential.	1.000	.582
IF2: I have necessary knowledge and experience of using AI technology.	1.000	.754
IF3: There is privacy concern in usage of AI technology.	1.000	.584
IF4: I find using AI technology useful in our job.	1.000	.774
IF5: Learning AI technology is easy for me.	1.000	.723
AI1: Organisation has adopted AI system.	1.000	0.674
AI2: Organisation has intention to adopt AI system in near future	1.000	0.878
AI3: Organisation is willing to adopt AI system.	1.000	0.824
Extraction Method: Principal Component Analysis.		

Source: Author's Calculation

4.3. Reliability test

Cronbach Alpha was used to check the reliability. The overall value of Cronbach alpha was found to be 0.924 (Table 2) which is more than the threshold of 0.7.

Table 2: Reliability analysis

Construct	No. of Statements	Cronbach's Alpha
TF	5	0.921
OF	4	0.844
EF	5	0.842
IF	5	0.857
AI	3	0.876
Overall	22	0.921

Source: Author's Calculation

4.4. Common Method Bias (CMB) Test and Total Variance Explained

Table 3 showing the five factors having eigen value above 1 and explaining a total variance of 71.81%. Harman's Single-Factor Test is used for CMB. This model employs EFA to determine the percentage of variance explained by the first factor. Table 3 shows that a first factor explains 40.23% of the variance, which is less than the 50% (Harman, 1976) i.e. the data is considered to be free from CMB.

Table 3: CMB Results and Variance Explained by Factors

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.851	40.232	40.232	8.851	40.232	40.232	4.131	18.777	18.777
2	2.505	11.387	51.619	2.505	11.387	51.619	3.236	14.709	33.485
3	1.692	7.692	59.311	1.692	7.692	59.311	3.144	14.293	47.778
4	1.562	7.1	66.411	1.562	7.1	66.411	2.68	12.182	59.96
5	1.189	5.405	71.817	1.189	5.405	71.817	2.608	11.857	71.817
6	0.765	3.479	75.296						
7	0.685	3.112	78.408						
8	0.645	2.931	81.34						
9	0.528	2.402	83.742						
10	0.465	2.115	85.857						
11	0.427	1.941	87.798						
12	0.404	1.835	89.633						
13	0.372	1.692	91.325						
14	0.359	1.631	92.955						
15	0.309	1.405	94.36						
16	0.247	1.123	95.483						
17	0.218	0.991	96.474						
18	0.215	0.977	97.452						
19	0.178	0.809	98.261						
20	0.165	0.75	99.011						
21	0.119	0.541	99.552						
22	0.099	0.448	100						
Extraction Method: Principal Component Analysis.									

Source: Author's Calculation

4.5. Rotated Component Matrix

Table 4 shows the rotated factor matrix which explains the relationship between each item (row) and the extracted factors (column). A cut-off 0.50 has been used to select the loads.

Table 4: Rotated Factor Matrix.

Rotated Component Matrixa					
Construct	Component				
	1	2	3	4	5
AI1					0.71
AI2					0.869
AI3					0.846
TF1	0.82				
TF2	0.802				
TF3	0.79				
TF4	0.738				
TF5	0.868				
OF1				0.748	
OF2				0.731	
OF3				0.749	
OF4				0.651	
EF1			0.84		
EF2			0.742		
EF3			0.643		
EF4			0.793		
EF5			0.752		
IF1		0.688			
IF2		0.717			
IF3		0.643			
IF4		0.73			
IF5		0.807			
Extraction Method: Principal Component Analysis.					
Rotation Method: Varimax with Kaiser Normalization.					
a Rotation converged in 6 iterations.					

Source: Author's Calculation

4.6. Validity test

To check the validity of the questionnaire, confirmatory factor analysis (CFA) was used (Table 5). To test the convergent validity (CV), the value for composite reliability (CR) should be more than 0.7 and lastly, CR > AVE (Hair et al., 2010). All values of CR are greater than AVE. Thus, all the conditions for convergent validity are fulfilled.

Table 5. Confirmatory factor analysis (first order construct)

Construct	Composite reliability (CR)	Average Variance Explained (AVE)
TF	0.901	0.647
OF	0.811	0.519
EF	0.869	0.572
IF	0.841	0.517
AI	0.851	0.658

Source: Author's Calculation

Discriminant validity is met when the square root of AVE is more than its correlation with any other latent variable (Fornell and Larcker, 1981). Table 6 indicates discriminant validity is met.

Table 6. Discriminant validity

	TF	OF	EF	IF	AI
TF	0.804				
OF	.564**	0.720			
EF	.302**	.391**	0.756		
IF	.550**	.590**	.366**	0.719	
AI	.510**	.525**	.250**	.443**	0.811

Source: Author's Calculation

Multicollinearity is also checked using variance inflation factor (VIF). Table 7 shows the absence of multicollinearity issue among variables and hence fall within the limit recommended by Hair et al. (2014) i.e. less than 5.

Table 7: VIF values

Constructs	VIF value
TF	1.645
OF	1.832
EF	1.224
IF	1.76

Source: Author's Calculation

5. Results and Discussion

5.1. Influence of TF on adoption of AI in insurance sector

The current study results (Table 8 and Figure 2) show significant association between TF and AI adoption by employees ($\beta = 0.23$, $p < .05$ i.e. 0.016). Thus, results are in the support of H_{1A}. The results are in conformity with the findings of Pathak and Bansal (2024); Nguyen et al. (2024); Gupta et al. (2022) who observed technology as a significant predictor in adoption of AI.

5.2. Influence of OF on adoption of AI in insurance

The regression results (Table 8 and Figure 2) suggest that OF is a strongest predictor of AI adoption ($\beta = 0.35$, $p < .05$ i.e. 0.000), therefore, the findings are in support of $H_{2A.}$ The outcomes are consistent with previous findings of Pathak and Bansal (2024); Nguyen et al. (2024); Gupta et al. (2022) who demonstrate top management support and organisation environment as a significant factor in adoption of AI.

5.3 Influence of EF on adoption of AI in insurance sector

The results also show positive but insignificant association between EF and AI adoption ($\beta = 0.04$, $p > 0.05$ i.e. 0.678) So, H_{3A} is not supported in the current study. The findings of the current study don't align with Pathak and Bansal (2024); Gupta et al. (2022) who highlighted regulatory support as a significant predictor of adoption of AI in insurance sector.

5.4 Influence of IF on adoption of AI in insurance sector

The current study results (Table 8 and Figure 2) show strong and significant association between IF and AI adoption in insurance sector ($\beta = 0.23$, $p < .05$ i.e. 0.017). So, H_{4A} is sustained in this study. Results are in conformity with the findings of Pathak and Bansal (2024) who showed how trust, privacy and knowledge aspects of individuals influence the adoption of AI in insurance sector.

Table 8: Path Coefficients

Hypotheses			Path coefficient	p value	Result
AI	<---	TF	0.23	.016	Accepted
AI	<---	OF	0.35	***	Accepted
AI	<---	EF	0.04	0.678	Not Accepted
AI	<---	IF	0.23	.017	Accepted

Source: Author's Calculation
Notes: Significant levels $p < .05$

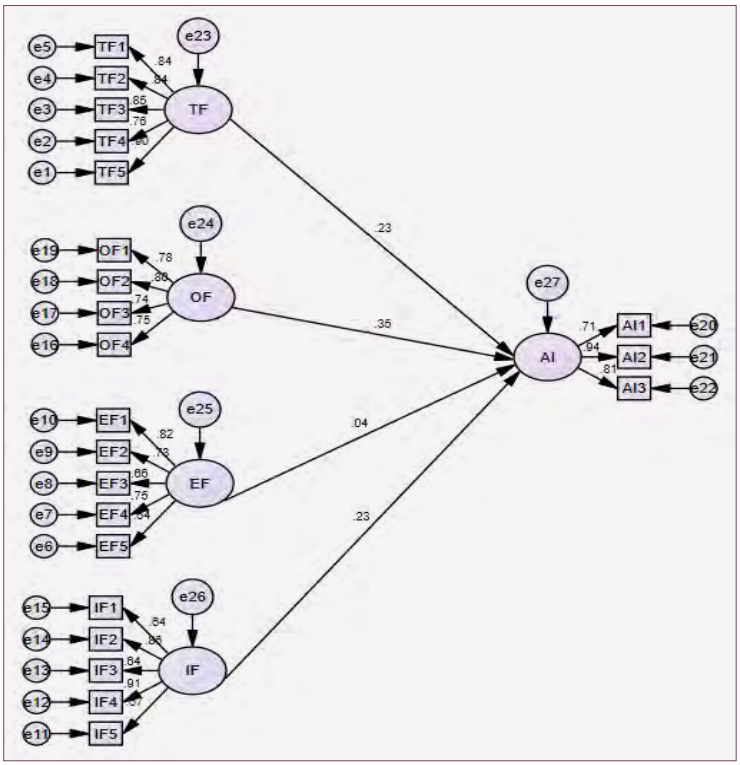

Figure 2: Factors associated with adoption of artificial intelligence (AI) in insurance sector using TOEI framework

Table 9 shows the combined influence of predictors (TF, OF, EF, IF) on adoption of AI i.e. 35% (R square value). This shows that TOEI factors taken together in the proposed model do impact adoption of AI in insurance sector.

Table 9: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.591[a]	.350	.327	.5788

a Predictors: (Constant), TF, OF, EF, IF

Source: Author's Calculation

Table 10 shows fit index GFI =0.872, CMIN/df= 2.052 and RMSEA =.09 which are within acceptable range. Finally, the proposed model is acceptable.

Table 10. Overall structural equation model (SEM)

Model	CMIN/df	GFI	RMSEA
Proposed	2.052	0.872	0.09

Source: Author's Calculation

6. Conclusion and Implications

6.1. Conclusion

This study presents a unique and new AI adoption model in insurance sector in India based on "Technological-Organisational-Environmental-Individual" framework. The findings reveal that OF emerge as a strongest predictor affecting adoption of AI in insurance sector in India. Results demonstrate that top management support and organisation readiness have significant influence on adoption of AI. The findings indicate that AI benefits enhances the efficiency of employees working in insurance companies. This shows transition from tradition method to AI based insurance due to regulatory bodies support i.e. government and other professional bodies. Results also indicate significant association between both TF and IF with adoption of AI. However, insignificant association between EF and adoption of AI. Previous studies also explained various challenges in adoption of AI like lack of experienced staff, data security and cost of AI training. Thus, this calls for more research on these factors.

6.2. Implications

There is shortage of empirically tested literature on adoption of AI in insurance sector in NCR, India. The current study proposed a model on adoption of AI using "Technological-Organisational-Environmental-Individual" (TOEI) framework and add value to the existing literature. The study highlights the significant factors such as TF, OF and IF as predictors in adoption of AI in insurance industry.

Moreover, this study offers valuable inputs for policymakers and stakeholders in designing policies to leverage adoption of AI in this sector. Therefore, more workshops, seminars, webinars and awareness programmes should be organised by insurance authorities in order to promote acceptance and adoption of AI tools in insurance sector.

7. Shortcomings of the Study and Future Directions

The present research overlooks the longitudinal research design to provide insights into the influence of TOEI factors on adoption of AI in insurance sector. The findings may not be generalised to other regions. The current study does not consider the role of demographic factors like age of employees, experience, etc. which might affect the adoption of AI. TJ

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Gen AI and its Impact on the Insurance Industry

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Scenario- *Ravish has worked as a Hindi typist in Sugar Firm for 5 years. Last year, Ravish lost one of his close friends, Suresh Kumar because of COVID. Suresh was the sole bread earner in the family and is no more, his family has been facing a deep financial crisis.*

Ravish was quite disturbed after visiting Suresh Kumar's family. He wanted to make sure that his family would not have to go through the same circumstances if something had happened to him. He decided to buy an insurance plan. He went through many life insurance companies' websites, but he could not understand their plans well because all plans were in English and had complex terms.

Fortunately, he came to the website of Live Life, a new Insurtech company, and found the Gen AI-enabled Chatbot option on the website Live Life, this chatbot provides life insurance advisory in a regional language. Ravish had deeply enquired about insurance plans through conversation with this Chatbot in Hindi and purchased one life insurance plan which will help him in meeting all his financial commitments.

The above example shows how Gen AI-enabled chatbot of Live Life has helped Ravish in understanding life insurance plans. Gen AI is playing a pivotal role in the insurance sector and making a positive impact.

The insurance industry is quite complacent in changing its conventional processes and embracing the newest technologies. It is slow in adopting emerging tech-led tools like Gen AI, machine learning, metaverse, and quantum computing. However, with the dynamic demands of customers and intense market competition, insurers should embed these technologies in their operations.

Gen AI helps in producing content in the form of text, images, audio, or other data types through deep learning models which can create new sets of data from existing data inputs. This breakthrough technology has immense potential to enhance efficiency, precision, and user experience through redefining the current insurance processes. Insurers can reap the benefits of their data and automate major insurance practices including product offerings.

Insurers will benefit from Gen AI through automating underwriting, defining apt insurance coverage & premiums to customers, and generating a simplified summary of the policy. Gen AI can provide an easily understandable summary of terms and conditions to customers which will help them in making their insurance understating more robust.

The Remarkable Benefits of Generative AI

Gen AI brings innumerable benefits to insurers to enhance every facet of their operations. Here are some key benefits:

Enhanced Risk Evaluation

Gen AI has the potential to analyze the large datasets of insurance companies and offer them a more accurate assessment of risk. With risk insights from Gen AI models, underwriters can make more informed decisions about the pricing more precisely.

Innovative Product Design Through Data

At present time, the preferences of

customers are changing very quickly. Capturing the demands of customers is very important for insurers. Gen AI can analyze big market data and dynamic customer preferences and can offer key insights to the insurance product development team. This will help insurers in bringing innovative and competitive insurance products to the market.

Streamlining Costs for Greater Efficiency

The cost of insurance operations is rapidly rising and pressuring the insurers to take cost-cutting measures. With the help of Gen AI, insurance companies can automate various processes of the insurance value chain, especially claim processing, underwriting, and customer support. This will lead to a cutback of insurance operations costs.

Deep Data Insights for Informed Decisions

Gen AI can derive the key information even from unstructured sources of data such as social media and news articles. These insights can bring a lot of benefits to underwriters in proactively managing the risk and adapting to changing market conditions.

Boosting Customer Loyalty and Retention

Gen AI can help insurers in offering tailored services, efficient claims processing, and real-time support to policyholders. This will lead to higher retention of customers and reduce the dropout rate of customers.

Generative AI Applications in the Insurance Sector

Streamlined Underwriting Automation

Currently, underwriters are burdened with immense administrative work in addition to their core work of risk analysis and pricing. Most of the underwriting processes are manual and it takes a lot of time and effort to price the risk accurately. Gen AI can ease the underwriting process for underwriters by analyzing a wide range of variables from applicants' documents to determine the risk.

Gen AI models have the power to assess a vast array of factors like age, health history, occupation, and more, providing a detailed view of customer profiles. Risk calculations and decisions can be done in a speedy manner through digital underwriting enabled by Gen AI. Gen AI can help underwriters in making consistent decisions while reducing bias or human errors.

Hiscox, a global specialist insurer has built an underwriting model with its Gen AI capability. The model would help in fastening and streamlining the process of issuing sabotage and terrorism insurance quotes in the London insurance market. Hiscox has partnered with Google Cloud to build this model; it will cut back the time from risk submission to quote creation.

QBE, an Australian multinational general insurance has launched a Gen AI solution to enhance efficiency across various global operations. It is named Cyber Underwriting AI Assistant to support underwriters in North America, helping them effectively review broker submissions. AI assistant has led to a reduction of 65% in review times.

SCOR SE, a French tier 1 reinsurance company has built Gen AI-enabled underwriting and claim assistant. The AI assistant is helping in providing access to enriched information of clients to underwriters and claims handlers and enabling them to make better decisions. The AI assistant can generate summaries from scanned and digital medical records.

Elevating Customer Experience

Most of the industries are now targeting customers through personalized communications. Insurance companies can leverage Gen AI to frame tailored messages, policy information, and interactions with individual customers. This will help insurers to make close and valuable connections with customers.

Gen AI assistants like chatbots can assist customers 24*7. Gen AI-enabled chatbots are well-equipped to answer queries, provide information about policies, and guide customers in the claim process. Gen AI is also capable of analyzing customer feedback and social media sentiment which can help insurance companies to improve their relationships with customers.

ICICI Lombard, an Indian general insurance company, has launched an innovative health insurance product 'Elevate'. The product has AI features in it. It can offer personalized solutions to align with dynamic lifestyles, unforeseen medical emergencies, and medical inflation.

Max Life, an Indian life insurance company**,** has launched a series of AI initiatives to enhance the customer and seller experience. The company is creating personalized videos, messages, and greetings for customers. The company aims to enhance personalized connections with customers.

Prudential, a British-domiciled multinational insurance and asset management company has launched an AI lab with Google Cloud to solve real-world problems and bring ideas to life. Lab will provide a sandbox environment, where 15,000 employees can unlock their creativity and experiment.

Rapid Claims Processing

Processing claim is a very cumbersome process for the insurance company. Investigators must collect and analyze vast amounts of claims data. Gen AI can help in streamlining the claims process. With Gen AI insurers can extract and process data from various claim sources, especially documents (claim forms, medical records, and receipts). The claims handler doesn't need to add the data manually. Insurers can process simple claims easily and complex claims can be taken care of by experienced claims handler.

Gen AI-enabled claim system can be helpful in tracking the entire process of a claim in real-time and can share the updates to claimant parallelly. With Gen AI the actual loss can be calculated more accurately and in much transparent manner as well.

Clearcover, the next-generation car insurance company, has launched an AI solution to improve the efficiency and effectiveness of claims operations. The tool uses Lage Language Models (LLMs) to guide conversational experience after the First Notice of Loss (FNOL). The tool collects necessary information typically collected in adjuster follow-up calls, to process and pay a claim efficiently. The company says the solution can issue payments in 30 minutes for simple claims.

Universal Sompo, an Indian General Insurance Company AI tools called 'Universal i Assess' and 'Universal i Gen' to speed up motor claims processing. The tools help surveyors and loss assessors to assess the damage and determine claims estimates in real-time.

Chubb, an American insurance company has collaborated with UK-based insurtech Cytora to automate the claims document management through an AI tool. The main target is to extract the key information from docs and operationalize the data more effectively.

Advanced Fraud Detection Solutions

Many times, insurers encounter fraudulent claims cases in their routine claims processing, however complex cases of fraud are still missed. Gen AI is helpful in analyzing suspicious patterns or deviations from usual behavior. This helps in alerting the insurers and taking quick action against such fraudsters.

Most motor damage claims are now being analyzed by Gen AI systems. Such a system flags any manipulation in the case to the claim handler. Insurers can cut back their operations costs by automating the fraud detection process.

Elevance Health, an American health insurance provider is working with Google Cloud to build a synthetic data platform that will health insurance company to detect fraud. The company aims to utilize algorithms and statistical models to generate synthetic data including data sets of medical histories and other health information.

IFFCO Tokio, an Indian General Insurance company has built Gen AI software to identify suspicious health insurance claims.

Future-Ready Predictive Analytics

A company that has the capability of assessing market trends and user preferences possesses cutting-edge advantages over others. Gen AI-enabled predictive analytics models are of great use in analyzing dynamic market trends and ever-increasing user preferences. With such models' insurers can effectively orient their customer acquisition and retention strategies.

Majesco, a global leader in cloud insurance platform software for insurance business transformation has launched a Gen AI-powered solution Majesco CoPilot. The solution can be directly integrated into core insurance operations. It will help boost productivity, streamline business operations, and cut down costs.

Potential Risks of Gen AI

There are many risks related to the adoption of Gen AI in insurance processes-

Data Privacy Concerns

Insurance companies hold immense amounts of sensitive information such as user personal data, medical records, and financial information. The insensitive handling of user data can be very risky for insurance companies. It can invite strict measures from law authorities. Hence, insurers should only gather and retain data using an AI model that is very necessary. Data should be collected only after getting user consent and it should be used for legitimate purposes only.

Training Bias in AI

Gen AI data can be collected from innumerable sources. Sources can have biases such as social and cultural. Such biases can result in the mishandling of sensitive claims cases. This can bring reputational damage to the company and dissatisfaction to potential customers.

Technological limitations

Insurers though have vast amounts of data with them, however, to process such data requires robust Gen AI models. Insurance companies may have to spend a large chunk of their revenue on such models. The second challenge lies in integrating Gen AI models with the existing insurance systems.

Regulatory Compliance

Many countries are coming up with stringent laws to protect the customer and their sensitive information. Insurance companies too need to comply with such laws. Insurance companies need to prepare clear guidelines and standards for Gen AI-powered systems. Failing to do these can be a harm to the insurer.

Conclusion

Gen AI brings substantial benefits to insurers and policyholders. It offers benefits from tailored marketing campaigns to automate claims and underwriting processes. However, it also comes with equal risks, especially of data privacy and regulatory compliance. Insurance companies need to plan in a disciplined manner to embed the Gen AI powers in their existing systems without jeopardizing the sensitive information of the user.

"Generative AI is the most powerful tool for creativity that has ever been created. It has the potential to unleash a new era of human innovation." - Elon Musk

Bookmarks

- https://www.ey.com/en_gl/insights/insurance/how-to-revolutionize-the-insurance-value-chain-with-generative-ai
- https://www.damcogroup.com/blogs/generative-ai-in-insurance-possible-use-cases-and-challenges
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Digitization and its Significance in Indian Insurance Sector: A Study

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Abstract

Digitization is simply a process where we alter analogy information into a discrete form of data which may be called as digital format. Nowadays, digitization in the insurance industry is one of India's most inevitable and requisite mechanisms of economic evolution. The COVID-19 pandemic has extensively influenced the requirement of digitization in the insurance sector, which has switched from taking a practical decision to a necessity. Dynamic changes are one of the main reasons for stimulating numerous transformations in the insurance industry. In this industry, good market leaders must adopt several actions that stimulate them to emphasize fulfilling customer demand, heightening their offers, and enhancing their operational effectiveness. Though, the study is to delineate the theoretical outline of digitization in the insurance industry and the substantial impact on business models due to the adaptation, implementation, and enlargement of digital technology usage in the industry here, in this endeavour an attempt has been taken to understand the overview of digitization in Indian insurance sector, including current trends, benefits, major challenges, and relevant solutions and examine the needs for digitization in the Indian insurance sector and discuss the changes in business models after installing and expanding the usage of digital technology.

Keywords

Digital Transformation, Digital Insurance, Digital Technologies, Government Regulation.

1. Introduction

Innovation has been reflected with the help of various digital platforms and setups that facilitate several entrepreneurial benefits across various sectors and are developed by current products, services and increased processes (Gault, 2018; Nambisan et al., 2019). In response to the insurance industry, innovative strategy is interconnected with modern technologies and aligns with the whole value chain system (e.g., Bohnert et al., 2019; Eling & Lehmann, 2018). The specified influence of "digitization" with

the help of selected technologies for the insurance sector has also been elaborated in this study (e.g., Bramblet et al., 2019; Eling & Lehmann, 2018; Naujoks et al., 2017). Moreover, researchers, practitioners, and academics have explored very little regarding a comprehensive overall outline of the opportunities and shortcomings of several technologies aligned with IT services and other activities in the insurance industry. *Technology* is an innovative mechanism that has demonstrated enormous transformations in the insurance sector. For insurers, the dynamic environment of the insurance sector can play a vital role in adopting technological innovation in this sector. Modern digital technologies are shifting how customers can communicate with insurers. Digitalization is crucial for the insurance sector to uplift the competitive environment and channel the quality of services to foster consumer involvement.:

The insurance industry in India has witnessed rampant growth in the last 20 years primarily because of increased participation of the private players, improved operational efficiencies and a significant reduction in the impediments relating to logistic capabilities due to the advancements in the distribution channels. S&P Global Market Intelligence has pointed out that India has occupied the second most prominent position in the insurance technology market in the Asia Pacific region. India accounts for a massive 35% of the total venture investments in this market segment, which amounts to US$3.66 billion. There has been a tremendous growth of 20% in premium collection in the Indian Insurance sector for the FY 2022-23 over its previous year, out of which the life insurance companies witnessed an increase of 18% in their premium collection, where 35% of this robust growth was the contribution of the private life insurance operators. As per IRDAI statistics, companies have achieved INR 3.71 trillion for FY2022-2023 compared with INR 3.14 trillion for FY2021-2020. The insurance industry is estimated to heighten by 5.3% from 2019 to 2023.

In the insurance sector, digitization incorporates several digital technologies into business operations. The introduction of digitization in the insurance sector can be a vital tool to increase further development through various platforms, including websites, apps, email, social media, live chat, text, and other technical channels to connect with consumers directly. Insurance companies try to conduct business activities based on several digital platforms and channels; adopting digital technologies to provide service through insurance schemes is treated as Digital Insurance. Digitization emphasizes operational effectiveness, promotes a costumers-oriented business model, and enhances the overall development of insurance sectors.

- Promote a customer-oriented approach.
- They were introduced to several digital platforms where potential customers could research, distinguish, and purchase online products without the involvement of any agents.
- Improve insurance coverage capability.
- Digital technologies also help improve risk assessment procedures and maintain effective pricing methods and digital platforms interconnected to modern insurance-oriented technologies.

2. Literature Review

Parviainen (2017) described in their study about the importance of digital transformation, gathered from different industrial case studies, and also elucidated a systematic method to adopt digital technology in to a business model.

Cappiello (2018) encouraged division managers for digital insurance and highlighting essential factors and diversification approaches.

Eling et.al (2018) discussed in their study about the effect of digital transformation on the insurance industry through Porter's value chain model.

Bohnert et al. (2019) outlined the need for innovative method in this industry's digital platforms.

Zetzsche et al (2020) Said that digital technologies can impact business performance. Digitization can foster organizational growth as it reflects the overview and operation.

Werth et al. (2020) described the valuable factors for the digital upliftment in the services industry.

Revathi (2020) outlined Digital Technologies in the insurance industry in India.

Eckert & Sterrieder (2020) investigated in their study regarding a comprehensive outline of information technologies such as artificial intelligence, cloud computing.

Grize et al. (2020) outlined the effective implementation of Machine learning on insurance services.

Satuluri and Radhika (2021) explained in-depth concepts of digital insurance in a competitive market.

Volosovych et al (2021) emphasised on modern online distribution platforms, in respect of their application for brokers, agents, consumers.

Yaneva (2021) evaluated the requirement of digital transformation in this industry, and the revolutions in business strategy with the help of the adaptation and installation of digital technology.

Sabu (2023) examined the role of digitization in changing this sector and how implementing information technologies can promote business activities.

Jayanthisobhana and Jeyanthi (2023) described about the progress, requirement, and problems attached with digital insurance, and also determined of the landscape and characters of the digital transformation in this industry.

Jayasurya (2023) outlined awareness of the vital role manifested by digital technology in this sector and explain how all necessary changes align with business strategy.

Sudhamathi (2023) emphasized overviews of digitalization, including its importance, evolution, and essential steps, it can help mitigate extra operational costs, promote effectiveness, and improve consumer involvement.

Thiyagarajan et. al (2023) examined the effect of digitalization on the insurance sector, evolving the accessibility of mobile applications, cloud computing, online insurance policies and described the several benefits of using digital technologies in to business operation.

Ambika (2023) investigated how digital technology improves this sector and emphasises consumers- a consumer-oriented approach.

Raheja (2023) reviewed the relationship between the digitalization with insurance sector and the parameters reflects the same. Additionally, this paper delineated about several emerging online distribution platforms and its impact on insurance market.

Sajan (2023) evaluated the important role of information technology in this industry and discuss the several approaches by which information technology has been renovated in this sector.

3. Research Objectives

Digitization is simply a process where we alter analogy information into a discrete form of data which may be called as digital format. Here, in this endeavour an attempt has been taken to-

- understand the overview of digitization in Indian insurance sector, including current trends, benefits, major challenges, and relevant solutions.
- examine the needs for digitization in the Indian insurance sector and discuss the changes in business models after installing and expanding the usage of digital technology.

4. Research Methodology

The proposed study is an exploratory in nature. It is largely based upon the secondary data which have been collected from different books, journals and available data from various websites.

5. Regulatory Framework

The IRDAI has embraced admirable initiatives to strengthen consciousness regarding the insurance sector and conduct several functions to make insurance affordable and accessible to all the society members in India. In 2021, IRDAI advised all insurance cooperation to adopt digital insurance schemes through Digi Locker. In order to increase the usage of Digi Locker in the insurance industry, the regulator instructs all insurers to upgrade their IT department to collaborate with Digi Locker technology to enable policyholders to accept Digi Locker for protecting all relevant policy records. Digi Locker can reduce relevant costs in the insurance industry, mitigate consumer complaints regarding the non-delivery of policy documents, enhance the turnaround time of insurance services, reduce claims

settlement, decline disputes, decrease fraud and enhance customer engagement. IRDAI has introduced a suggestion to all insurance enterprises to make the digital insurance schemes of all policyholders accessible through the Digi Locker account and to receive Digi Locker-provided documents as effective documents. Regulators have implemented several progressive schemes, including BIMA SUGAM, BIMA VISTAAR, and BIMA VAHAK. These schemes exhibit the regulators' assurance to enhance the insurance industry. The Digital Personal Data Protection (DPDP) Act of 2023 can be essential for this sector, and it may provide companies with a way to ensure data protection in the areas. Several financial inclusion schemes have been introduced, such as Jeevan Suraksha Bandhan Yojana, Pradhan Mantri Suraksha Bima Yojana, Atal Pension Yojana, and Pradhan Mantri Jan Dhan Yojana, that are very helpful in increasing the activities in this sector. In India, this industry is experiencing a foremost revolution with the establishment of Bima Sugam, which can reduce the complexity of the procedure at the time of purchasing and claiming insurance schemes.

6. Digital Trends in Insurance Industry

The usage of mobile phones and the internet has acknowledged incredible development in India and around the world. Digitization in the insurance industry is becoming a more innovative and effective landscape for customers and is treated as one of the inevitable creations of the insurance industry in India. Some of the digital trends in this industry have been discussed in the below:

- **Purchasing Insurance policies through an Online platform:** Getting insurance services online has allowed consumers to assess all activities very quickly. All the consumers are getting free-of-cost online insurance facilities where consumers can select and purchase various digital insurance policies online. It can exclude the requirement of meeting an agent by the insurer. It also excludes the requirement to speak or investigate regarding an insurance policy by the mobile service.
- **Using Automation and AI for improving Claims settlement:** With the help of AI technology, people can capable to meet their claims and promote a good underwriting process. AI can also help consumers quickly get more personalized and unique products and services in the insurance market.
- **Social media:** social media can play a vital role in introducing a new landscape in digital marketing and improving business strategies that are more effective than traditional marketing strategies. The conversation with consumers is changing, and social media has made it easier for consumers to select appropriate and suitable insurance products. This is one of the most innovative platforms for consumers to investigate the insurance sector and examine products and service quality.
- **Chatbots:** Chatbots usually provide relevant responses to questions potential consumers request on digital platforms, making it possible for insurers to take various essential information quickly. AI chatbots are an innovative technology that reduces the time taken to buy insurance products. Insurers are getting new opportunities by using chatbots to improve their resources through digital platforms. It introduces new opportunities to stimulate consumers to choose several insurance schemes.
- **Internet of Things (IoT):** IoT generally has an interconnection with the worldwide digital web and is used to help improve the insurance industry's adoption of essential technical activities. With the help of IoT, insurers may use a huge amount of data and real-time relevant information regarding potential consumers' preferences. Insurers can utilize it to generate innovative advantages in the insurance sector.

  Digitization can ensure insurers good understand their customers with the help of data analytics, which may help them promote more personalized policies and improve customer satisfaction. Digitization can offer several advantages to the insurance sector.
- **Promote Customer Involvement:** One of the superior advantages

of Digitization is that it helps consumers improve their involvement and enhance their satisfaction. By examining customers' preferences with the help of the data analytics, companies can build more personalized policies and improve customers' long-term bonding.

- **Increased Efficiency and Reduced Costs:** Digitization can assist consumers in automating manual procedures, resulting in enhanced efficiency and decreased costs. Moreover, digitization can restructure claims processing, mitigating the time and cost of manual processing. Digitization can be bridged to reduce the gap between the insurance company and the customers to a considerable extent. This is probable to happen because of the standardization and comparable data. The traditional approach of marketing, which involves investing large amounts of expenses expressly in advertising and promotion, has decreased significantly with the adaptation of digital marketing. Due to cost benefits, consumers can assess the benefits of digitization.
- **New Income:** Digitization can also help insurers recognize new revenue opportunities. For example, data analytics techniques can also help insurance companies establish new products or services that are better personalized to customer needs and preferences.
- **Improved Decision Making:** Another benefit of digitization in the insurance sector is that it helps consumers take good decisions. By harnessing the power of data analytics, insurers can gain insights into customer behaviour, claims trends, and other areas that can help inform decision-making. In addition, predictive analytics can help insurers identify risks before they occur, permitting them to do proactive assessment to reduce them.
- **Enhanced Fraud Detection:** Digitization can also assist both consumers and insurers to identify and overcome several existing frauds in the operation process. Such as, data analytics mechanisms can recognize trends in claims data that can point out fraud. Using biometrics and other software authentication technologies can confirm that only genuine customers can access insurance products and services.
- **Improved Risk Management:** Digitization can support consumers and insurers in following appropriate risk management mechanisms by giving adequate data and insights into different risks. These risks must be carefully tackled to ensure a successful revolution in the insurance sector. Moreover, there are many potential opportunities for digitization for both parties.
- **Focus on Safety:** With the help of digitization, the risk and loss of traction of policies can be eliminated. The online form of the insurance is very safe and can be accessed from anywhere and anytime by the policyholder. Digital insurance can provide a higher level of safety against illegal and fraudulent activities by brokers or agents.
- **Convenience of Transacting:** Modern customers want to meet their demands instantly. By using several Online platforms, Consumers can buy their selected schemes from home and at any time. Also, digitalization in this sector has simplified the buying, renewing, and claims processes, thereby enriching the customer's overall experience.
- **Followed Compliance and Regulatory Framework:** Any illegal activities of agents or brokers can be excluded as consumers have to maintain a direct relationship with insurers regarding the entire process of purchasing insurance products and services from the insurance company. Customers can easily distinguish between several insurance companies and their products before purchasing the right insurance package.
- **High Brand Awareness:** Digitization can help to enlarge the knowledge of customers regarding the company's products and service quality through their different websites, which offer informative and quality content. Companies can utilize online platforms, including

various apps, texts and email marketing, to heighten brand awareness among potential customers.

- **Post-Sales Service:** While the initial response during the purchase stage of an insurance policy might give customers the right experience, there is a general impression that customers are forgotten after a policy is sold. However, with digital insurance, post-sales service, such as the process of raising a claim, is hassle-free, offering a paperless translation. Also, insurance companies use their social media handles to receive feedback and complaints and resolve issues. This way, they are able to provide better post-sales service much faster than traditional insurance companies.

The following are some of the current challenges faced by insurers in India's digital insurance landscape.

✓ **Data privacy & Security:** This is one of the foremost challenges customers face when facing vast amounts of data. In order to keep this essential and sensitive data, customers are required to maintain robust security measurement techniques, including data encryption and multi-factor authentication. Insured and consumers must be know of the data protection regulatory framework that mainly oversees personalized data and issues some measurement methodologies to retain data security.

✓ **Infrastructure:** In order to strengthen Digitization, the industry needs to have the appropriate IT system and environment. This will be an essential investment for customers, who need to assure that they should have the appropriate knowledge and activities in-house to fulfill IT modernization targets. Insurers should invest in ascendable, secure, and interoperable IT infrastructure, digital processes and data analytics activities to channel unified customer involvement and ensure regulatory responsibility.

✓ **Regulatory:** A significant issue for consumers is to follow a complex regulatory environment in India. As insurance is a strongly controlled industry by the government of India, Digitization can come with several modifications that must be added to current rules and guidelines. Insurers should be closely attached to all necessary regulations to ensure that their Digitization in the insurance sector complies with all guidelines. IRDAI has launched several programs, including reporting guidelines, disclosure norms, and licensing requirements.

✓ **Operational Risks:** Digitization can reduce operational risks as much as possible, and companies have to adopt dynamic risk mechanism procedures to reduce considerable losses.

7. Table 1: Relevant Solutions are Discussed Below

Enhanced customer Engagement	Insurers may foster customer relationships by giving personalized communication using digital tools and techniques. Promoting chatbots, mobile apps, and online assistants can provide consumers with intelligent access to support and assistance, increasing their experience.
Flexibility and adaptability	Insurers should use several applicable methodologies and innovative operational techniques to accept dynamic market segments and emphasize customer demand.
Sustainable partnership	Insures can promote partnerships with several technology firms, Insurtech, and ecosystem players to foster innovative activities and increase digital efficiency. Data analytics providers can collaborate with fintech companies to elevate new benefits and opportunities for product development and customer engagement.
Promoting technology and innovative skills	Insurers can put their money into cutting-edge technology, including blockchain. IoT, AI, and machine learning to increase digital efficiency and promote competitive advantage in the digital era. Additionally, investing money into several training programmes that motivate employees to acquire various skills.

Source:(https://www.ibef.org/blogs/digitalizing-insurance-in-india)

8. Traditional Insurance Comparison with Digital Insurance

Digital technology has enabled insurers to improve their product and services by developing their actions, streamlining practices and decreasing costs.

Table 2: Comparison between traditional insurance and digital insurance

Factors	Traditional Insurance	Digital Insurance
Valuing	excessive operating expenses because of various branches and only offline actions.	Small operating expenses are caused by online procedures that are cost-efficient, more accessible, and quicker.
Purchasing Procedure	Multi-step mechanism and difficult. Need bookkeeping to continue the procedure.	Paperless transactions have been made with the help of online mode. It is less straightforward and more accessible to purchase online mode.
Interaction	faced difficulties in their operational conditions or complicated implementation	It is easier to understand and available via various methods, including apps, social media, apps, emails, texts, websites, etc.
Claims and settlements	Need various bookkeeping mechanisms to build the extent of accountabilities	More consumer-oriented and faster settlement of claims. Focus on customer claims through online methods such as websites, various apps, or phone calls.
Source: (https://www.acko.com/digital-insurance-trends-and-benefits/)		

9. The growth of Digitization in the Insurance Industry

One of the significant achievements of Digitization in this industry is the utilization of scanners and innovative algorithms to determine accurate premiums. This accuracy in this industry is becoming more profitable and has also permitted them to balance risk concerning managerial activities. In the last few years, this industry has adopted the opportunity to use information technology to provide their insurance policies directly to customers. This created a current source of profits for insurance operations and also facilities to enhance consumers' trust and continue a long-term relationship with them. In current years, the insurance industry has been adopting digital platforms to continue updating their business curriculums.

Moreover, this industry now accepts data analytics to identify consumers' demands and preferences and recognize new development advantages. Insurance companies' emphasis on consumer engagement can assist them make long-term decisions on the basis of data analytics and offer advanced products and services that fulfil the requirements of a digital domain. This industry progressively accepts the latest technologies and methods to help it sustain itself in a competitive business environment.

10. The Requirement of Digitization in the Insurance Sector

In order to persist in a competitive environment, the insurance sector is focusing on the requirement for the adaptation of Digitization. Customers' prospects have faced some transformation, and consumers now want to use a digital platform to experience their service. To fulfil these potential opportunities, companies should encompass all the digital innovation in their process. This Digitization may help companies strengthen consumer involvement and foster development.

The Impact of digitalization on the insurance Industry in India

- Companies are progressively adopting Digitization in their process in order to establish a good image and heighten their relationship with their consumers by increasing the amount of communication with the companies and introducing new and innovative products and services. Consolidating new methodical methods can enhance consumer involvement, elevate loyalty towards companies, and promote a long-term partnership with consumers by embracing their thoughts and requirements when making new products.

- Another impact of Digitization in the this is to decrease the overall gap between companies and consumers, and the usage of modern technologies permits companies to gather exhaustive information regarding consumers' needs and preferences in order to make highly personalized products and services that help to enhance consumers satisfaction and engagements towards the companies.

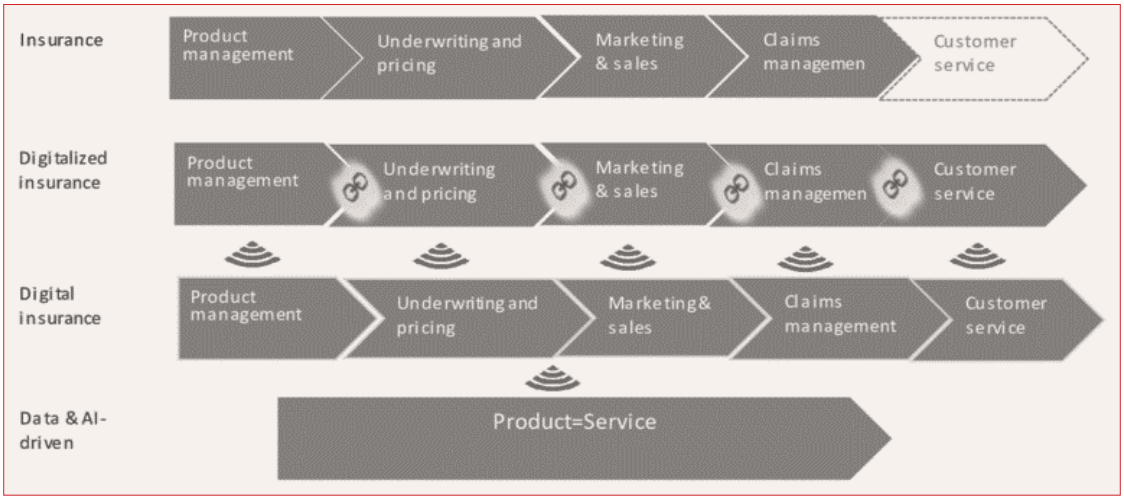
Table 3: The Digitalization of the Insurance Sector

Operational Strategy	Digital Tools and Techniques	Application in Insurance industry
Product design and Development	Big Data, Blockchain, IoT	Data collection, increase customer engagement, create an innovative idea in production, diversification in product or service.
Insurance risk (assessment)	Big data Artificial intelligence IoT Blockchain Cloud computing	Reduction of information asymmetries Finer risk assessment More possibility of risk prevention Finer segmentation driven by greater processing capabilities More risk appropriate pricing Contract information stored digitally.
Sales and Distribution	Big data Cloud computing Artificial Intelligence Social networks, Mobile devices Web site and apps.	More spread of information to the market Contract information stored digitally Increase in the number of policies purchasable online Increased involvement of the customer in the sales process Innovation and diversification of sales channels
Claims settlement	Big data Artificial intelligence Blockchain	More accurate claims assessment Fraud reduction Automated calculation and payout of claims Possibility to claim damages and follow the procedures digitally Decrease of processing time.
Source: (Pauch, D., & Bera, A. (2022)		

Table 4: Advantage and disadvantage of application of the Various technologies in insurance sector in India

Technologies	Advantages	Disadvantage
Big data	Comprehensive registration and real-time updating of all information flows	Data security, Cyber attract, data privacy, costly in nature, technical issue.
Artificial Intelligence	increasing the efficiency, the quality of the customer experience, optimizing the costs, speeding up the service process and eliminating damages	Algorithmic error, potential bias, lack of transparency, privacy and data security, scarcity of trust.
Internet of Things	information accumulation, customer behaviour research, real-time information in claims processing, risk assessment, customer guidance, prevention and loss reduction	High initial cost, Data security and fraud, Complexity in implementation, Limited standardization.
Cloud Computing	process efficiency and flexibility, cost savings for configuration, development, hardware, licensing, installation and maintenance of a legacy system; data availability anywhere and anytime	Data lose and theft, data security concern, lack of expert, privacy and compliance, lack of internet connectivity, lack of visibility, cloud misconfiguration.
Block chain	Trust, sustainability and security; effective organization of information flows, generalized, comprehensive customer information database	Lack of technical expert, high set-up cost, scalability issues, lack of regulation, high energy consumption. Security and authorization.
Social network	Improving Customer service, building trust, increasing brand loyalty, enhance brand awareness, strengthen customer relationship	Damage to insurance claim, unfair discrimination, unverified Content.
Source: Own processing		

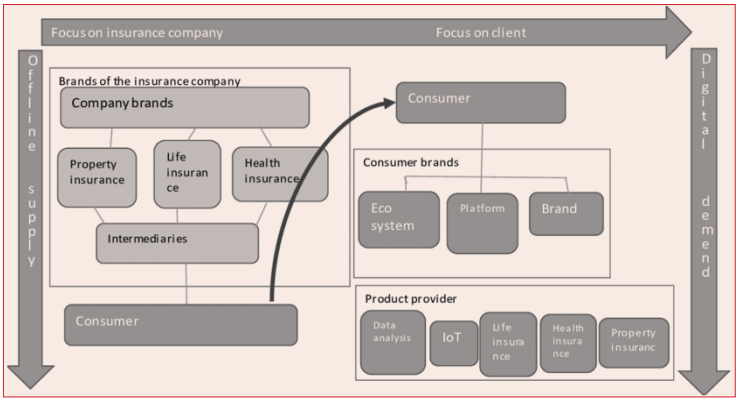
Chart 1. Insurance value chain transformation



Source: (Swiss Re, 2018)

The crucial steps of the value chain system in the insurance industry involve marketing, sales and distribution, development of insurance products, faster insurance and claims procedures, effective pricing strategy and underwriting processes, firm administration, and standardized risk management systems. Digital transmission can impact the whole value chain system. The advantage of digitization in the insurance sector is that it builds the value chain into something more well-organized and systematic. Artificial intelligence is important in creating a comprehensive value chain mechanism in the insurance industry that may help companies' consumers directly. Digital insurance can help customers identify accurate products and make quick decisions through digital channels without agents' involvement in the whole process. In the value change system, different mechanisms, including product management, faster claims management, customer service and underwriting, and pricing systems, are beneficial components of the value chain system that may be more developed using the digitization of the insurance industry.

Chart 2: Transforming attention towards consumers from the insurance company.

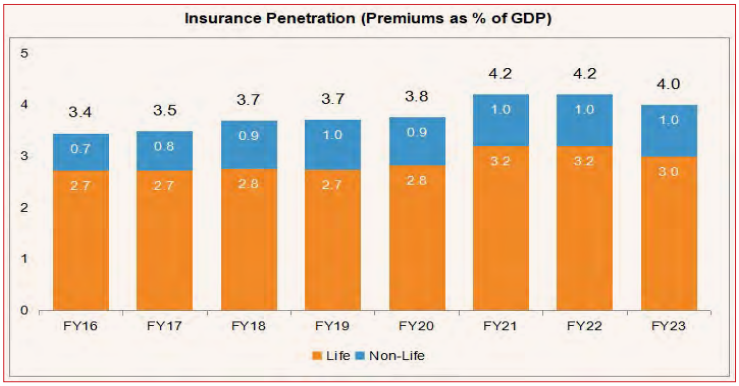


(Source: Vanderlinden, et al., 2018)

The transformation towards consumers from companies can reflect the modification of the procedure of product enlargement. Nowadays, insurance companies emphasize making personalized products and services to satisfy customer demand, and companies have to adopt a consumer-oriented business model. The advantages of using an online platform and giving immediate feedback from social media encourage customers to make decisions regarding an insurance scheme without the involvement of any agents or third parties.

Customers want to select the right product and services after scrutinizing all the available data on digital platforms and distinguishing the products and services with the help of various distribution channels.

Chart 3: Insurance penetration (premiums as % of GDP) in India (2016 to 2023)



(Source: https://irdai.gov.in/**)**

According to the Swiss Re Institute, India's insurance penetration is less than the worldwide value of around 6.5%. Moreover, India's insurance industry is estimated to enlarge the maximum progress rate among G20 countries, with premiums forecast to increase by 7.1% between 2024 and 2028. However, the global market is predicated on close to 2.4% involvement in development. Several driving factors, such as an increasing income source of the middle class, resourceful policies and schemes, and practical regulatory principles, influence the enlargement of the insurance sector in India.

11. Future of Digitalisation

Digitization is becoming a transformative approach that will highlight enormous developments through digitization in the insurance sector in the future. Integrating digital platforms and physical methods is a comprehensive approach in highlighting to satisfy consumers' expectations. Insurance companies can face high potential upliftment and growth in the future due to strong partnerships between insurance companies and other sectors. Insurance companies have been focusing substantial progress, close to 32 to 34% yearly, going to achieve five positions in the world. These associations among industries can reduce the gap and make a path to assess insurance services in India. The introduction of online platforms in the insurance industry through Bima Sugam schemes can denote an intensive effort towards universalizing insurance and improving customer transparency and trust. In India, a Digital programme has been launched and adopted with unified and standardized digital technologies; the insurance industry is increasingly growing by accepting these transformative and innovative changes into the business environment to reflect digital India, which can do a important role in making a strong economy in future. Due to having an effective and standardized regulatory principle and its proper implementation in this sector, improving data protection mechanisms and embracing digitalization in the insurance sector can increase consumer engagement and satisfy them in the future.

12. Concluding Remarks

The introduction of information technology in this industry can build competitive market by depending on attachment to high-tech companies and offering a diverse and transparent insurance scheme after transforming products and services quality. Digitalization can improve the connection between insurers and consumers where the guidelines regarding this sector are more transparent and efficient, and the interaction between them continues with the help of various distribution channels and digital sales methods. The fruitful introduction of information technologies can help insurers enhance their profitability by reducing costs and elevating sales value because of the suitable reaction to consumers' demands and preferences based on extensive data analysis. Based on an accurate investigation of personal preferences, this sector can develop a future digital strategy, which is essential for establishing a more profitable and sustainable enterprise. This is very much needed to succeed in technological revolutions and fulfil

the wish of an innovative leader who accepts all variations in the competitive market. Technological upliftment in this industry, which depends on the digital platforms, can integrate components of insurance, technology, and finance, which are significant in establishing a competitive market and assist in building an innovative organizational model to fulfil consumer needs and preferences better. Value creation, with the help of digitization in the insurance sector, can also establish innovative, modified, and more consumer-oriented products and services that help reduce costs. Digitalization helps to increase the anticipated automation of various procedures for providing insurance services. However, in a highly volatility market, this can decline the excess premiums, enhance affordability and enlarge coverage packages. Three comprehensive approaches of digitization may foster further development in this sector. Such as- Modern technologies can strengthen the interaction between customers and insurers with the help of various digital platforms, including chatbots, social media etc; Digitization can be maintained good standardization and promote the effectiveness of operational strategy through using several online methods and digital claim settlement; and Moden technologies can expose the opportunities to change current products quality, such as on-demand insurance, and permit the expansion of modern products. TJ

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Impact of Digitalization on the Insurance Industry: With Special Reference to Settling the Motor Third Party Insurance Claims in India

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I. Introduction

Motor third party insurance in the Indian insurance market predates every known facet of insurance. At the same time, it has a significant share in the non-life segment of the Indian insurance industry. An active association of motor third party insurance with safety has led it to be converted into compulsory insurance coverage, thereby helping insurance companies to increase their underwriting exposure. The manual processes in claims settlement and other verticals can be changed into fully digitized versions. Settling claims using digital technologies will speed up the process. The Indian insurance industry is facing the effects of unreasonably pessimistic economic, demographic, and technological changes. New technologies revolutionize the risk assessment and reduction of different types of insurance. Motor third party insurance and claims settlements can be placed further at a grassroots level where any technology can show its real application. Motor vulnerability indexes are used to accurately settle new product prices in auto insurance. Insurance claim information can influence official statistics.

Insurance is a business that is based on trust. Trust can also be achieved by fast claims settlement. Evidence of required documentation and authenticity of claims are the heart of the entire claims process. In the field of non-life insurance, claims management plays a crucial role because it is the only way through which the insured obtains satisfaction and trust in the insurance companies. Claims arise out of the insurance policy and are settled by the insurance company beyond any specific law, as insurance is based on goodwill, trust, and morality of both parties, *i.e.*, insurer and insured. Technological change has positively impacted every process of the industry. The claims process has drastically changed due to the employment of the internet and mobile applications. An array of technologies and digital platforms is being deployed to mitigate the impact and to finance the liabilities posed by manmade and natural claims. Through collective timeframes, insurance claims are placed directly into bank accounts. An e-insurance platform is used to transfer money into claimant's accounts. Insurtech has created technological trends, including the use and outgrowth of blockchain and smart contracts, the use of artificial intelligence, and on-spot claims settlement as claimed by the loss-avoiding applications. The purpose of this essay was to study the impact of digitalization on motor third party insurance claims settlement in India. More research in this area can be done at the level of claim settlement department and can be shared further in the field of technological implementation in non-life insurance businesses.

II. Overview of the Motor Third Party Insurance Claims in the Indian Insurance Industry

Motor third party insurance is a class of vehicle insurance that is both a

social security and a private contract. The insurance covers third parties and not primarily the insured or the vehicle owned by the insured. In India, it is necessary for the owner of a motor vehicle to compulsorily take an insurance policy involving public liability claims with a minimum scope of liability. Currently, the coverage of motor third party insurance extended by the Indian Motor Tariff is at the discretion of the insurance companies. According to statistical data, claim frequency trends have been showing a decreasing trend over the last few years, but the size of claims has been increasing. Average claim settlement ratios were about 99% and 95% for private cars and two-wheelers respectively in the years 2017–2019.

There are many common challenges associated with the process of motor third party insurance claim settlement. The assessment of the 'just and proper' compensation to claimants is a commonly cited concern. The settlement process most of the time is initiated by the claimant through advocate before the Motor Accident Claims Tribunal. The claims process is generally facilitated by the tribunal when claimants and the insured are not content with the denial of a claim, or when the insurance company has made what was considered an unfair offer in settlement or did not respond to the demand for settlement. As per the Motor Vehicles Act, 1988 the claim should be disposal within six months from the date of filing. At stake is the greater the time taken for this process. This process can be influenced by several factors. Authorities have attempted to reduce the time taken for the settlement of claims. They have directed insurance companies to make claims processing possible. They have directed insurance companies to provide 'just & reasonable' compensation to claimant. The judiciary also acts as mediators through lok adalat. In most cases in India, their observations are taken on board during the negotiations. Usually, the advocates and investigators inform them only about such observations when the insurance company disagrees with their suggestions. However, the challenge is to ensure real-time validation. Any delay in the process results in much compensation owed. In India, previous researchers have attempted to improve the settlement of insurance claims without success. The toll that software can offer is now modified to complement it. Additionally, none of these solutions has replaced the traditional method, as the alternative was not intended to be used for all stakeholders – especially the insurance companies and the regulators.

III. Digitalization Trends in the Indian Insurance Industry

In claim settlement, digitalization has accelerated its pace due to the innovative technologies of motor vehicles, their insurances and claims filed by the third party after the accidents. A variety of websites available on the internet with advanced technologies to transform and automate the insurance workings and claim settlement. These technologies include data analytics, artificial intelligence, verification of vehicular documents, machine learning, predictive analysis, cloud computing, microservices, image analytics, robotics process automation, and digital advertisement. New technologies and digitalization combined are compelling insurers to change the way they conduct day-to-day activities, not only providing ease to the customer but also making processes faster, cheaper, and more efficient. The interaction pattern of a customer has been completely changed by the use of smartphone-enabled applications.

The Covid-19 has seen a significant increase in the number of online claims intimation. The motor third party claims in the Indian insurance industry have also been impacted by this paradigm shift. Financial, technology, and telecommunication companies have been creating a rapid legal and policy-focused framework for digital transformation across the industry. Greater impetus for digitalization has been given through heavy investment from stakeholders in digital initiatives being taken up by insurance companies. Until now, the focus was on physical claim documents, which has been shifted to digital documentation. As the incumbent is the biggest obstacle to implementing the change, management focus has shifted to attracting and acting according to the needs of the less swayed digital natives. This is attracting more investment in the digitization process of the industry. Insurers have also ventured into developing

mobile apps or hiring software to assist and govern the management of their insurance systems. The industry today is leagues ahead, being governed on third-generation platforms. Efforts are also being made to establish custom-developed agile systems in the business. Insurtech companies have also been promoting the use of digital business.

Given this scenario, efforts were made to review the growth path of the Indian insurance industry, along with the trends regarding motor third party claims handling and the types of initiatives taken up by insurers to embrace the digital paradigm. However, given the significant role of the regulator and watchdog, the assistance provided by the insurance watchdog is seen in a more legal, formative, and supervisory light. The role of the regulatory regime in giving a systematic push to digital advancements has been less discussed. Given the kind of revolutionized entity that insurers in the country are being shaped into under the digitalization purview, the role of new insurtechs has also been acknowledged. This, in summary, would help in building a paradisiacal claim processing and settlement through lok adalat. The paper will proceed in the next section by previewing the trends of digitalization in the Indian insurance industry.

IV. Benefits of Digitalization in Settling the Motor Third Party Insurance Claims

Technology has a tremendous impact on settling motor third-party insurance claims in the insurance industry. In digital claim settlement, many activities, like first-information reporting, claim registration, and assessment, documents verification can quickly be done, resulting in a significant reduction of turnaround time. A quick settlement is made, the result of which is high insured satisfaction. Some key advantages of digital claim settlement are as follows:

a) **Automated Claim Investigation:** Various claim investigation techniques and tools are available. Surveillance and fraud analysis tools, sentiment tools, and social media intelligence tools are becoming essential for accurate claim assessment. Image analysis tools and real time location of vehicle driver are used for involvement of insured vehicle.

b) **Data analytics:** Tools are available for predictive modeling for motorists' claims, third-party injuries, and third-party loss. The accuracy of the claim can be verified if it is within the range of prediction. These tools not only enhance accuracy but also improve the claim assessment process. Transparent, efficient, and prompt customer service is the need of today's world. The adherence to digital technology enhances transparency and accessibility for customers to obtain information. Customers can track the status of their claims at any time with digital technology. They can know the investigation progress, claim approval status, and further processes at their fingertips. Insurers working on new technologies to improve their claims process could receive premium reductions based on savings in claims costs. The benefits include savings in resources, both claims and underwriting, which can help insurers support their policyholders in the age of digital transformation.

c) **Regulatory Compliance:** Better claim estimation can reduce exposure to systematic claims liabilities, especially for third-party claims. In the present scenario, no direct guidance is given to claim inspectors for settling third-party claims. The parameters used are past claim cases, expert judgment, and accident information. There is less dependence on expert judgment if digital tools are used. Digital data provides comprehensive information about prior accidents and investigations for similar cases, reducing human judgment and the chances of human error estimates. Resources can be deployed elsewhere for enhancing company infrastructure. Improvements in technology adversely impact resource utilization. Professional costs can be reduced if the process is standardized. The use of digitalization in claims can reduce dependency on human resources. The handling of documents and claim processing

can be managed through a computerized process. Costs of loss assessments can be saved by a robust, systematic approach to settling third-party liability. The overall benefit can be passed on to policyholders in the form of reduced premiums for both third-party and own damages.

V. Challenges and Barriers to Digitalization in the Indian Insurance Industry

Several challenges have hindered the progression of digitization in the Indian insurance industry. Lower levels of digital literacy among the insured, beneficiaries, assessors, insurance advocates, investigators, agents, and insurance company staff have been identified as key constraints. Claimants and other agents will have to bear a cost to gain capacity and learn, access, and use computer resources. There has also been constant resistance from employees, levels of management, intermediaries, dealers, suppliers, distributors, and other business partners who are mentally focused on new digital initiatives and collaboration between the most advanced human-computer technologies and the most antiquated organizational, agency, departmental, career, and hierarchical rigidity of the past. Local and individual level constraints such as both demand and supply side infrastructural barriers and a suboptimal age and gender profile of internet users have also been previously reported. Privacy and security concerns from the customer standpoint, as well as greater regulatory requirements, engaging more complexity into compliance, and potentially more monitoring on the companies' end are at play when it comes to sharing more data online electronically. The regulatory authority has put in some guiding principles but is still working to come up with a comprehensive framework to oversee data sharing and repository use in Indian insurance.

On the supply side, smaller insurance companies, which are the bulk of insurance companies in India, are constrained by the costly technological solutions that accompany digitizing initiatives and projects. In conclusion, the literature suggests a number of constraints among the insurance companies, primarily stemming from the demand and supply side issues in terms of capabilities and capacities. Demands require customers (current and potential) to appreciate the ease and flexibility of doing business that is mediated by advanced technology. There are also supply side constraints due to a lack of organizational capabilities and infrastructural capacities. However, it is also clear from our survey data that a majority of insurance professionals attach value to the opportunities of digitization in insurance as being greater than the constraints. The message emerging from the literature, as well as our exploratory empirical investigation, thus seems to be that constraints are relatively surmountable and the time is ripe to exploit digitization opportunities in motor third-party insurance.

VI. Case Studies of Successful Digitalization Initiatives in Settling Motor Third Party Insurance Claims

In this section, we compile different narratives showcasing the use of digitalization initiatives at various insurers. These can be sector case studies or solution provider case studies.

Case study 1:

Mobile motor TP claims investigation apps. Deployment of an AI tool as part of fraud risk management. Fast track settlements. Placed almost 92% of its vehicle insured up to 30th July. Developed a list of fraudulent hospitals.

Case study 2:

Embarked on a new digital ecosystem for various other non-life insurance products with hyper-personalized customer experience aiming to onboard 500,000 agents within three years. Deployed end-to-end straight-through processing. One of their segments currently has 40% STP, and claims can be processed in 10 minutes. Due to the STP claims, a seamless ecosystem, and a robust digital core, the company claims to achieve the best claim settlement ratio, even in a year of disaster.

Case study 3:

The 100% Digital India Private Car Claims platform offers a pain-free registration process, allowing people to self-inspect without using any third-party inspector. This appointment, which earlier used to

take days to inspect, now takes only 24-48 hours. The customer receives an instant SMS about the appointment for vehicle IDV assessment, after which the customer is guided through a hassle-free registration process for towing and accidental damage. Automated data analytics, such as claim process flow, pipeline, losses, cost separation, and underwriting computations, are utilized.

The digital core engine immediately segregates policy-based claims and is handled by the respective insurance underwriting departments and a cashless decision support system within the platform. Quickly accepts and cashlessly settles the claim for damages caused. By deploying the platform, the average time taken to close the claim has been reduced to just 5 days compared to the industry average of 22 days. Within just 1 year of deployment, the company claims to have settled claims of over USD 54 million. A cashless ecosystem with a waiting chat robot for customer service will delight the policyholders and will be a game-changer in the TPA sector of motor claims.

VII. Future Prospects and Recommendations for Leveraging Digitalization in the Indian Insurance Industry

Future prospects with the impetus of digitalization and in the coming years, the penetration of smartphones and the increase in initiatives like the linking of motor insurance claims with the driving license and vehicular databases will make the process of claim settlements even faster. It needs to be experienced how it will impact the motor third-party cases, particularly where the other party is injured and the compensation amount needs to be admissible. Whatever the situation may be, it is clear that in the long term, the insurance industry has to create solutions that do not rely on physical presence but provide the claimants with services that are still equivalent to today's crisis handling services. In this context of discussion, the following could be the future recommendations avoiding any conflict of interest:

- Insurers need to work intensively on the intuition for the service they render in providing customer-appropriate design, and user-centric thinking should be integrated into every business area.
- Investments need to be made in data analysis, in digital claim settlement on websites or apps, especially in points of small damage claim settlement, in the development of existing internet websites into interactive sales and service platforms, and in customer service through teams present on different social media platforms.
- The staff of the insurance, investigators and advocates needs to be trained in digitization to meet the present scenario and to further develop the digitized processes based on their practical experience.
- The standard of modern quality of an insurance company depends on the swift claim settlement which is also true in the field of digitization. Regular exchange of experience and continuous training in claim handling can be a success factor for future claim management.

Underpinning the above with the possibilities of constant digitalization of an insurance company, its digitized managing processes from incoming to the handling of the prices, the systems connecting, the technical implementation itself, and the associated workflow and all related material offerings are integrated into the digital lifetime infrastructure in order to create the actual conditions for defined digital insurance to enable authentic and efficient care for the insured. Therefore, the direct and third-party intermediaries also have to be helped in digitalizing their old frameworks. More needs to be done in collaboration to approach the overall strategy and ways to enforce the case. Policy enforcement, especially regarding tight data protection on personal fronts, will also be required if the digital scope widens. TJ

Insurance Digitization & Transition of Industry towards Customer First Approach

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Abstract

This journal explores the profound impact of digitization on the Indian insurance industry, focusing on customer service evolution, insurance intermediaries, and operational shifts. It discusses how digital technologies have transformed insurance marketing, sales, and claims processing for insurance companies and insurance intermediaries, with an emphasis to figure out which model will help them access insurance market growth. Through an analysis of six major case studies, the journal illustrates how companies leverage AI, data analytics, insurance grievances, claim resolution and UPI systems to streamline operations and enhance customer satisfaction. A SWOT analysis highlights the strengths, weaknesses, opportunities, and threats faced by the industry in this digital age. The journal concludes by evaluating the long-term prospects for India's insurance landscape, fueled by increasing internet penetration and favorable government initiatives.

Keywords

Customer Service, Customer Experience, Insurance Intermediary, Annual Reports, Digitization, SWOT Analysis, Case Studies, Insurance Ecosystem.

Abbreviations

AI – Artificial Intelligence
CIS – Customer Information Sheet
CSR – Claim Settlement Ratio
DPI – Digital Public Infrastructure
EMI – Equated Monthly Installments
IRDAI – Insurance Regulatory and Development Authority of India
MSME - Micro, Small and Medium Enterprises
PED – Pre Existing Disease
RBI – Reserve Bank of India
SAHI – Standalone Health Insurance Company
SEBI – Securities and Exchange Board of India
SWOT – Strengths / Weakness / Opportunities / Threats
TPA – Third Party Administrators
TPV – Total Payment Value
UFBP – Unfair Business Practices
UPI – Unified Payment Interface

Introduction

Customer service is a support, advice and assistance provided before and after a customer buys or uses a product and its services. It is a crucial factor because depending on the customer's experience, rand their review, the growth of a company gets determined. The decisions to purchase an insurance product from a particular company or to avoid that company product are done by the customer by checking the reviews of insurance intermediary and the service each member provides to the policy holders.

Insurance is an intangible product. When we talk about customer service in the insurance sector, we are looking an Everest of services, satisfactions, referrals and feedbacks.

Customer expectations have increased and they have every right to ask, review and clarify facts before purchasing any insurance product and to receive after sales service. Here are lists of possible details customers ask or need clarification during their insurance purchase and after sale cycle.

Customer queries before Purchasing Insurance

1) Insurance company comparison based on product comparison, product benefits, and product features, insurance policy terms and conditions, difference between direct purchase and purchase through intermediary.

2) Claim settlement ratio, incurred claim ratio, insurance complaints received, average claim amount paid by the insurance company are some important queries to look into.

3) Explanation of policy terminology, new surrender value norms presented by IRDAI from 1st October 2024, underwriting rules, list of waiting periods, PED clause, terms and conditions.

4) Types of add-on / riders available, policy customization options, portability terms and conditions (in case of Health insurance), hospital network list, cashless / reimbursement queries.

5) Customer service experience which includes call back service, mobile application or digital platforms for policy management and ease of premium payment for policy holders.

6) Discounts or rewards provided by the insurance company to lower premium amount at the time of renewal (Example – Many health insurance companies provide premium discount if the insured walks 10000 steps in a day for 200 days out of 365 days) and other benefits such as conversion of annual premium in EMI process, CIBIL score premium discounts.

Customer Expectations after Insurance Purchase & after sales service

1) Time duration to make changes in policy such as change in address, mobile number, nominee update

2) Old health insurance plans get discontinued and policy holders are shifted to latest company products. **Company-Approved notifications / changes in Products (**updates on policy features, new riders, changes in terms and conditions) to be co-ordinate to the policy holder along with new premium rate chart

3) What is the reason for Sudden Premium Increase (especially in health insurance as per age slab change), otherwise policy holders tend to port health cover to other health insurance companies with lesser annual premium without checking on insurance benefits and limitations

4) Yearly bonus declared by the insurance company must be clearly communicated to policy holders, allowing them to check bonus status for endowment, whole life, or guaranteed savings plans

5) Ability to track maturity amount inclusive of bonus added under the policy. **Loan Against Policy Availability** (how much and under what conditions loans can be taken on policies)

6) Regular updates regarding the insurance market and new regulations brought by IRDAI for consumer protection (For example, use of CIS – Customer Information Sheet)

Customer Experience during Claim Settlement & Claim Rejection

Insurance is an intangible product. Therefore, prompt claim settlement is the most critical aspects of seamless insurance claim experience, as it directly impacts customer satisfaction and builds trust towards the insurer. An insurance company can create a product which 100 of benefits but if insurance claim is put on hold, is delayed or rejected, this leads to customer dissatisfaction and negative feedback for the respective insurance intermediary and the insurance company.

It should be a priority for insurance companies to hold customer trainings or online webinars regarding claim query initiation, claim procedure, and claim experience, so that due to unavailability of insurance intermediary, the nominee or family members of the insured can be prompt to notify the insurance company regarding claim.

1) Policyholders expect timely settlement. Some insurers offer faster settlements, especially for smaller or less complex claims.

2) Due to insurance awareness initiatives by many financial influences through social media or through YouTube channels, policy holders start asking important questions that matter at the time of claim settlement, such

as CSR (What is claim settlement ratio of respective insurance company), time duration to settle claim, volume of claim received by the insurance company in a year, volume of claims settled and highest claim amount settled by insurance company.

By understanding the claim settlement process, policyholders can ensure they follow the correct procedures to receive their rightful claim payout, and insurers can improve their service by reducing claim disputes and delays.

There is still a lot of awareness required on Insurance ombudsman procedures. Many intermediaries are unaware how to approach an insurance ombudsman and when to approach an insurance ombudsman.

Overview of Insurance Industry in India in 2024

If I am to summarize the insurance industry in India, I would look at the following details and categorize insurance industry in 6 main areas.

If any details are missed in the diagram created below, let me know so that the details can be updated

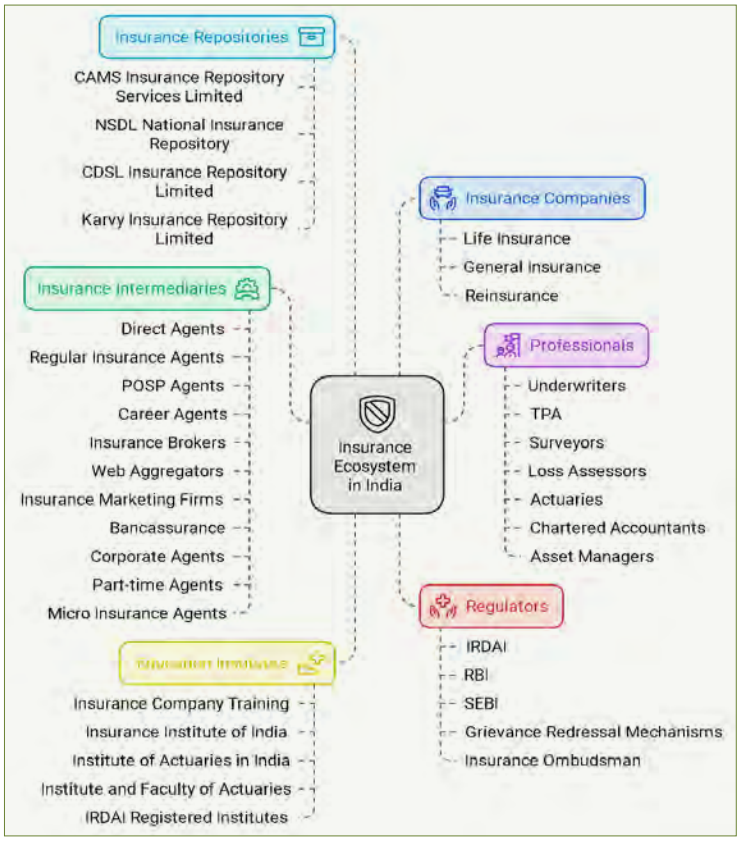


Diagram 2 – Overview of the insurance ecosystem in India

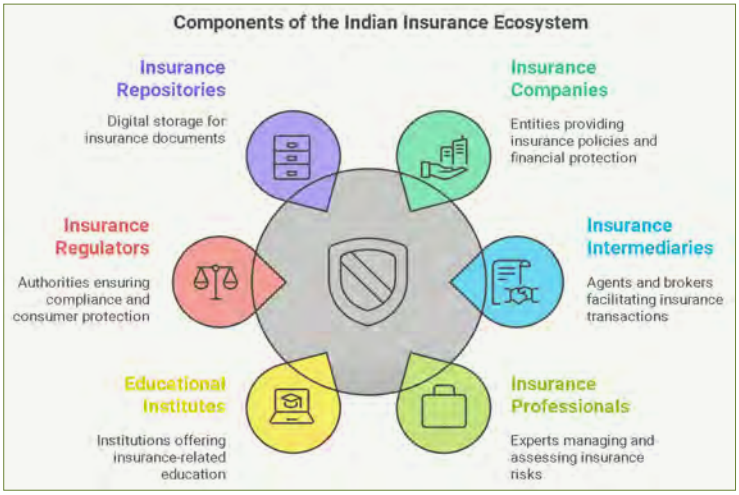


Diagram 1 – Components of the Insurance Ecosystem

Each component supports the other. Insurance companies create products as per the requirements of the customer, as per "File & Use" rule. Insurance Intermediaries facilitate insurance awareness and connect customers in need of insurance products. Professionals are required by insurance companies to manage their asset, cash flow and expenses. Educational institutes offer diploma course, certifications and licenses to insurance intermediaries. We have insurance regulators for compliance and consumer protection. All data needs to be stored and we have

to see the exponential growth of insurance repositories as well.

If we want to go in-depth, here is how the insurance industry would be summarized.

Pre-digitization Era in Insurance Marketing & Insurance Servicing

The insurance industry is regarded as a paper weight industry, known for its long waiting period history and higher dependence on agents. Premium payments were done via cheque or demand draft or using cash transactions. In both cases, physical acknowledgement copy or receipts were the only proof of premium payment for policy holders. Many Indian households used wired telephones or landlines and even fewer families had access to personal computers, laptops and internet connection. During this time, most insurance-related tasks, including policy issuance, claim processing, customer service, and record-keeping, were done manually or through paper-based systems.

Newspapers, television advertisements, pamphlets or stickers pasted on railway compartments, canopy placements near banks, high footfall areas were primary source of insurance marketing and insurance sale and insurance servicing opportunities before internet boom in India. Policy holders preferred visiting banks, insurance company branches or connected with their respective insurance agents to make their premium payment. Insurance sales were largely dependent on agents, who played a key role in educating customers, processing applications, and handling paperwork. Communication was slower, often limited to postal mail or in-person visits, with less efficiency in responding to customer queries or providing updates on policy status.

Transition into digital age

After the widespread adoption of internet paired with low cost of data, India become the largest market in the world allowing majority of its population to access internet and internet services thereby allowing many e-commerce platforms to emerge, online video platforms, financial technology (Fintech) Firms and health care startups. The data below shows the net additions of internet users across multiple countries [1]

Report by Morgan Stanley – India's Digital Future, published in 12th October 2017 holds true today. "The country was already on a strong trajectory, but digitization puts India's nominal GDP growth on track to compound annually by more than 10% in U.S. dollar terms over the coming decade," says Anil Agarwal, Head of Asian Financial Research at Morgan Stanley. This report claims India's digital revolution was the 2010 launch of a biometric identification program called Aadhaar, which assigns everyone a unique 12-digit number that can be verified by fingerprint or iris scan.

Source - https://www.morganstanley.com/ideas/digital-india#:~:text=%E2%80%9CThe%20country%20was%20already%20on,%2Dtrillion%2Ddollar%20opportunity.%22

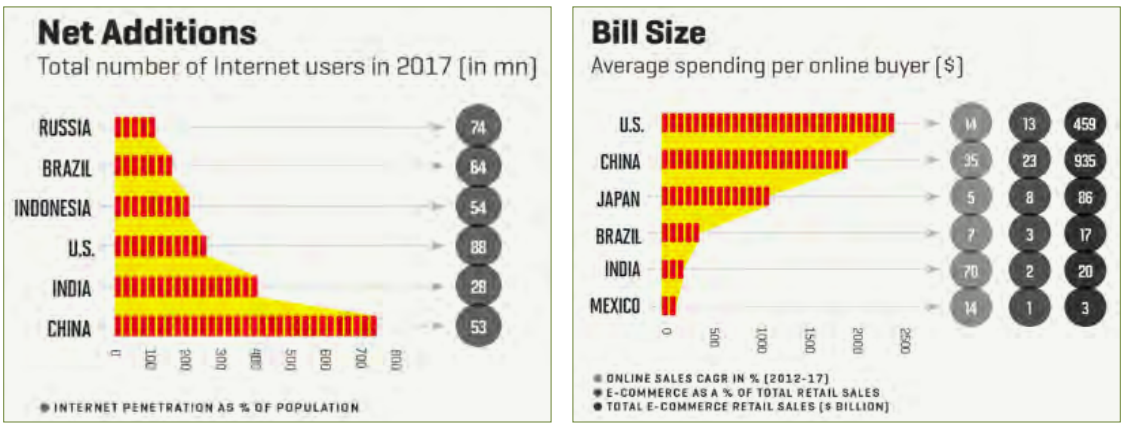


Diagram 3 – Graphical representation of internet users in 2017 and average spending per online buyer
Source - https://www.fortuneindia.com/macro/how-low-cost-data-is-powering-india/102740

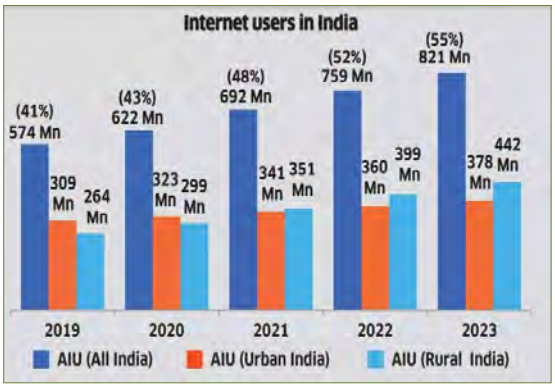


Diagram 4 – Internet users in India (2019 to 2023) [2]

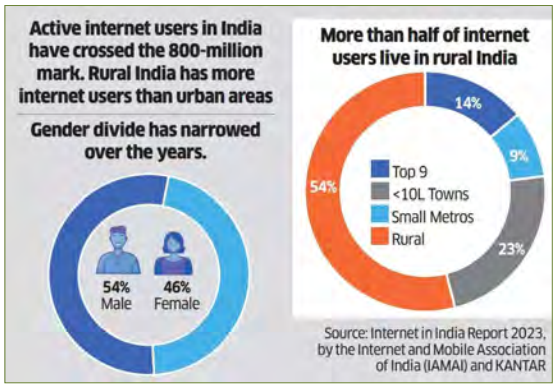


Diagram 5 –Active internet users in India [2]

Source - https://economictimes.indiatimes.com/tech/technology/how-india-is-using-the-internet/articleshow/108354854.cms

The inclusion of Jhan Dhan Yojana by the India government helped many Indian citizen access financial services such as bank accounts, insurance and pension provisions. COVID 19 pandemic help with a drastic overnight shift from traditional offline transaction environment towards cashless payment systems leading to higher acceptance of UPI.

Tech Integration & Intermediary Approach towards Insurance digitization

This refers to the use of technology and digital tools to transform how insurance products are sold, managed, and serviced. It has revolutionized the insurance industry by streamlining processes, improving customer experience, enhancing efficiency, and increasing accessibility.

We will dive deep into multiple businesses and understand their experience regarding digitization in insurance.

Case Study 1 – PhonePe Private Limited (PhonePe Insurance Broking Services)

Important highlights from "Letter from the Co-founder & CEO, – Mr Sameer Nigam – From PhonePe Annual Report FY2023-24 Page No 3

"By 2015, when Rahul, Burzin and I (Mr Sameer Nigam) started PhonePe, it was clear that India was on the cusp of a tectonic shift that promised to not only turbocharge India's digital economy, but also play an instrumental role in positively transforming a billion lives."

"Rapid penetration of affordable smart phones, access to low-cost high-speed Internet service, forward-looking governmental policies such as the PM Jan Dhan Yojana and ongoing investments in Digital Public Infrastructure (DPI) such as Aadhaar were creating unique tailwinds for population-scale -financial inclusion solutions to be developed in India. At PhonePe, our ambition is to build Internet platforms that help all Indian citizens improve their lives, realize their aspirations and unlock their true potential."

"From providing access to affordable Insurance, formalized Credit, and customized Wealth Management products, to powering growth of Micro, Small and Medium Enterprises (MSMEs) via pin code, and developing a Made-for-India app store via Indus App store, we believe that continuous innovation is the key to building a modern, developed economy by the hundred-year anniversary of India's independence."

As per PhonePe Annual report FY2023-24[3] page number 7 and page number 12, I would like to showcase PhonePe business portfolio and PhonePe corporate structure and integration of digitization into PhonePe mobile application. PhonePe is trying to take UPI boost advantage for it's insurance sale business protocol.

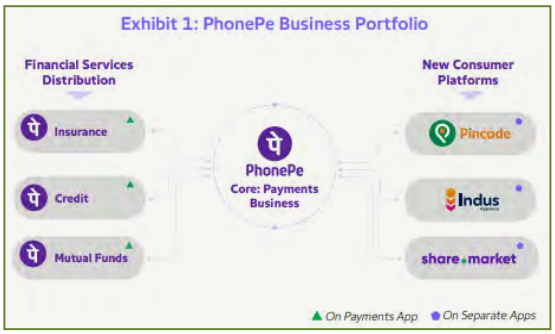
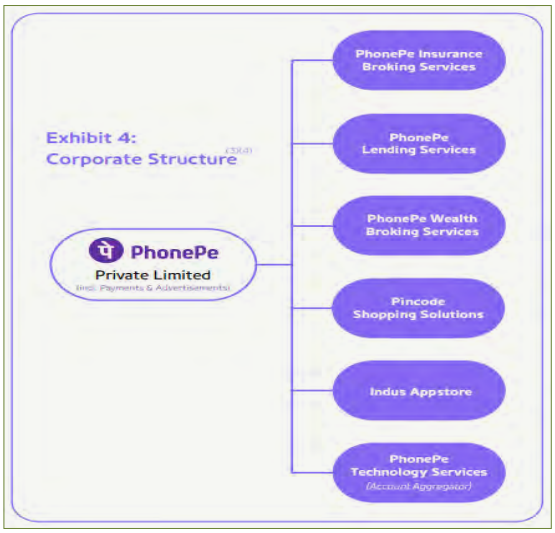
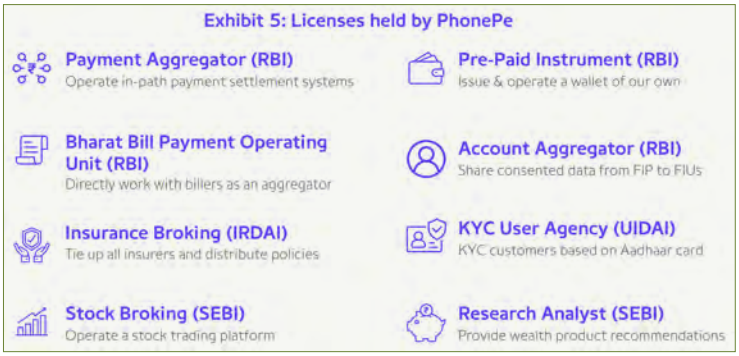


Diagram 4 – PhonePe Business Portfolio and PhonePe Corporate Structure



As per PhonePe Annual report FY2023-24[3] page number 15, we, the readers can check multiple licenses held by PhonePe.

PhonePe digital payments app was launched in August 2016. PhonePe applied for insurance broking license, as an insurance intermediary services as a direct insurance broker (life and general) under registration code IRDA/DB 822/20 issued by Insurance Regulatory and Development Authority of India on August 11, 2021 (Mentioned PhonePe Annual report FY2023-24[3] on page-61 under corporate information, paragraph 2, line 3)



The adoption of UPI has been nothing short of phenomenal, making India the global leader of digital payments and PhonePe the most popular UPI enabler. This represents a significant increase from previous years, showcasing the growing reliance on digital channels financial transactions.

The Indian government has linked multiple bilateral partnerships, enabling international UPI acceptance in countries such as UAE, Singapore, Nepal, and France. UPI aims for 2 billion transactions a day by 2030 as per NPCI CEO Dilip Asbe[4]

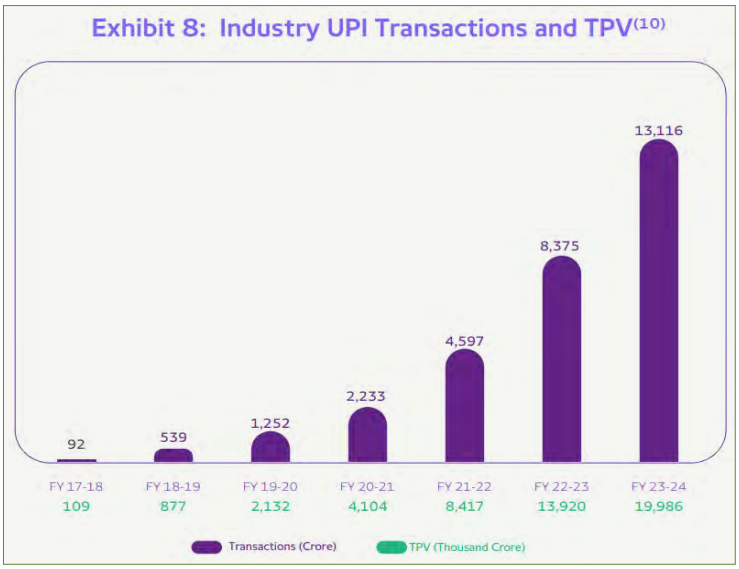


Diagram 5 – Indian Digital Payment Industry Outlook

UPI trend is going to increase rapidly and this will eventually bring a new chapter with growth opportunities for the Fintech sector. With this digital infrastructure placed by PhonePe and multiple licenses held to monetize financial opportunities in upcoming years, what is the current state of insurance policy sale for PhonePe Insurance Broking Services?

A recent news article by Economic Times [5], dated 18th January 2024, here are a few synopsis presented by Economic Times, sharing news that PhonePe has sold 9 million policies since September 2021.

List of insurance products available and promptly sold by PhonePe, as per their official insurance website https://www.phonepe.com/insurance/ is as follows:

Accidental Insurance – Life, Term Insurance, Health Insurance, Travel Insurance, Motor Insurance and rewarding their customers with financial security with attractive tax benefits. If you are planning to purchase insurance through PhonePe as an intermediary, it is mandatory to process it through their PhonePe mobile application only. This allows policy holders to review their investments through one mobile application only.

PhonePe earns its revenue through commission on transactions, advertisement, promotions, partnerships, financial service where the insurance company pays certain commission on sale of an insurance product and other services as per license diagram provided previously.

As we don't have data on "Volume of sales as per insurance company" in the annual report, we will need to look at other insurance intermediaries to find this answer

Case Study 2 – Ditto (Tacterial Consulting Private Limited – Corporate Agent)

Before Ditto even existed, the mindset of the founder was to "Simplify Financial Information"[6] for their audience and this led to the inception of two ventures, Finshots – A financial newsletter media company and Ditto Insurance.

Finshots started in 2019 and later gained solid footing but in case of Ditto, entry of Zerodha as an investor cum mentor holds a lot of significance, as this guidance helped them with their business model. As the ideal goal was to simplify the most complicated product in the financial market, that is insurance, not with a push strategy but with "No Spam, No Cold Calls, No Pressure" strategy.

The WHY for Ditto can be perceived through their website https://joinditto.in/ too, because the first display statement is "Insurance Made Easy"

This helps them add credibility and trust using their testimonial and referral model. If you have a LinkedIn profile, once a week, if you follow Finshots or Ditto, while scrolling you might see a LinkedIn post done by a potential customer or prospective client who approached Ditto for insurance advisory services.

If you check Ditto's LinkedIn profile, you can see more than 1 lakh followers who receive multiple updates regarding insurance and simultaneously might see a post shared by prospective client which adds trust and brand value that make customers think – Why not book a free consultation for once ?

Another highlight I would like to share in this journal is "Comparison" option available for customers without sharing personal details. In case of comparison under health insurance, website shows 19 insurance companies, which includes General insurance and SAHI (Standalone Health Insurance) companies. This comparison chart doesn't show yearly premium amount but highlights only on comparison on insurance parameter such as network hospital,

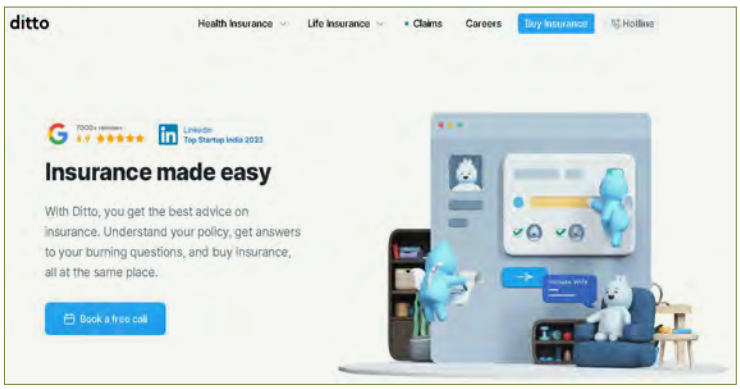


Diagram 6 – Ditto website homepage [7]

claim settlement ratio, co-payment, and room rent limit, sub-limits of any kind or PED waiting period and not recommended parameter as well so that the insured or customer can make an informed decision. This process increases trust, transparency and prevents miss-selling.

As IRDAI is focused on its priority goal of "Insuring India by 2047", IRDAI, insurance education institutes, insurance companies, insurance intermediaries and insurance ombudsman have huge responsibility such as to educate, advice and consult prospective clients and existing policy holders.

This simplified approach towards insurance must be appreciated as such complex date such as policy benefits, policy wordings, CSR, hospital network list, claim volume, average claim amount disbursed are available on IRDAI website but are difficult for customers to understand.

Case Study 3 – Insurance Samadhan

If you are not aware about insurance samadhan, you don't need to worry. As per company website [8] https://www.insurancesamadhan.com/ , insurance samadhan is an ISO/IEC 27001:2022 certified company, who also made its appearance on "Shark Tank India Season 1".

Their Mission – To empower insurance policy holders in managing policies and resolving grievances

Their Vision – To be the most trusted tech platform for enhancing faith in the insurance ecosystem

Insurance is an intangible push product, and customers or policy holders don't see any immediate benefits after purchasing insurance policy. Insurance is an agreement between two parties, the customer and the insurance company, where the customer agrees to pay premium amount and the insurance company agrees to pay claim in case of medical hospitalization or death of the insured up to the sum insured but due to claim rejection, claim delay or claim put on hold, what should the customer or nominee do? Insurance Samadhan is trying to resolve this query.

As per company website, the services and help available are in mis-selling in insurance policy; claim rejection, delay in claim process, claim short-settled, and health claim reimbursement and know your policy. These services are provided after customer issues are accepted as per FAQ provided on website.

Insurance Samadhan has a dedicated mobile application, "Polifyx App" allows respective individual for avail their services. Once user enters policy details in their application, the user can check and review their insurance details, file a fraud or mis-selling claim and check their case history and status of their claim. This way, insured's policy details are stored digitally on one mobile application with the ability to approach Insurance Samadhan regarding any mis-selling or claim related query. But what are the possible growth opportunities in Insurance grievances segment and why all intermediaries need to review this untapped market?

Is Insurance Grievances & Claim Guidance an untapped Market?

Yes, and we need to look at IRDAI Annual Report to understand insurance grievances and claim rejection data.

Table I.8: Actual Death Claims of Life Insurers

(₹ Crore)

Segment	Particulars	Total Claims	Claims paid	Claims Repudiated	Claims rejected	Claims Unclaimed	Claims pending at end of FY
Individual Business:	Number of Policies	10,76,467	10,59,776	10,822	4,340	696	833
	In per cent	100	98.45	1.01	0.40	0.06	0.08
	Amount Paid (₹ crore)	30,216	28,611	1,026	24	206	350
	In per cent	100	94.69	3.39	0.08	0.68	1.16
Group Business	Number of Lives	12,48,378	12,40,247	3,183	849	13	4,086
	In per cent	100	99.35	0.25	0.07	0.001	0.33
	Amount Paid (₹ crore)	17,769	17,178	393	23	2	174
	In per cent	100	96.67	2.21	0.13	0.01	0.98

Note: Claims rejected are those claims that cannot be considered due to policy terms and conditions.
Claims repudiated are claims that cannot be considered as per the provisions of section 45 of Insurance Act, 1938.

As per IRDAI Annual Report FY2022-23, Table No I.8, Page Number 11

1. Key milestones in insurance digitization – As of 2024

In-case of Life Insurance, Out of Total Claims of 10,76,467 we have 10,59,776 claims paid by Life Insurance Companies but 10,882 claims of 1,026 crores were repudiated (As per Section 45 of Insurance Act, 1938). Example for claims repudiated could be important and crucial details hidden by the Insured / Policy Holder at the time of insurance purchase and insurance Company has the right to repudiate the claim.

Claim rejected means when policy terms & conditions are not met. We have 4,340 claims of Rs 24 crores. Both the above mentioned can be prevented If proper consultation, guidance was provided from the start but as of now, claims repudiated can be paid if we can prove nothing was hidden at the time of purchasing Policy.

As per IRDAI Annual Report FY2022-23, Table No I.26, Page Number 65

Table I.26: Status of Claims under Health Insurance Business ofGeneral and Health Insurers (2022-23)

number in lakh and amount in (₹ Crore)

Claims outstanding at the beginning of the period		New claims registered during the period		Total Claims		Claims paid during the period		Claims disallowed as per terms and conditions of policy contract		Claims repudiated during the period		Claims outstanding at the end of the year	
No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount
20.06	5,978.44	255.18	93,060.46	275.24	99,038.92	235.75	70,929.82	0.00	12,754.95	21.65	9,107.68	17.84	6,246.88
				(100)	(100)	(85.66)	(71.62)	(0)	(12.88)	(7.87)	(9.20)	(6.48)	(6.31)

Note: Figures in brackets are percentage to total

In case of health insurance business, where Rs 9,107.68 crore claim amount is repudiated and can be retrieved with proper guidance on insurance ombudsman so that nominee or policy holders can take guidance from insurance ombudsman.

As per IRDAI Annual Report FY2022-23, Table No I.15, Page Number 31 &

As per IRDAI Annual Report FY2022-23, Chart I.17 and Chart I.18, Page Number 44

Looking at Unfair Business Practices (UFBP) registered against Life insurers, one can understand the UFBP constitute only 20.50% of total number of grievances on life insurers.

Table II.19. Status of Grievances as per Bima Bharosa Portal

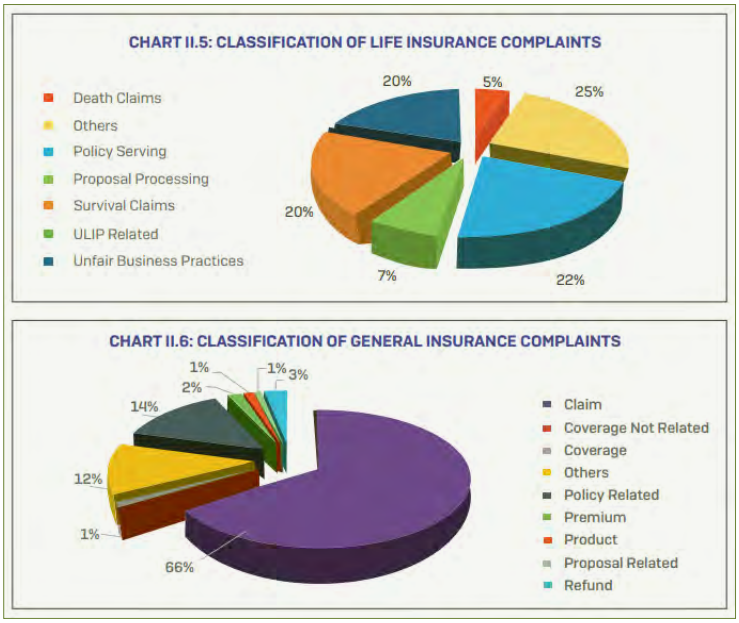
(Number of Grievances)

Insurer	2021-2022			2022-23		
	Reported during the year	Attended during the year	Pending at the end of the year	Reported during the year	Attended during the year	Pending at the end of the year
Life Insurer						
Public Sector	1,14,202	1,14, 226	5	81,303	81,303	-
Private Sector	40,624	40,664	113	42,990	43,114	289
Total	**1,54,826**	**1,54,890**	**118**	**1,24,293**	**1,24,417**	**289**
General Insurer						
Public Sector	23,822	23,663	537	22,563	20,781	2,149
Private Sector	41,693	40,692	1,164	55,784	56,178	1,224
Total	**65,515**	**64,625**	**1,701**	**78,347**	**76,959**	**3,373**
Grand Total	**2,20,341**	**2,19,515**	**1,819**	**2,02,640**	**2,01,373**	**3,662**

As per IRDAI Annual Report FY2022-23, Table II.19, Page Number 76

Table I.15: Grievances on Unfair Business Practices (UFBP) registered against Life Insurers

Grievances	2021-22			2022-23		
	Public	Private	Total	Public	Private	Total
Total No. of grievances on Life Insurers	1,14,202	40,624	1,54,826	81,494	45,884	1,27,378
No. of UFBP grievances	3,509	22,207	25,716	2,978	23,129	26,107
Share of UFBP grievances to total grievances (%)	3.07	54.66	16.61	3.65	50.41	20.50
Share of UFBP to new policies sold (%)	0.02	0.3	0.09	0.04	0.11	0.09



Using the above table and charts, we can see a pattern of insurance complains for life insurance and general insurance. Bima Bharosa Portal sheds some light on grievances registered during financial year FY2021-22 and FY2022-23 and comparing grievances table II.19 with complaint chart II.5 and chart II.6, we can conclude that.

In case of life insurance – Policy servicing, Survival Claims and Unfair Business Practice need higher attention and faster resolution, which will help customers to trust insurance claim settlement process

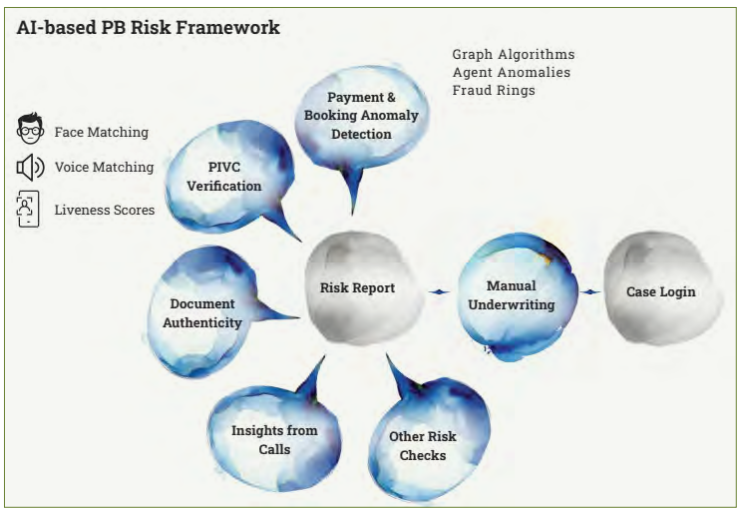
In case of General Insurance – Claim and policy related complaint is priority. The ultimate goal "Insuring India by 2047" can only be achieved once insurance sector focuses towards faster complain resolution and customer education, query resolution.

Case Study 4 – PB Fintech Ltd

As per PB Fintech Ltd Annual Report FY2023-24, PB Fintech Ltd started with an insurance web aggregator license, and then moved to insurance broker and currently as a corporate broker. PB Fintech Ltd has their flagship brands, PolicyBazaar and PaisaBazaar. With a primary aim to protect the Indian middle-class households against the financial impact of death, disease & damage, Policybazaar provides end-to-end insurance solutions while deepening the trust of the consumers in the insurance industry.

With primary motto of 3D – Death, Disease and Disability, PB Fintech Ltd is making use of its years of experience in digital distribution, product transparency, process transparency and personalized digital experience.

Policy Bazaar uses AI based PB Risk Framework (as per Annual Report FY2023-24 Page Number 39 and 41) which consists of risk report helping manual underwriting and finally leading to case login. Detailed process flow image is attached below for reference.



This tech helps Policybazaar and their partners with data collection and superior underwriting. The primary function of AI and technology is to identity outliers and abnormalities at initial sourcing state. As per annual report, PB Risk

Framework evaluates customers based on robust scoring system on four factors:

Transactional, Personal Behavior, Biometrics and tracking customer advisor calls during sales cycle, to improve quality of assessment terms further.

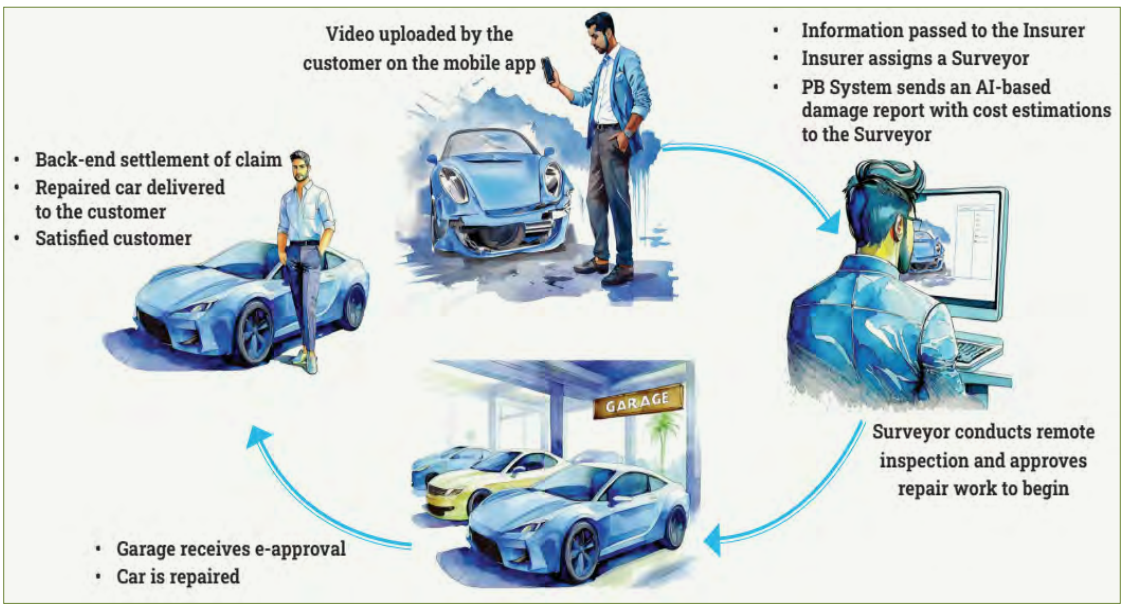
In the words of Mr Santosh Bhatt, head, data science at Policybazaar,

"The entire implementation of PB Risk Framework is automated and several deep learning models work sequentially to generate the risk reports for our quality teams. The documents submitted by the customer are identified using computer vision models and are then matched to the photographs and videos (verification process) using face-matching algorithms. Speech spectrograms are used to match the customer voice during telephonic conversations. This is an area where technology such as graphs, conventional machine learning models, deep learning models and generative AI all play a part in determining outliers or suspicious behavior and feeding the analysis to humans who play the role of decision makers".

In case of motor insurance, advanced machine learning models are used to detect and prevent motor insurance frauds and tackle fraudulent insurance claims. Video inspections thought mobile application is used at time of renewal of insurance post expiry. [10]

Insurance self service experiences for customers using technology, helping the customers find perfect product as per their needs and preferences. This has given rise to WhatsApp channel and chatbots using generative AI for rapid resolution or shifting chat to agents for personalized assistance. Policy bazaar uses Optimal Character Recognition (OCR) and computer vision technology to auto-fill proposal forms by extracting key information from uploaded documents [10].

For break-in cases in motor insurance, consumers are provided with an option to create a video of their vehicle and the same is used for underwriting, instead of the traditional manual inspection of the vehicle. Deep learning models are used to inspect over 40 attributes of the vehicle including tech-based identification of cracks and dents etc. Generative AI is used to determine • if there are issues with the video such as vehicle is parked in the basement • damage detection and estimation • very difficult issues such as dirty windshields. All these models have been combined to automate the entire process in just 2-3 minutes and provide feedback to the customer in almost real time. The time reduction of this process is over 70%. More importantly, the customer experience has significantly improved. [10]



Case Study 5 – Tesla Insurance

Tesla insurance [11] offers insurance pricing based on how you drive and how much you drive. Tesla mobile application helps you get quote, purchase and manage policy and submit a claim.

Tesla Insurance uses your Tesla vehicle data about how and how much you drive to calculate your monthly premium using Safety Score system created by Tesla, where your premium is determined by driving behaviors, and not factors outside of the control of drivers that other insurance providers may use. Factors that affect your premium depends on how safely you drive, how much you drive, what vehicle you drive, where you live, what coverage you have and how many vehicles you insure.

Safety Score helps assess driver behavior on every non autopilot miles depending on multiple safe and important parameters such as number of forward collision warnings, hard breakings, aggressive turning, unsafe following, excessive speeding, late night driving, forced auto-pilot disengagement and unbuckled driving.

Using all the above parameters, a safety score is generated and displayed on mobile application, which later helps to determine insurance premium. Each factor focuses on safety of the driver and whether traffic rules and regulations are being followed or not.

Such a system will help vehicle manufacturers to build better safety feature once they are implemented by government rules and regulations. Insurance companies will focus on actual driving behavior rather than demographic data, making insurance fair and more customized. This will encourage safer driving, reduce claims if reward based systems are integrated.

Case Study 6 – UK Insurance Company & XEROX

Reference - https://www.xerox.com/en-us/services/uk-insurance-company-case-study and pdf document [12]

The challenge for the insurance company was it received thousands of documents, forms, letters, checks, photographs, even video — from corporate and individual customers. This caused delays, leading to negative effect on customer satisfaction and retention and was costly in terms of manpower as well. The solution presented was to implement digital mailroom service and document management solution without disrupting insurer's service.

When the service was introduced, the insurer moved rapidly from working on a "best efforts" basis to delivering a market-leading service, regularly exceeding its own targets. A few results mentioned under the case study are as follows

- 80%+ reduction in document processing time, from 7–10 days to 1 day,
- Average 44,500 documents of 110 types indexed per month over 8 years
- Average 182,000 images scanned per month over 8 years
- Improved information security, with tighter control over document access
- Office space reclaimed through elimination of physical document archives

Making use of this digitization process helped the insurance company to increase their efficiency and help them index electronically received document. The ones received physically were scanned. In each case, the key data was extracted from each document, and helped identify different document types under customer name, policy, claim number, and attachment of them to previous records.

Once a document has been indexed and uploaded to the Document Management System, these trigger the relevant task (or tasks) for the appropriate employee/s within the relevant business system/s. anything that can't be completely indexed is added to an exceptions queue for further review.

SWOT Analysis – Strength / Weakness / Opportunities / Threats

If we want to understand and analyze insurance related queries using SWOT (Strength, Weakness, Opportunities, Threats), then we need to structure it as per each insurance company. Let's take some example to plot.

SWOT Analysis regarding Insurance Digitization

Strengths

- Wide range of product availability, such as term insurance, personal

accident cover, health insurance, health insurance top up cover, health insurance for critical illness patients, ULIPS, Motor insurance, fire insurance, each available with customization as per the insured's requirement.

- Insurance regulator IRDAI's approach towards "Insurance All by 2047" with proper guidance and upcoming stance of "Customer First" initiative, to enhance transparency such as implementation of CIS (Customer Information Sheet) system and changing health insurance application process, from upfront premium to premium payment after risk acceptance.
- Insurance Regulatory and Development Authority of India (IRDAI), ensuring transparency and consumer protection. Recent Orders such as
    - o "Order in the matter of Ms Marsh India Insurance Brokers"[13]
    - o "Order in the matter of SBI Life Insurance Co Ltd"[14]
    - o "Order in the matter of M/s HDFC Life Insurance Co"[15]
    - o "Order in the matter of Care Health Insurance Ltd. (CHIL) [16]

All these orders tell us why insurance regulator IRDAI is strengthening their approach towards insurance intermediaries.

Weakness

- Complexity to understand insurance terminologies and insurance jargons, claim procedures, underwriting rules leading to delay in insurance processes.
- Lower penetration of insurance in rural areas, with people often not knowing their rights regarding insurance purchase and after sales service.
- Not aware about recent changes brought by IRDAI for customer protection, such as CIS (Customer Information Sheet).
- Delays in claim settlement customers sometimes face delays in claim settlements or miscommunication between insurers and intermediaries, leading to dissatisfaction.

Opportunities

- Use and faster adoption of digital platforms, mobile applications and AI integrated chat bots to help customers with faster query and doubt resolutions.
- Faster acceptance of insurance companies to implement AI in underwriting and claim settlement process.
- Developing more simple and transparent educational content can break down insurance complexities, increase trust, and boost sales.
- Usage based insurance models as seen in case of Tesla Insurance, which has integrated driver data and risk assessment system to calculate insurance premium.
- Digital platforms streamline customer on boarding, claims processing, and customer support, reducing wait times and paperwork, which can significantly enhance user satisfaction. We can see PhonePe using digital UPI system to enhance their marketing and insurance sales.
- Due to wide range of products, it is important for an insurance intermediary to filter importance details and present them to the customer before insurance sales. Case study of Ditto **(Tacterial Consulting Private Limited – Corporate Agent)** tells us about their forward thinking towards insurance guidance and consultations.

Threats

- As per complain & grievances database, unfair business practices, Bima Bharosa portal, mis-selling and customer dissatisfaction with premium hikes, exclusions, or rejection of claims could lead to reputational damage and loss of trust.
- Majority of customer dissatisfactions are regarding insurance mis-selling, policy servicing issues, claim related and policy related queries.
- The entry of insure tech firms and global players can increase competition, making it harder for traditional insurers to retain customers.
- With more personal data being collected, customers may become concerned about how

their data is stored, used, and shared, requiring robust cyber security measures

After recent data breach from Star and Tata AIA, IRDAI has issued press release regarding information security https://irdai.gov.in/web/guest/document-detail?documentId=5977374

Conclusion and In-sights

Digitization is reshaping the insurance industry, providing opportunities for growth, efficiency, and enhanced customer service. Multiple growth drivers might help the Indian insurance market to catapult insurance penetration.

India has favorable demographics, with 68% of India's population is young and 55% of its population is in the age group of 20-59 (working population) in the year 2020 and is estimated to reach 56% of the total population by 2025 allowing young insurable population in India.

Higher digital pattern behavior might help boost insurance sales in India. 73%/62% of customers preferred the online mode for General/ Health Insurance products (2020). Agents' ease with digital tools has also grown, with 63% of agents comfortable with video-calling clients and >50% amenable to virtual renewals

Higher boost towards government led initiatives, such as PM-JAY and the vision of universal health coverage will improve health insurance plans and services in areas which were previously not affordable to senior citizen. TJ

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Local Laws, Global Data: Navigating the Boundaries of Borderless Risks and the Jurisdictional Challenges of Digital Insurance Practices in India

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Abstract

The rapid globalization of digital insurance practices has created a complex interplay between local laws and global data management. In India, this dynamic is shaped by evolving regulations intended to address the jurisdictional challenges posed by cross-border risks. Jurisdictions have a significant impact on insurance claims since they decide where claims may be submitted, which laws apply, when claims must be filed, how disputes are resolved, and even what rights and safeguards customers have. In order to successfully navigate the claims process, policyholders must comprehend the jurisdictional context of their insurance policies. To make sure that claimants protect their rights and comprehend how jurisdiction affects their insurance claims, legal counsel may be required, particularly in complicated instances involving many jurisdictions.

Keywords

Jurisdiction, Digital Insurance, Arbitration, Mediation, Consumer, Place of Suing, Challenges, IRDAI, Civil Procedure Code, Data Protection, Cyber Law.

1. Introduction

The digital transformation across sectors has necessitated the evolution of insurance practices, particularly in the context of global operations and data management. While traditional insurance paradigms were often bound by geographical boundaries, the advent of digital technologies has encouraged insurers to operate in a borderless environment. In India, the insurance market is experiencing significant growth, influenced by regulatory changes and the intermingling of local laws with international practices. As insurers harness global data through digital platforms, they encounter legal and regulatory frameworks that vary widely. This paper explores the legislative framework governing digital insurance, examines the implications of data localization and cross-border data transfers, and discusses how these factors impact the operational landscape for insurers in India. By analyzing relevant laws, rules, and regulations, the paper also aims to provide insights into navigating the challenges of digital insurance in a jurisdiction shaped by both traditional and modern legal frameworks, in the light of laws dealing with digital insurance in some developed countries.

2. The Digital Insurance Landscape in India

It is anticipated that the insurance sector will have to negotiate a radically different future from the one that has already existed. Approximately 20% of respondents are thinking about using algorithm-based digital programs for insurance advice, and more than 28% of those polled anticipate managing their insurance solely online, according to research on insurance customers in several APAC nations[1]. One The digital world is changing customer expectations and legal frameworks, with demands for self-service capabilities, seamless and personalized experiences, and improved cybersecurity, anti-fraud,

and data protection measures. In reaction to these new tendencies, digital transformation is at the top of the agenda. 72% of CEOs surveyed say they have an aggressive digital investment strategy, 40% say they will think about digital transformation to predict long-term growth, and the number of companies with leadership buy-in for emerging tech has more than tripled, from 10% in 2022 to 38% in 2023, according to KPMG research.

3. Overview of Insurance Sector in India

India's insurance sector has witnessed substantial growth in recent years, characterized by the increasing penetration of technology in product distribution, underwriting, and claims management. The sector is supervised by the Insurance Regulatory and Development Authority of India (IRDAI), which oversees market stability and consumer protection. India is the tenth-largest life insurance market globally. In 2019, India has a 2.73 percent market share in the global life insurance industry. While life insurance premiums worldwide climbed by 1.18 percent over the previous year, life insurance premiums in India soared by 9.63 percent. India is rated 15th in the world for non-life insurance. In 2019, India's market share for non-life insurance was 0.79 percent worldwide. While non-life insurance premiums worldwide climbed by 3.35 percent over the previous year, non-life insurance premiums in India increased by 7.98 percent.

In 2019, life insurance accounted for 46.34 percent of all premiums worldwide, while non-life insurance accounted for 53.66 percent. Nonetheless, India's life insurance market accounted for a substantial 74.94 percent of the country's total insurance market, and the non-life insurance market accounted for 25.06 percent[2].

4. Emergence of Digital Insurance and its Relevance in Recent Era

The proliferation of digital technologies has made it easier for consumers to access insurance products. Insurers have adopted online platforms for policy purchase, claims filing, and customer service. Amidst this shift, various start-ups have emerged, offering innovative insurance solutions that leverage big data, artificial intelligence, and machine learning. Indian Insurance in the International Context.

With a premium volume of 131 billion (or 1.9% of the global insurance premium in USD) in 2022, India was ranked as the tenth largest insurance market in the world. Due to its rapid growth, the Indian insurance market is expected to rise to the sixth largest by 2032. Strong economic growth, growing disposable incomes, a youthful population, more risk awareness, internet penetration, and regulatory advancements provide the foundation of India's growth forecast[3].

The Authority released rules on insurance ecommerce on March 9, 2017, in an effort to boost insurance penetration through e-commerce. On April 11, 2017, the IRDAI –Insurance Self Network Platform (ISNP)[4] opened its online application site for online applications. As of March 31, 2023, the following is the status of the ISNP applications that insurers and intermediaries have received:

Persons/ entity	2020-21[5]	2021-22[6]	2022-23[7]
Insurers	52	53	53
Broker	145	189	251
Web Aggregator	16	19	80
Corporate Agents	48	66	24
TOTAL	**261**	**327**	**408**

The table[8] indicates that the number of case through Insurance Self Network Platform is increasing day by day and hope that more and more cases will be resolved in the coming future.

Due to digital Insurance schemes, the field investigators are geotagged when cases are allocated to them via digital systems, guaranteeing improved control, risk reduction, and quicker processing. M/s. e-Governance Services India Limited is responsible for implementing the Common Service Centers (CSCs), which are created under the Government of India's Digital India initiative. Further, the IRDAI (Insurance Services by Common Public Service Centrers) Regulations, 2019 replaced the Insurance IRDAI Services by Common Service Centres) Regulations, 2015[9] to enable the concerned to get the issues resolved through online methods. *Further, BIMA SATARK* is a Health

Fraud Analytics System which is developed by IIB under the guidance of IRDAI, which enables Insurers to take an informed decision on claims, underwriting & digital purchase journey of Consumer/customers[10].

The BIMA Sugam is an online marketplace for insurance that would empower and assist all parties involved in the insurance value chain. The Primary goals of BIMA Sugam are to: (i) serve as a single point of contact for policyholders to manage their insurance coverage; (ii) offer end-to-end solutions for clients' insurance needs, including seamless purchase, servicing, and settlement; (iii) make it easier for insurance companies to access verified and authentic data from multiple touch points in real-time; and (iv) enable intermediaries and agents to sell policies and offer services to policyholders. This program is a step in realizing the goal of "Insurance for All by 2047[11].

5. Legislative Framework Governing Digital Insurance

I. The Insurance Act, 1938

The backbone of the insurance sector in India is the Insurance Act of 1938 as amended by 2015 Act, which provides the foundational legal framework for the industry. Although digital insurance is not expressly covered under the 1938 Insurance Act, the framework established by later rules and modifications under the jurisdiction of IRDAI offers insurers strong guidelines for operating in a digitally altered world. The rules place a strong emphasis on consumer protection, openness, and the smooth use of technology in the insurance procedure.

Key provisions which deals with digital insurance are-

a. The Insurance Act establishes the basic idea that underpins all forms of insurance products, including digital insurance offers, by providing a wide definition of "insurance".

b. **Regulation-making powers :** Under Section- 14, the Insurance Regulatory and Development Authority of India (IRDAI) has the power to establish rules, policies, and recommendations for the way the insurance industry is conducted, including digital insurance models. The Act, makes the provisions for Committee to be known as the Insurance Advisory Committee. This section describes how insurers, especially those who provide digital insurance products, must possess operating licenses in order to ensure regulatory monitoring and compliance of the rule in the digital space.

c. **Licensing of Insurers:** Outlines the requirements for obtaining a license to operate as an insurer. Section 14 of the IRDA Act, 1999, which gives the Authority to create rules pertaining to the conduct of insurance business, including digital insurance, can be used to refer to the particular provisions pertaining to insurer licensing. The Insurance (Licensing of Insurers) Regulations also apply to these licensing criteria; however, the IRDAI's unique recommendations under the regulatory framework established by these laws would determine whether or not digital insurance is specifically included[12].

d. **Policyholder Protection:** Specifies the rights of policyholders and the obligations of insurers to maintain transparency and fairness in dealings. Section 26, of the IRDA is authorized by this section to create powers to make rules that safeguard policyholders' interests and advance their well-being, including handling grievances and redressal procedures. Furthermore, the Insurance Regulatory and Development Authority of India (Protection of Policyholders' Interests) Regulations, 2017 and related regulatory frameworks provide further details on the duties of insurers and other measures to safeguard policyholders' rights and interests.

II. The Information Technology Act, 2000

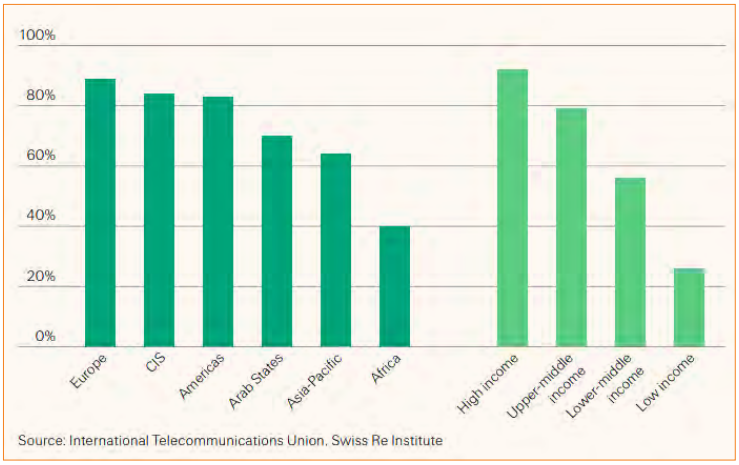
To facilitate the growth of digital insurance, the Information Technology Act, 2000, was established. This Act provides a legal framework for electronic governance and the protection of data. An important factor in determining the state of digital insurance in India is the Information Technology Act, 2000 (IT Act). It offers a vital foundation for cybersecurity, data protection, and electronic transactions and is the

first comprehensive law to address the issues raised by the growing digital economy. Rapid technological improvement in the insurance industry, especially since the IT Act was passed, has sparked innovation and expansion, improving the way insurance services are delivered but also placing heavy responsibility on insurers to secure customer data. The creation of a legal framework for digital signatures and electronic transactions is one of the IT Act's most important functions.

Section 3-7 of IT Act, 2000 give electronic signatures and documents legal status, which makes the transition from paper to digital insurance procedures easier. Because it improves client comfort, lowers expenses, and simplifies processes, this change is essential for insurance businesses. Online policy purchases, claims filing, and account management have increased access to insurance products for a wider range of demographics (6–10). Cross-border data transfers are also made easier by the IT Act, which is crucial for international insurance operations and partnerships. It becomes essential to comprehend and abide by various data protection rules because many insurers operate across jurisdictions. While protecting domestic customer data, the IT Act's rules on data localization and transference enable Indian insurers to operate in global markets. Maintaining competitiveness in a world that is becoming more networked and where data portability and sharing with other parties are normalized requires this flexibility[13].

The IT Act was expanded upon by the IRDAI, which established certain rules to guarantee data integrity and confidentiality. For instance, the IRDAI requires insurers to uphold. Another essential component for guaranteeing data security in the insurance industry is the IT Act. As more and more insurers collect, store, and process large volumes of sensitive and personal data via digital platforms, adherence to the IT Act.

However, the main challenge is that according to the International Telecommunication Union (ITU) estimates, around 2.7 billion people worldwide are still not online, with continent-by-continent variations.



Source: International Telecommunications Union, Swiss Re Institute

A significant contributing aspect is economic disparity, since in 2022, just 26% of people with low incomes used the internet, compared to 79% of upper- and middle-class families and 92% of high-income households[14]. Adoption of digital technologies is likewise more expensive in lower-income nations. Compared to 2.8% for lower-middle-income nations and 1.5% for upper-middle-income countries, data-only mobile broadband costs account for 9.3% of gross national income per capita in low-income countries. Growth and internet penetration have been proven to be strongly positively correlated; in advanced nations, a 10-percentage-point rise in fixed broadband penetration boosts GDP growth by 1.2%, while in developing economies, it increases by 1.4%.26. Insurance can support the growth of digital infrastructure by offering coverage for risk protection[15].

III. The Digital Personal Data Protection Act, 2023

The IT Act will only become more relevant as digital insurance develops, especially in light of the recently passed Digital Personal Data Protection Act, 2023 (DPDP Act). The DPDP Act lays forth more specific data protection rules, giving consumers more control over their data, even if the IT Act serves as the fundamental legal framework for data protection. In addition to enhancing consumer protection, this alignment between the IT Act and the DPDP Act guarantees that insurers follow

a thorough regulatory framework that promotes accountability and transparency. Furthermore, the Insurance Regulatory and Development Authority of India's (IRDAI) rules governing the security of policyholder data are supplemented by the IT Act. Building on the IT Act, the IRDAI has produced The Digital Personal Data Protection[16] Act, 2023 (DPDP Act) aims to establish a comprehensive framework for the processing of personal data, which significantly impacts digital insurance.

In India, the Ministry of Electronics and Information Technology (MEITY) supervises the various government ministries that are in charge of data protection; there are no authorities in charge of this. Nonetheless, the DPDP Act calls for the establishment of the Data Protection Board of India (DPBI) to oversee the nation's overall digital personal data protection system. After it is established, the DPBI is tasked with managing the enormous volumes of data that are gathered, addressing the complaints of Data Principals, and penalizing Data Fiduciaries for non-compliance. In order to investigate whether Data Fiduciaries are complying with the law, the DPBI will have the authority to call and impose people's attendance, interrogate them under oath, and check any data, books, documents, registers, books of account, or other documents. This step would be also be relevant in determining forum or jurisdiction of the court as to where the dispute has arisen and which court is supposed to adjudicate.

IV. Framework of Digital Transaction under the Consumer Protection Act (CPA):

The 2019 Consumer Protection Act describes the jurisdictional structure for handling consumer complaints. The CPA's Sections 34 and 58 provide guidelines for deciding where a claim can be filed by outlining the authority and jurisdiction of several consumer forums. The CPA defines "e-commerce" as the purchase or sale of goods and services, including digital items, using electronic or digital networks. B2B, B2C, and C2C transactions are among the many internet business types that are included in this wide term. Further, Secation 94 makes the provisions for actions taken to stop unfair trade practices in direct selling, e-commerce, etc. in this regard, the Central Government may take the actions that may be required to stop unfair commercial practices in direct selling and e-commerce as well as to safeguard the rights and interests of consumers. The District Consumer Forum, whose jurisdiction the opposing party resides or conducts business in, is where complaints can be submitted, according to Section 34. Further, section 58 gives consumer forums pecuniary jurisdiction, which is crucial for choosing the right forum for complaints pertaining to insurance based on the size of the claim.

V. The 1908 Code of Civil Procedure (CPC):

Section 15 of the CPC makes the provision that every suit to be instituted in the court of first instance which is competent to try. The suit must be filed where the subject matter is located, according to Section 16 of the CPC. The following suit types are covered under this section: -for the recovery of real estate, whether or not it has profits or rent. Regarding, foreclosure, sale, or redemption in the event of an immovable property mortgage or charge, for figuring out any additional immovable property rights or interests, seeking restitution for wrongs done, for the retrieval of moveable property that is really subject to attachment or distrain. In such case, the provision of section 16 stipulates that a lawsuit may be filed where the defendant's actual and voluntary residence within the local boundaries of the property's location.

In addition to this, section-17 makes the provisions that when immovable property is located within the jurisdiction of multiple courts, Section 17 allows for litigation. It allows lawsuits involving real estate located in several districts or courts, giving the plaintiff the option to choose a court that is most convenient for them geographically. If any immovable property is allegedly unclear within the local boundaries of the jurisdiction of two or more courts, any one of those courts may, if it is convinced that there is reason to be uncertain, record a statement to that effect and proceed to consider and decide any suit pertaining to the property. The court's decision in the suit will have the same effect as if the property were located within the local boundaries of its jurisdiction, provided that the suit is one over

which the court has the authority to exercise jurisdiction due to its nature and value. The suit may be instituted at the plaintiff's choice in either of the aforementioned courts if it is alleged to be unclear within the local limits of one court's jurisdiction and the defendant resides, conducts business, or works for personal gain within the local limits of another court's jurisdiction and the case is for compensation for harm done to a person or to movable property.

6. Jurisdictional Challenges of Digital Insurance Practices

a) **Cross Jurisdictional Issues-**

International Claims: Claims may include several legal systems for insurers that operate abroad or in numerous countries, making the claims procedure more complex and necessitating knowledge of international agreements and laws.

b) **Enforcement of Judgments**: If a customer prevails in a court lawsuit in one area, it might be difficult to enforce that decision in another, particularly if the insurance provider is based in a different state or nation.

1. **Effect on Coverage and Premiums**

a) **Local Regulations:** Different jurisdictions may have different minimum coverage requirements, which might result in different premiums. For instance, state-by-state variations in vehicle insurance rules can have a substantial impact on claims and payouts.

b) **Regulatory Oversight:** Insurance activities, including claims processing, are supervised by the insurance commissioners or regulatory authorities that are specific to each jurisdiction. This may affect how quickly and fairly claims are processed.

c) **Variability in Consumer Protections:** The degree of consumer protection provided by different jurisdictions with relation to insurance claims varies. Stronger consumer protection regulations in some countries can have a big influence on how insurers manage claims and what customers might anticipate from the claim-processing process.

7. Legislative Framework Governing Digital Insurance

Territorial difficulties are addressed in a number of insurance-related legislative provisions, especially those pertaining to court jurisdiction and claim processing. The following are the main areas that affect territorial jurisdiction in insurance cases:

a. **The 1938 Insurance Act:** The Insurance Regulatory and Development Authority of India (Issuance of e-Insurance Policies) Regulations were first issued by the IRDAI in 2016. Customers can now carry policies online thanks to these legislation, which established the foundation for issuing and administering electronic insurance policies. This is in line with the Insurance Act of 1938's overarching goals of fully regulating insurance in India. The required elements to support these regulations were also introduced into the Insurance Act revisions[17].

- Section 164: This section stipulates that no insurer may do insurance business in India unless permitted by this Act. This implies that insurers must abide by local laws when providing insurance services.

b. **Motor Vehicles Act of 1988** The Insurance Information Board (IIB) now uploads data on new car insurance and vehicle insurance renewals to the VAHAN database every day, and the mParivahan/eChallan app shows the insurance's validity.[18] Further, the notification also mandates the Conversion to e-Insurance. In accordance with these rules, insurers must provide e-insurance plans in addition to conventional paper plans. By lowering the use of paper, this action seeks to improve customer convenience, encourage the digitalization of policy, and create a cleaner environment. The States have been given the ability to update the VAHAN/SARATHI database online in relation to the driving license or vehicle registration details through this Ministry's eChallan system in cases where an offense has been committed that calls for the seizure or impoundment of such documents in their electronic form. States must update the VAHAN/SARATHI database via a web link if they are utilizing any

other databases or web/mobile tools of their own[19].

So far as forum for filing suit is concerned, Section 166 of the Motor Vehicles Act of 1988 deals with claims for damages resulting from accidents. A claim may be filed specifically before the Claims Tribunal that has jurisdiction over the region where the accident happened, where the claimant resides, or where the defendant resides, according to sub-section (2).

c. **The ADRs Mechanism:** The 1996 Arbitration and Conciliation Act also affects territorial jurisdiction if parties decide to arbitrate their disagreements, and the applicable provisions will control the jurisdiction for dispute arbitration pertaining to insurance contracts. Cross-border conflicts are specifically addressed under the Arbitration and Conciliation Act, 1996 of India, especially when it comes to international commercial arbitration. Section 2(1)(f) of the Act, provides a definition of "international commercial arbitration," which is essential to comprehending Indian arbitration law's jurisdiction in global settings. According to this, a conflict develops when parties from various nations get into a legal connection that is deemed commercial under Indian law.

Further section-44, covers the enforcement of international awards. As long as it conforms with the New York Convention's provisions and does not conflict with Indian public policy, it describes the circumstances in which a foreign arbitral decision may be implemented in India. According to provision 45, if the parties have agreed to arbitrate, the court will refer them to arbitration and refrain from interfering with the proceedings. This also holds true for arbitration in international commerce. Section 48, outlines the grounds—such as the parties' incompetence, the agreement's illegality, and breaches of natural justice principles—under which a foreign award may not be enforced in India. A court will acknowledge and enforce an arbitral award if it is found to be legitimate under Indian law, according to Section 49, which addresses award enforcement.

Together, these parts provide the basis for international commercial arbitration's operations in India, especially when it comes to handling cross-border disputes.

8. Jurisdictional Concerns in the Digital Age, Challenges and Opportunities

When it comes to processing insurance claims, jurisdictions are crucial since they have an impact on a number of factors, such as where claims may be made, which laws apply, when they must be filed, and how policyholders are treated overall. Contracts for insurance sometimes contain provisions indicating which courts in a given jurisdiction will hear disputes. However, when parties are located in various countries, it can be difficult to determine whether a certain court has jurisdiction. The location of the risks, the contract's formation, and the parties' primary locations of business are frequently questioned. Jurisdictions impact insurance claims in the following ways:

a. ***Selection of the Legal Forum***: The jurisdiction establishes which court is able to hear a matter. For instance, certain regulations require that claims be submitted in the jurisdiction where the policyholder, insurer, or insured risk happened. This may affect the claimant's accessibility and convenience.

b. ***Location Restrictions***: Certain insurance plans stipulate that lawsuits must be filed in a certain area, which may restrict a policyholder's choices if they want to file a claim immediately. International insurance claims may provide further challenges. Foreign regulations pertaining to consumer protections, liability standards, and contract interpretation are frequently encountered by insurers; these laws can differ greatly between jurisdictions.

c. ***State Law Variation:*** Laws pertaining to insurance claims, especially those pertaining to consumer protection, insurer duties, and responsibility, differ between jurisdictions. This implies that policyholders in various states can be subject to various regulations pertaining to insurance issuance and claim settlement. Additionally, dispute resolution procedures like

arbitration or mediation might vary from state to state.

d. ***Complexity of E-commerce Transactions:*** Since transactions frequently transcend state and national borders, the growth of e-commerce has made determining jurisdiction more difficult. A precise characterization of the relevant laws and jurisdictions is necessary due to this complexity, especially in cases when disagreements emerge between customers and service providers.

e. ***Ambiguity in Boundaries of Jurisdiction****:* The jurisdiction that oversees a certain complaint may become unclear as a result of digital transactions. It might be difficult for customers to determine which particular venue is best for submitting complaints, which makes seeking legal redress more difficult. It may be difficult to determine which jurisdiction's laws would apply in a dispute if the insured risks encompass several states or nations (for example, a global corporation insuring assets in numerous places). Multiple jurisdictions may make things much more difficult, particularly when local laws clash. Cases involving many jurisdictions create concerns about whose laws apply, particularly when dealing with foreign suppliers or services. For both consumers and insurers, the interaction of national and international rules can make enforcement and compliance more difficult.

So far as the CP Act, 2019 is concerned**,** Section 21 of the CPA and pertinent read with some section of the Code of Civil Procedure, 1908, a consumer may register a complaint in the location where they now reside or where the cause of action originated. Determining the location of the cause of action can be difficult in the digital setting, when services are provided online.

f. ***Admissibility of Online Contracts****:* A lot of e-commerce sites include user agreements that users frequently accept without fully comprehending. These agreements' jurisdiction clauses may shield businesses, but they may also mislead customers about their rights and the relevant legal systems.

g. ***Role of Technology in Dispute Resolution:*** Ambiguities surrounding jurisdiction, particularly in decentralized systems, become even more apparent as the insurance business investigates the use of block chain technology and smart contracts. Online Mediation and Arbitration are two examples of alternative dispute resolution (ADR) techniques offered by digital platforms. However, concerns are raised over the acceptability of such processes in conventional jurisdictions as well as the enforcement of the results of cross-border digital conflicts.

h. ***International Treaties and Regulations to deal with jurisdictional issues:*** Because digital services are global in scope, customers may interact with businesses across borders. When customers try to file claims against Foreign Service providers, jurisdictional problems occur, underscoring the necessity of international legal frameworks to expedite dispute resolution. Because insurance is sold digitally, policies from providers in several legal countries can be obtained. Conflicts about which court has jurisdiction may result from this. For instance, it is unclear whether Indian courts or the courts of the insurer's home country should consider a lawsuit involving a consumer in India who buys insurance from a European corporation. While addressing the specific legal settings and difficulties associated with jurisdiction in consumer disputes in the digital age, there is need for a framework upon which a more comprehensive document might be built. Each point need to be expanded significantly in a full paper, which would have the required length. The interaction of bilateral and multilateral treaties pertaining to insurance may give rise to ambiguities. For instance, not all treaties include precise instructions on jurisdictional matters, even if certain jurisdictions may have agreements pertaining to the recognition of insurance contracts.

i. ***Enforcement of Judgments:*** Ambiguity may arise from variations in how different jurisdictions carry out their enforcement of judgments. There are concerns over where policyholders can seek dispute resolution because a judgment rendered in one jurisdiction might not be enforced in another.

9. Conclusion

The emergence of digital transactions and cross-border exchanges has increased the complexity of legal issues in a world that is becoming more linked. India confronts particular difficulties with regard to jurisdiction in cross-border and online conflicts because of its growing digital economy and its involvement in international trade. The Arbitration and Conciliation Act of 1996 and other procedural rules serve as the main pillars of the current legal system, which frequently lacks the precision and clarity needed to adequately handle the complexities of cross-border and international conflicts. Establishing precise clauses that are in conformity with international norms is essential to ensuring efficient dispute resolution as globalization continues to obfuscate jurisdictional boundaries.

There is now a great deal of uncertainty about India's jurisdiction over internet and cross-border conflicts. While some aspects of dispute resolution are covered by a number of statutes, such as the Information Technology Act of 2000, the Indian Contract Act of 1872, and the Arbitration and Conciliation Act, they do not offer thorough guidelines on jurisdictional issues unique to digital transactions. For example, different interpretations continue to exist about the application of Indian law in situations involving foreign corporations, which leaves people and companies involved in cross-border transactions unsure. Furthermore, it becomes more difficult to identify the appropriate legislation and settle issues when online contracts lack explicit references to jurisdiction.

The fact that conventional ideas of jurisdiction have not yet changed to reflect the digital environment is one major obstacle. In the context of online platforms, when goods and services are provided worldwide without a physical presence in the countries where they are used, the idea of "territorial jurisdiction" is frequently insufficient. This leads to problems about where a dispute should be settled and which jurisdiction's laws should be used. India can improve its approach to jurisdiction in cross-border disputes by using helpful frameworks provided by international norms, such as the UNCITRAL Model Law on International Commercial Arbitration. The necessity for standardized legal frameworks to handle jurisdictional concerns resulting from cross-border internet conflicts is becoming more widely acknowledged on a global scale. Regulation (EU) No 1215/2012, sometimes referred to as the Brussels I Regulation, for example, has created explicit guidelines that establish jurisdiction based on the defendant's or the consumer's habitual residency. These models provide certainty and transparency, which are critical for multinational corporations. India might increase its appeal as a destination for international arbitration and trade by embracing comparable concepts.

Furthermore, the need for explicit jurisdictional rules is reinforced by India's involvement in international agreements like the Hague Convention on Choice of Court Agreements The necessity of enforceable agreements in cross-border transactions and the significance of honoring the parties' right to select their own jurisdiction are both highlighted by these agreements. Adopting thorough jurisdictional rules that adhere to these international norms will boost trust among trading partners while also bringing Indian law into compliance with international norms.

Clear regulations about jurisdiction may greatly improve India's dispute settlement procedures in addition to fostering international collaboration. The creation of a specific framework defining the jurisdiction for cross-border and online conflicts might simplify the legal system and lessen the workload for judges. The lack of a defined jurisdictional basis now causes delays and complexities for litigators, which may deter foreign parties from doing business with Indian companies. A clear legal framework will make it easier to resolve disputes quickly, boosting corporate trust and luring in international investment.

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(Endnotes)

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Digital Insurance: The Growth Trends in India

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Abstract

Growing digital technologies such as AI, blockchain technologies, IoT, smartphones, and FinTech are reshaping business models and human interactions. In response to this shift, the insurance industry implemented digital transformation as a strategic business approach. The aim of this article is to highlight the growth of opportunities and challenges for both life and non-life insurance businesses with the integration of digital technologies in the insurance sector. The secondary data of TRAI and other reports portraying the Indian insurance sector have significant growth opportunities in life insurance, LIC has a major market share of 64 percent, and non-life insurance also has significant growth opportunities, especially in the health, crop, and motor insurance segments. The major challenges to the Indian insurance sector are low rate of financial literacy, insurance literacy, digital literacy, and rigid regulatory compliance.

Key words

Digitalization, Technology, Insurance, Efficiency.

1. Introduction

The economic reforms in 1991 drastically transformed the insurance industry by allowing private firms in the insurance sector. Furthermore, the foreign direct investment (FDI) limit in the insurance sector has increased from 26% in 2014 to 74% in 2021.These policy changes have risen competition from local to global in insurance sector. The rapid growth of computer science has enabled insurers to become globally competitive.

The advancements of digital technology have been reshaping business models and making things easier. Digital technology is embedded with computers, smartphones, internet, artificial intelligence, big data analytics, machine learning, blockchain, cloud computing, mobile apps, and other technology tools. The use of digital technology by every firm in the market is inevitable in the 21st century. Hence, the insurance sector is gradually adapting digital technology for front-end and back-end operations.

The adaptation of digital technology by insurers provides enriched customer services at the front-end. For instance, assist in the selection of policies through access to different insurance policies and comparison of policies, renewal of premium, rising complaints, AI interaction with customers via chat bots and virtual agents, speed process of insurance claims, and design of customized products.

At the back-end, digitalization enhances efficiency and performance accuracy. For instance, it speeds up completion of tasks, boosts productivity, and performance precision. Insurers can reduce cost and loss adjustment expenses, improve fraud detection, precisely assess risk, streamline claims procedures, and eliminate manual

interactions through the integration of automation and analytics (Sharma, 2020).

Therefore, the digital transformation of the business model and automated infrastructure brings numerous utilities and a competitive advantage for insurers.

2. Key Drivers Enabling to Digital Transformation of Insurance in India

2.1 Artificial Intelligent (AI)

AI aims to mimic human intelligence by using machine learning, neural networks, and deep-learning technology. AI works on algorithms and models that can automate multiple processes simultaneously, solve complex problems, and analyze and classify massive amounts of data. AI allows machines to learn from data and identify patterns, thereby enhancing their ability to perform tasks with greater efficiency and effectiveness. These abilities can save time and fill operational gaps that humans used to miss.

The insurance industry can greatly benefit from AI, through AI-powered processes, the time it takes for insurers to process and settle claims is significantly reduced. AI can analyse various types of data, including claim forms, documents, images, and videos, and automatically prioritize incoming claims based on their complexity and urgency. Predictive models powered by AI can analyse large volumes of data from diverse sources, enabling insurers to forecast trends and identify potential risks with greater accuracy. These capabilities allow insurers to proactively adjust their strategies and pricing to effectively manage risk.

Algorithms powered by AI have the ability to craft personalized insurance coverage based on an individual's specific requirements and risk profile. Through the analysis of each customer's data, insurance companies can create tailor-made insurance plans with personalized pricing, often in minutes. Furthermore, virtual agents and chatbots improve customer interaction by providing intelligent responses to service inquiries and rapid access to policy details. 24/7 customer support availability leads to increased satisfaction and decreased workload of human agents. The identification of fraudulent property and casualty claims is a significant challenge for insurance companies. AI-driven predictive modelling and anomaly detection can help detect hard-to-spot irregularities and patterns across various insurance sectors, such as healthcare and automobile businesses, which indicate potential fraudulent claims. AI improves performance of insure in any given specific task as like humans performs.

2.2 Blockchain Technology

Blockchain technology is an advanced database technique that permits transparent information sharing across a business network. A blockchain database keeps data in blocks that connected each other in a chain. Blockchain cannot be removed or altered without network approval, and data are consistent across time. As a result, blockchain technology allows the construction of an immutable ledger for monitoring orders, payments, accounts, and other transactions.

Blockchain strengthens insurer security, privacy, transparency, and efficiency. Distributed ledger technology helps data integrity, streamlines insurance claims processing, improves cybersecurity protocols, and potentially speeds up payment times. Risk management is vital for insurers because it ensures efficiency in risk identification and fraud detection by integrating immutable data and assessing all insurance policies and documents. The claim process is another important function of the insurer: smart contacts of blockchain provide efficient and unaltered recording of all transactions and allow them to access transactions on the chain, thus speeding up the claim process and settlement. Blockchain enables real-time data sharing among different parties and ensures data security and audits, which results in strong customer trust.

2.3 Internet of Things (IoT)

IoT is a network of physical devices, vehicles, appliances, and other physical objects that are embedded with sensors, software, and network connectivity, allowing them to collect and share data. Today, the IoT has become an integral part of our lives, both personal and professional. IoT

is making things easier and hasty. Network devices are equipped with sensors, auto-functions, fast installation, and real-time analysis. We can use IoT anywhere and any situations that providing enormous information and solutions.

So far, insurers have mainly used IoT capabilities to aid interactions with customers and to accelerate and simplify underwriting and claims processing. However, new IoT-based services and business models are emerging that are very appealing to insurers. For instance, IoT allows collaboration between IT and other firms to provide customized products for individuals and industries by harnessing new technology.

More than 26 billion of these networked devices are currently in use, and this number is predicted to reach 75 billion by 2025. The extensive availability of devices with connective capabilities, as well as the possibility of real-time communication between them, contributes to IoT's ability to drastically enhance efficiency and capabilities across a wide range of industries.

2.4 Smartphones

Presently, India has the second largest smartphone market around 1.12 billion active mobile users that replicate 78 % of the total population. 751.5 million internet users, which replicate 52.4 percent of the population, and 462 million social media users, which replicate 32.2 % of the Indian population (*Digital 2024: India*). These statistics describe the penetration of digital technologies and the trend of strategic digital transmissions in India. Smartphones are gateways of digital inclusion that allow access to information, products, and services worldwide for improved livelihoods. The blend of smartphones and internet proliferating digital business models to survive and expand market share across all industries irrespective of size and nature of business.

To connect and provide improved services for customers every firm developed mobile Apps. Through mobile apps, we can access a variety of financial services, including insurance. Smartphones help reach customers, especially in rural and tribal areas, where there is no access to financial institutions (Barnwal, 2023). Therefore, smartphones provide broad services for insurance policyholders to manage insurance policies. For instance, comparing the available policies, payment of premiums, claiming claims, and interaction with insurers.

2.5 FinTech

FinTech, also known as financial technology, refers to the adoption of software, mobile applications, and other technologies to provide customers with improved and automated financial services. FinTech enables efficient management of money. For instance, checking of balances, remittance and transfer of money, initiation of financial transactions, monitoring of expenses, providing multiple savings and investment avenues, and facilitating lending and borrowing. FinTech facilitates policyholders' premium payments through UPI and internet banking without delay and collection of claims. FinTech makes business easier for insurers.

2.6 Regulatory and Government encouragement

The IRDAI is a regulatory body of insurance in India, encouraging all insurers to adopt digital technology to improve service to customers. IRDAI advises All Insurance Companies to dispatch all insurance policies through DigiLocker and enables the IT system with DigiLocker to access insurance policies (wide circular dated 9thFebruary 2023). The DigiLocker facility was provided under the Digital India program by the Ministry of Electronics and Information Technology (MeitY). Digilocker aims to provide all authentic documents/certificates in a digital format from the original issuers.

Digital India is a flagship program launched on July 1, 2015, by Prime Minister Shri Narendra Modi, to provide all services digitally for citizens. The Government of India encourages all firms to digitally transform. Digital India ensures the digital access and delivery of services via sustainable technology at an affordable price.

3. Growth Prospective of Digital Insurance in India

Presently, we are in the realm of digital technologies and meet our needs at finger touch on the screens

of mobile phones, computers, and other digital machines. Digital devices and software eliminate manual engagement of people to meet their needs and goals. Every industry transforms digitalization to retain and expand its market share. Similar to AI, machine learning, blockchain, Internet of Things, and mobile applications are built to observe customer behavior and purchasing patterns to provide a better experience.

Behera, (2024) reported that the mobile internet users are almost 55 % of Indian population, rapid shift has been seen during 2016 to 2024. The growth of Internet users has fostered great opportunities across all industries for digital transformation. In recent years, the insurance sector has undergone a digital transformation from a traditional business model.

The traditional model is highly floating with agents and other third parties that have low market penetration. For instance, only 37% of the population is covered by health insurance (Pradhan 2024). Statista reported that 28 million new life insurance policies will be issued in 2023.

The IRDAI annual reports show consistent growth in both life and general insurance in the insurance sector.

3.1 Life Insurance

A total of 26 companies are operation under the life insurance segment in India. LIC India dominates the life insurance segment, with a 64 % market share. The India Brand Equity Foundation (May 2024) stated that India is the 5th largest life insurance market in the world and a fast-growing economy with huge human capital. Table 1 presents the consistent growth in the issue of new life insurance policies, and Table 2 shows the increasing trend of the gross premium. Figure 1 shows the growth share of public and private firms in the life insurance segment. Whereas, private players are expiring growth from FY 2019-20. Customers around the globe have switched to digital forms of information and products. The digital landscape brings great opportunities for insurers to reach potential customers and align with business goals.

3.2 General Insurance

Dhanuka, R. (2024) stated that India is the 10th largest market globally regarding volume of insurance premium. Health, motor, and crop insurances are growth drivers under the umbrella of general

TABLE 1: NUMBER OF INDIVIDUAL NEW LIFE POLICIES ISSUED (Rs. In Lakhs)

Insurer	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
LIC	345.12	201.71	205.47	201.32	213.38	214.04	218.96	209.75	217.19	204.29
Private Sector	63.6	57.37	61.92	63.24	68.59	72.44	69.5	71.52	73.94	80.42
Total	408.72	259.08	267.38	264.56	281.97	286.48	288.47	281.27	291.13	284.7

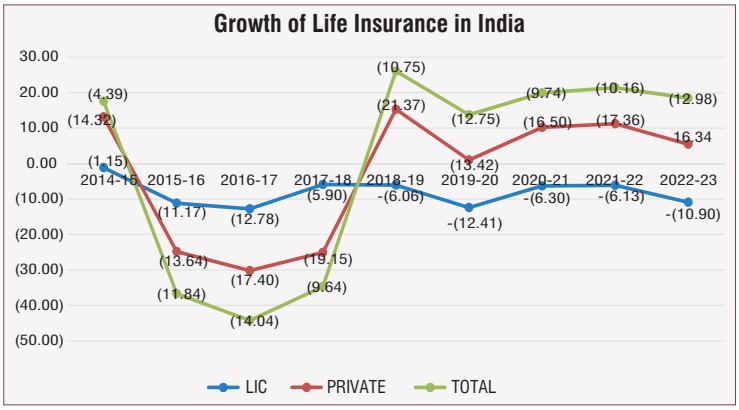
Note: Figures in brackets indicates the growth (in per cent) over the previous year.
Source: https://irdai.gov.in/handbook-of-indian-insurance

TABLE 2. TOTAL LIFE INSURANCE PREMIUM RECEIVED (Rs. In Crore)

Insurer	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
LIC	2,36,942.30	2,39,667.65	2,66,444.21	3,00,487.36	3,18,223.21	3,37,505.07	3,79,389.60	4,03,286.55	4,28,024.97	474668.136
Private Sector	77,359.36	88,434.36	1,00,499.03	1,17,989.25	1,40,586.23	1,70,626.96	1,93,520.59	2,25,444.48	2,64,589.17	307835.83
Grand Total	**3,14,301.66**	**3,28,102.01**	**3,66,943.23**	**4,18,476.61**	**4,58,809.44**	**5,08,132.03**	**5,72,910.19**	**6,28,731.04**	**6,92,614.14**	**782503.97**

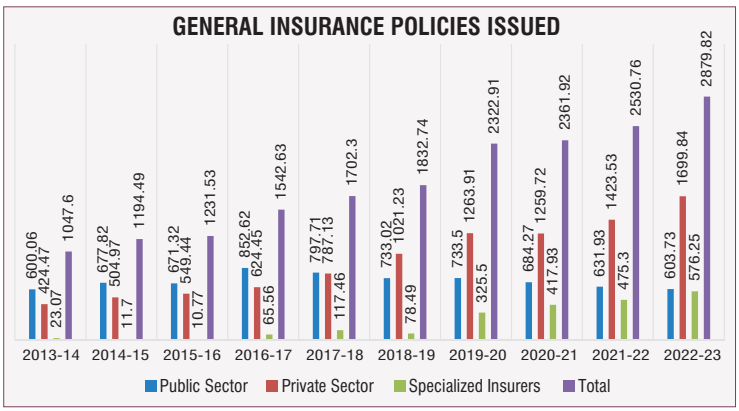
Note: Figures in the brackets represent the growth over the previous year in per cent.
Source: https://irdai.gov.in/handbook-of-indian-insurance

Figure 1: Growth Trend of Life Insurance between Public and Private Firms



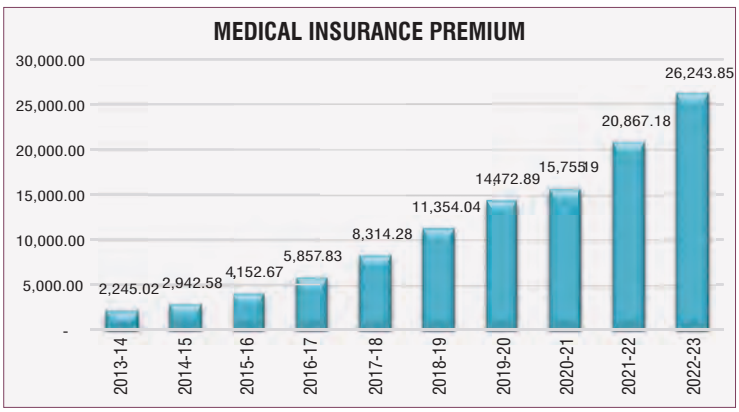
Source: Data draw from https://irdai.gov.in/handbook-of-indian-insurance

Figure 2: Growth Trend of General Insurance in India



Source: Data draw from https://irdai.gov.in/handbook-of-indian-insurance

Figure 3: Growth Trend of Medical Insurance in India



Source: Data draw from https://irdai.gov.in/handbook-of-indian-insurance

insurance. Figure 2 depicts the rapid growth of general insurance, especially for private and specialized insurers. Private insurers are highly leveraged technology for providing enhanced services for customers. Digital infrastructure enables the development of customized products and provides a better understanding of customer behavior.

3.2.1 Health Insurance

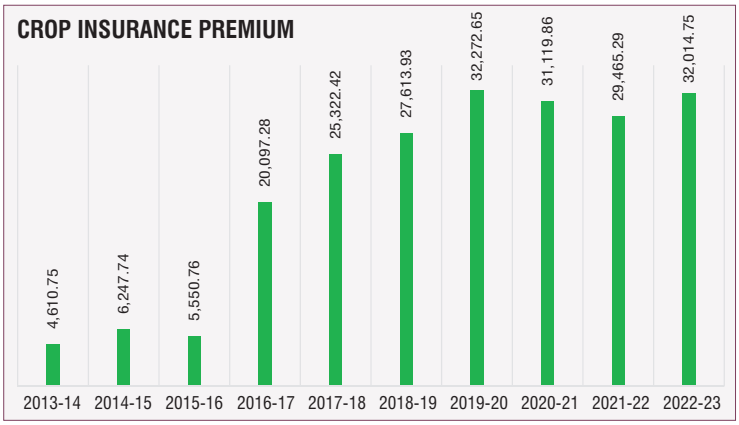
COVID19 taught us importance of health and drastic changes has taken place lifestyle of every family. Healthcare costs increasing by an average of 14 % YoY. Digital devices such as smartphones and digital wearable devices have surged to monitor health conditions. New digital devices and apps are built to provide health care information. Health care is vital in modern lifestyles and is expensive. Hence, medical insurance covers all the medical expenses. Digital insurance helps insurers monitor customers' health conditions regularly and prepare well in advance to manage health insurance risks. Figure 2 shows the consistent growth in medical insurance. Hence, digital insurance in medical care provides enhanced services to both insurers and customers. For instance, telemedicine enables real-time monitoring of patience, enabling accurate sharing of health records to healthcare providers and insurers to estimate risks and claims.

3.2.2 Crop Insurance

Crop Insurance has been on surge since 2016 due to the Government of India flagship program, Pradhan

Mantri Fasal Bima Yojana (PMFBY). Which aims to provide financial support to formers from crop losses and damages. Figure 4 depicts the 27.62 percent of rise in crop insurance from FY 2025-16 to FY 2016-17. In their whitepaper, TCS (2021) stated that only 22 percent of the former and 30 percent of the crop area were covered under crop insurance. Henceforth, crop insurance has great opportunities and is expected to be the third-largest business under general insurance. Insurance education and technology play pivotal roles in achieving milestone crop insurance. Around 16 % of the Indian GDP is contributed by agriculture and is highly vulnerable to climate change. Digital technologies would help all stakeholders, such as farmers, the government, and insurers, to measure the accurate risk associated with forming and allied activities. For instance, digital technologies assist in pooling accurate yield data, crop insurance, premium payments, and the estimation of claims. Delays in crop insurance assessments and claim processes can be efficiently managed using digital technologies. Technology enhances crop insurance through satellite imagery, IoT, AI, and blockchain. These innovations enable precise risk assessment, real-time monitoring, and automated claim processing. Remote sensing, predictive analytics, and mobile apps improve data collection, whereas AI and drone streamline damage assessment offer more accurate, transparent, and efficient insurance solutions.

Figure 4: Growth Trend of Crop Insurance in India

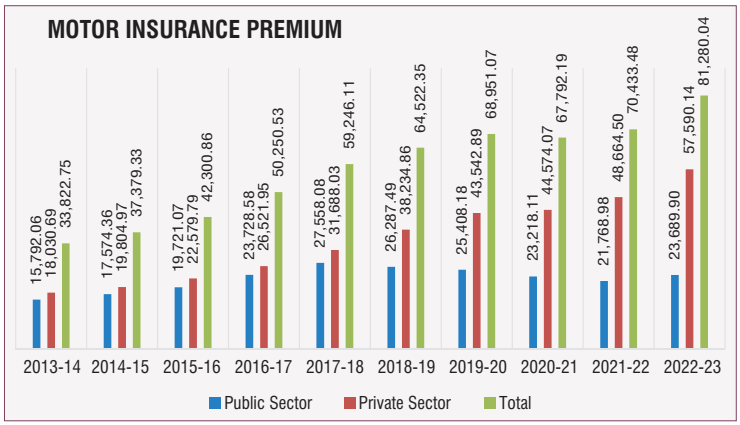


Source: Data draw from https://irdai.gov.in/handbook-of-indian-insurance

3.2.3 Motor Insurance

The Motor Vehicle Act of 1988 strictly prohibits driving any vehicle without motor insurance and is punishable. Hence, it is compulsory for every vehicle owner to buy motor insurance to cover financial damages and losses due to theft or accidents. Jain (2024) wrote on Forbes Adviser that motor insurance contributes approximately 38 percent of India's general insurance. She stated that the motorist used to buy motor insurance at the time of buying a new vehicle later on, ignoring the renewal of motor insurance. This is very high in rural and semi-urban areas compared with metro cities. Digital services help mitigate this behavior among customers by alarming customers in due course and helping them renew motor

Figure 5: Growth Trend of Medical Insurance in India



Source: Data draw from https://irdai.gov.in/handbook-of-indian-insurance

insurance. The automobile industry is highly technology-driven, contributing around 6 % of Indian GDP and 35 % of Indian Manufacturing GDP. Technology in motor insurance enhances efficiency and customer experience through telematics, AI, big data, and IoT. It enables personalized pricing, streamlined claims, fraud detection, digital policy management, risk assessment, cost reduction, and overall service quality. Digital insurance helps to more accurately assess the risk aspects of different vehicles and fosters insurance claims.

Property insurance, marine insurance, travel insurance, and other types of special insurance are also rapidly growing in India. It helps protect the financial loss of property (such as homes, cars, bikes, and other valuable goods) from accidents, fire, and theft. Overall, the Indian insurance sector has huge opportunities to be leveraged through digitalization and insurance literacy.

4. Major Challenges

4.1 Financial and Insurance Literacy

Generally, insurance is pursued as a risk-transfer tool, but it is pivotal for financial planning. Financial planning essentially serves the efficient management of money in terms of savings, investments, expenditures, and budgeting. For financial independence, one should have financial literacy, which is about knowledge of various financial services and the risk and return attributes of financial services. The myth of financial literacy is being rich people, it is not necessary being rich everyone should have it to lead a quality and standard livelihood.

Insurance literacy is also an essential for risk, income, and retirement planning. Generally, Insurance used for only protecting from untimely loss of life, income, and property risk. Currently, insurance is beyond the scope of risk management. Currently, insurers offer multiple insurance policies, including risk, saving, income, investment, and retirement. Therefore, it is vital to be aware of all insurance policies and their terms and conditions that help achieve financial liberty.

Most of the Indian population does not have financial or insurance literacy. Henceforth, to ensure quality livelihoods, one should have financial and insurance literacy. Financial and insurance firms must organize financial literacy programmes and workshops to empower Indian citizens.

4.2 Digital Literacy

In the digital realm, one must have digital literacy to avoid cybercrime and its vulnerabilities. The use of mobile phones by almost every household is a potential threat to security. Mobile phones, computers, and other digital infrastructure-supporting devices are sensitive to cyber-attack. The public, government, and firms are more concerned about cybercrime.

The National Crime Record Bureau (6th February 2024) published a total of 11,28,265 financial cybercrimes that amounted to **₹748863.9 Lacs. These statistics are only reported, but there are millions of unfilled individuals because of concerns about personal and social reputation. Therefore, digital literacy is vital to the digital realm.**

4.3 Regulatory Compliance

The IRDAI is a statutory body constituted under the Insurance Regulatory and Development Authority Act of, 1999 in April 2000. The IRDAI is established for regulating insurance businesses in India, including promotion of competition and protection of customers. The Insurance Act was revised in 2024 to promote transparency, efficiency, and customer-centric ecosystems. Rigorous regulatory compliance of the IRDAI is a troughing challenge to insurance businesses in India.

The move to digital platforms such as Bima Sugam brings with it potential advantages and difficulties for insurance companies. Although digitalization can enhance efficiency, cut costs, and enhance customer satisfaction, it also prompts concerns about the security of data, privacy, and the potential exclusion of segments with minimal access to digital technology. Insurers need to allocate resources to sturdy digital infrastructure and cybersecurity measures, while guaranteeing that digital solutions are fair and available to all segments of the population.

5. Conclusion

Digital insurance offers multifold benefits for insurers, customers,

and regulatory bodies. PwC reported that the 41percent of insurance customers prefer to buy at their convince, 47 percent of them choose online for information to buy, and 67 percent choose social media to compare policies. These statistics portray the significance of digital technologies in customers' buying behavior. The adoption of technology creates awareness and demands that customers buy online. Customers prefer digital insurance, which provides a hassle-free KYC process, making it easy to pay a premium, and the claim process.

Digital insurance assists insurers with real-time tracking of customer behavior via AI tools and in designing suitable insurance products for a wide variety of customers according to their risk appetite. Digital infrastructure helps to provide the required information about products, compare products to make efficient decisions for customers, detect fraud claims, and cut costs.

The government and IRDAI encourage the insurance of digital transformation. This helps regulators monitor insurer activities and practices to protect customers and encourage new-age InsureTech firms. TJ

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Empowering Consumers: Exploring the Impact of Digital Insurance on Access, Affordability, and Experience

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Abstract

Technological advancements have significantly transformed the insurance industry, emphasizing digitalization and consumer empowerment. This study focuses on consumers' perceptions and experiences with digital insurance in terms of access, affordability, and customer experience. A cross-sectional survey of 330 participants from Salem, Tamil Nadu, India, reveals a predominantly middle-aged, educated, and urban-centric population relying on digital channels for insurance information. The findings highlight consumers' priorities, with easy policy purchasing, real-time claim tracking, and 24-hour customer support ranked highest. Factor analysis identifies key dimensions: digital engagement and satisfaction, accessibility and convenience, integration with financial services, customer support and document access, and trust and security. The results underscore the importance of making digital insurance services accessible, affordable, and secure to enhance user experience and foster consumer confidence.

Keywords
Digital Insurance, Consumer Empowerment, Accessibility, Affordability, User Experience.

1. Introduction

Technological advancements have recently sparked a profound transformation in the insurance industry. This shift towards digitalization has upended traditional practices, fundamentally changing how consumers access, manage, and experience insurance products and services (Mustafina et al. 2019). Digital platforms have become integral as insurance companies embrace innovative technologies to streamline processes, enhance customer interactions, and empower consumers in unprecedented ways (Fritzsch, Scharner, and Weiß 2021; Pisoni 2021). This digital transformation encompasses various technological innovations, including online platforms, mobile apps, artificial intelligence, big data analytics, and blockchain, catalyzing a paradigm shift where consumers wield greater control and autonomy over their insurance needs (Pisoni 2021; ZareRavasan, Krčál, and Ashrafi 2021). At the core of this transformation is consumer empowerment through digital insurance solutions. In this context, empowerment refers to consumers' ability to make informed decisions, conveniently access insurance products and services, and engage with insurers on their terms.

Digital insurance solutions empower consumers by offering greater transparency, flexibility, and customization options, democratizing the insurance landscape and fostering a more consumer-centric industry. Leveraging digital platforms, consumers can now seamlessly compare insurance policies, obtain quotes, purchase coverage, and manage their accounts online or via

mobile devices, empowering them to proactively address their insurance needs (Chen et al. 2023). Moreover, digitalization has revolutionized the customer experience by enabling personalized communication (Pauch and Bera 2022), interactive tools, and real-time support, enhancing engagement, trust, loyalty, and satisfaction (Viswanathan, Singh, and Gupta 2020). Digital insurance solutions not only streamline administrative processes but also elevate the overall customer journey, making it more intuitive, efficient, and enjoyable (Viswanathan and Gupta 2020).

2. Theoretical Background and Literature Review

The insurance industry increasingly adopts technologies like AI (Pisoni and Díaz-Rodríguez 2023), big data analytics, blockchain (ZareRavasan et al. 2021), and IoT to automate processes (Sharma and Sood 2022), enhance decision-making, and improve risk assessment(Nicoletti 2021). AI-powered chatbots and virtual assistants provide instant support and personalized recommendations to policyholders through integrated customer service (Kumar et al. 2023). Digital transformation significantly improves the customer experience by offering user-friendly interfaces for purchasing policies and managing claims (Eckert and Osterrieder 2020). Innovative business models such as usage-based insurance (UBI) leverage data from connected devices to provide dynamic pricing based on individual behavior (Eckert, Neunsinger, and Osterrieder 2022). Peer-to-peer insurance and on-demand insurance offer more flexible and affordable coverage options, gaining traction in the market. However, digital transformation presents challenges regarding data privacy, cybersecurity, and regulatory compliance (Omnia Kandil Laurence Dessart and Bosma 2024). Insurers need to invest in digital infrastructure and workforce upskilling to fully realize the benefits of digitalization and maintain competitiveness (Venkatesan and Jacob 2019). Collaboration between traditional insurers and InsurTech startups accelerates innovation, resulting in products and services catering to changing consumer needs and acceptance (Cosma and Rimo 2024; Kim and Kim 2024).

Mobile applications are increasingly popular for accessing insurance services, enabling policy management, claims filing, and real-time assistance (Bodendorf and Schobert 2007). Digital tools enable insurers to offer personalized insurance products based on individual preferences and data-driven insights (Naylor 2017). This customization enhances consumer access to products that best suit their needs and circumstances (Venkatesan and Jacob 2019). Digitalization fosters transparency by providing comprehensive information about policies, coverage, and pricing, building trust, and encouraging active consumer engagement (Gebert-Persson et al. 2019). Insurers adopt dynamic pricing models based on individual risk profiles and behavior, leading to cost savings for low-risk consumers (Nayak, Bhattacharyya, and Krishnamoorthy 2019). Big data analytics improves risk assessment accuracy, allowing insurers to offer more precisely priced policies (Rana, Bansal, and Gupta 2022b). The rise of InsurTech startups and digitalization increases competition, resulting in more competitive pricing and cost reductions for consumers (Stoeckli, Dremel, and Uebernickel 2018). Digitalization lowers operational costs by using online distribution channels such as websites and mobile apps, which can result in potential premium reductions for consumers (Ishan 2023).

Digital platforms enable on-demand insurance, allowing consumers to purchase coverage for specific periods or events. AI-powered chatbots and virtual assistants further enhance customer service by offering 24/7 support and guiding consumers through various processes anytime, anywhere (Saxena and Kumar 2022). Additionally, AI and machine learning are used to solve business challenges, particularly in the fraud detection process (Hamdoun 2021; Rezvani, Parsaei, and Fathollahzadeh 2018; Tumminello et al. 2023). Insurers offer multiple communication channels, including email, chat, phone, and social media, improving convenience for consumers (Alt et al. 2021). The use of big data analytics and AI enables insurers to offer personalized policy recommendations, assisting consumers in finding the most suitable coverage options (Rana, Bansal, and Gupta 2022a). Digital insurance has significantly contributed to social development (Singh, Singh, and Gupta 2023), creating employment opportunities, and enhancing service speed in the

digital environment. It also promotes savings (Bongini, Cucinelli, and Soana 2023) and supports national development(Azamat et al. 2023). The literature review explores consumer access, affordability changes, and experiences with digital insurance services.

3. Study Area and Sampling

The study employed a cross-sectional survey design to gather data at a single point in time, focusing on consumers' perceptions and experiences with digital insurance in terms of access, affordability, and customer experience. A non-probability sampling method was used, selecting participants based on convenience, ensuring they were easily accessible and willing to participate. The targeted sample size was 330 participants from the Salem District of Tamil Nadu, India, ensuring a strong dataset for analysis. Participants were recruited from a variety of sources, including insurance company offices, insurance agents and brokers, and bank branches to ensure a diverse range of perspectives. Data collection was conducted through a structured questionnaire, designed to capture detailed insights into participants' interactions with digital insurance platforms. To analyze the collected data, statistical methods such as frequency measures, Garrett ranking, and factor analysis were used.

4. Results and Discussion

The demographic data of 330 individuals reveals a predominantly middle-aged population, with 43% aged 41-60 years and 30.3% aged 21-40 years. The sample is primarily male (59.7%) and mainly employed in government jobs (34.5%), followed by private employment (25.5%) and self-employment (22.7%). The income distribution shows most individuals earning between Rs. 25,001 and Rs. 75,000 (73%). Educationally, the population is well-qualified, with 33.6% holding a degree and 28.2% a postgraduate degree. A significant majority are married (77.3%). The geographic distribution is primarily urban (43.3%) and semi-urban (37.9%), with fewer individuals from rural areas (18.8%). This suggests a mature, educated, and urban-centric population with stable employment and moderate income levels.

Table 1: Sample profile

Filmography		Frequency (N=330)	%
Age	Below 20 years	11	3.3
	21-40 Years	80	30.3
	41-60 Years	142	43
	Above 60 Years	77	23.3
Gender	Male	197	59.7
	Female	133	40.3
Occupational Status	GOVT Employed	114	34.5
	Private Employed	84	25.5
	Self-employed	75	22.7
	Daily Wages	23	7
	Agriculture	34	10.3
Monthly Income	Below Rs. 25,000	56	17
	Rs. 25001- 50,000	110	33.3
	Rs. 50,001- 75,000	131	39.7
	Above Rs. 75,000	33	10
Educational Qualification	School level	57	17.3
	Degree	111	33.6
	P G Degree	93	28.2
	Professional	69	20.9
Marital Status	Married	255	77.3
	Unmarried	75	22.7
Location	Rural	62	18.8
	Urban	143	43.3
	Semi-Urban	125	37.9

Table 2: Insurance Details

Filmography		Frequency (N=330)	%
How to Know Digital Insurance	Newspaper & Television	36	10.9
	Social media	120	36.4
	Family and Friends	78	23.6
	Agents	36	10.9
	Banks	15	4.55
	From Insurance Company	45	13.6
Type of Insurance	Health Insurance	74	22.4
	Life Insurance	158	47.9
	Auto Insurance	41	12.4
	Home Insurance	31	9.4
	Travel Insurance	20	6.1
	Others	6	1.8

The data suggests that digital channels, particularly social media, play a significant role in how people access insurance information, with 36.4% of respondents citing social media as their source of information. Additionally, family and friends also have a considerable influence, with 23.6% of respondents relying on them for insurance-related information. When it comes to the type of insurance, life insurance appears to be the most prevalent, with 47.9% of respondents opting for it. Health insurance follows closely behind at 22.4%, indicating a significant focus on personal well-being and financial security.

Table 3: Insurance preference (Garret Ranking Analysis)

S.No	Reason	Total Score	Garrett Ranking	Ranking
1	Easy policy purchasing/Claim	16960	51.39	1
2	Easy online policy renewal	15725	47.65	4
3	Convenient for cost and time	16525	50.08	2
4	Personalized recommendations	11575	35.08	5
5	24/7 customer support	16315	49.44	3

The Garrett Ranking Analysis for insurance preferences indicates that the highest priority for consumers is “Easy policy purchasing/Claim,” with a top Garrett score of 51.39. This is followed closely by “Convenient for cost and time “ (50.08) and “24/7 customer support” (49.44), which are also highly valued. “Easy Online policy renewal” holds a moderate preference with a score of 47.65, while “Personalized recommendations” ranks lowest, scoring 35.08. These rankings highlight the significant emphasis consumers place on convenience and support in their insurance experience.

Table 4: KMO and Bartlett’s Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.819
Bartlett's Test of Sphericity	Approx. Chi-Square	4522.875
	df	406
	Sig.	.000

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) value of 0.819 indicates that the data is suitable for conducting factor analysis. Generally, a KMO value above 0.6 is considered acceptable, suggesting that the variables in the dataset are sufficiently related for factor analysis. Additionally, Bartlett’s Test of Sphericity is statistically significant ($p < 0.001$), with an approximate chi-square value of 4522.875 and 406 degrees of freedom. This result indicates that correlations between variables in the dataset are sufficiently large for factor analysis to be appropriate.

Table 5: Exploratory Factor Analysis

Construct	Items	Std Loading	% of Variance	Eigen Value
1. Digital Engagement & Satisfaction	Challenges in Digital Dispute Resolution	.834	19.154	4.980
	Clarity and Understanding of Digital Insurance Information	.818		
	Interest in Exploring New Digital Insurance Features	.817		
	Willingness to Recommend Digital Insurance Services	.804		
	Peer Recommendations for Online Life Insurance	.761		
	Confidence in Digital Process Accuracy	.690		
2. Digital Accessibility & Convenience	Independence and Convenience of Buying Life Insurance Online	.834	35.897	4.353
	Accessibility of Transaction History on the Website	.818		
	Completeness and Reliability of Insurance Product Information	.817		
	Ease of Downloading Premium Receipts	.804		
	Regular Notifications for Premium Payments via SMS or Email	.761		
	Confidence in Digital Process Accuracy	.690		
3. Integration & Financial Benefits	Integration Benefits with Other Financial Services	.789	49.432	3.519
	Cost-effectiveness of Digital Insurance Policies	.783		
	Ease of Digital Payment Facilities	.782		
	Improvement of Persistence through Digital Media	.744		
	Customized Recommendations for Individual Needs	.743		
	Encountered Technical Issues in Digital Insurance Services	.742		
4. Customer Support & Document Access	Effectiveness of Digital Media in Promoting New Insurance Products	.828	57.211	2.022
	Convenience in Accessing Insurance Policy Documents Online	.797		
	Limited Availability of Customer Support for Complex Issues	.786		
	Ease of Altering Details through Digital Channels	.749		
	Straightforward and User-Friendly Online Insurance Purchase Process	.749		
5. Trust & Security	Trust in Security Measures of Digital Insurance Platforms	.819	63.194	1.555
	Satisfaction with Quality of Customer Service via Digital Channels	.790		
	Satisfaction with Personalized Recommendations	.762		

The exploratory factor analysis unveiled five distinct dimensions that shape participants' perceptions of digital insurance services. Factor 1, termed "Digital Engagement & Satisfaction," emphasizes the significance of engagement and satisfaction in digital insurance interactions, explaining 19.15% of the variance. Factor 2, "Digital Accessibility & Convenience," underscores the pivotal role of accessibility and convenience, explaining 35.90% of the variance. Factor 3, labeled "Integration & Financial Benefits," highlights the perceived benefits of integrating digital insurance with other financial services, contributing to 49.43% of the variance. Factor 4, "Customer Support & Document Access," accentuates the importance of customer support availability and document accessibility, accounting for 57.21% of the variance. Finally, Factor 5, "Trust & Security," underscores the paramount

importance of trust and security measures, explaining 63.19% of the variance. These dimensions collectively provide insights into key aspects influencing accessibility, affordability, and experiences within the digital insurance landscape.

5. Discussion with Managerial Implications

The analysis offers key managerial insights for enhancing digital insurance services. The demographic profile reveals a middle-aged, educated, and urban-centric population, suggesting a focus on digital platforms and robust digital marketing strategies. Given the influence of social media and family on accessing insurance information, leveraging social networks for outreach is crucial. The preference for life and health insurance highlights the need for comprehensive coverage options addressing personal well-being and financial security, enhancing customer satisfaction and loyalty. Garrett Ranking Analysis underscores the importance of convenience and support, indicating that insurers should streamline processes like policy purchasing, claim tracking, and customer support for a seamless user experience. Factor analysis identifies accessibility, convenience, integration with financial services, customer support, and trust/security as key drivers of consumer perceptions. Insurers can enhance digital platforms by focusing on these areas, ensuring robust data encryption and clear privacy policies to build trust. In summary, demographic insights and consumer preferences should guide insurance companies in developing tailored products and services. By prioritizing accessibility, affordability, and user experience, insurers can stand out in a competitive market and foster long-term customer relationships.

7. Limitations and Direction for Future Research

The analysis reveals insights into demographics, insurance preferences, and factors influencing digital insurance services. However, limitations exist, notably the sample bias towards urban areas. Future studies should aim for a more diverse sample, including rural perspectives. Future research should explore how different demographics perceive and interact with digital insurance platforms. Additionally, while key dimensions like digital engagement and trust are identified, the role of affordability and its influence on consumer preferences remains unexplored. Further studies should investigate affordability across income brackets and potential barriers to digital insurance access, such as internet connectivity and digital literacy, to ensure inclusivity for all population segments. Investigating technological literacy's role in shaping digital insurance experiences is also crucial.

8. Conclusion

In conclusion, this research offers valuable insights into the preferences and perceptions of individuals regarding digital insurance services, particularly within a middle-aged, educated, and urban-focused demographic. The emphasis on accessibility and convenience, highlighted by features like Easy policy purchasing, Real-time claim tracking, and 24/7 customer support, underscores the evolving consumer expectations in a digital environment. The prominence of social media as an information source signifies the changing landscape of consumer behavior, necessitating adaptation in communication strategies by insurers. Factor analysis reveals critical dimensions influencing consumer perceptions, including engagement, accessibility, integration with financial services, customer support, and trustworthiness. Moving forward, enhancing accessibility, affordability, and overall user experience in digital insurance platforms will be crucial for insurers to effectively meet the evolving needs and expectations of consumers in an increasingly digitalized landscape. The study concludes that digital insurance platforms significantly enhance consumer access, affordability, and overall experience, making insurance services more user-friendly and widely accessible. Consumers prioritize easy policy purchasing, real-time claim tracking, and 24/7 customer support, reflecting the demand for convenience and reliability. The research identifies key dimensions such as digital engagement, integration with financial services, and trust and security, which are crucial for consumer satisfaction. For the insurance industry, these insights emphasize the need to focus on improving digital interfaces, ensuring affordability, and maintaining robust security measures to foster consumer confidence and drive industry growth.

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Redesigning Insurance Value Chain, Penetrating Digitization - Are Insurance Companies Becoming Customer-centric?

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Abstract

In today's modern world, digitization has emerged as a pivotal force, driven by rapid advancements in information technology and the pervasive use of internet-based data exchange. This technological shift is permeating nearly every facet of human life; ranging from education, healthcare, and sports to hospitality, administration, trade, commerce, and industry. Digital transformation is reshaping these sectors by enhancing efficiency, improving accessibility, and offering timelier, more accurate, and user-friendly services. The insurance sector is not an exception to this. Digitization is increasingly influencing the insurance industry, bringing in profound changes to the industry's value chain system. By integrating modern digital tools and processes (digitalization), insurers are streamlining operations, enhancing customer experiences, and making services more personalized and responsive; harnessing the power of technology, the insurance sector is thus gradually shifting towards a value chain that prioritizes speed, precision, and accessibility, transforming how insurance products are both delivered and consumed in the digital age, and thereby strategically positioning insurers to better meet the evolving needs of the modern customers. This paper, therefore, attempts to explore the growing impact of digitization on the insurance value chain in general, and Indian insurance sector, particularly, highlighting how it is transforming its various functions i.e. from policy issuance to claim management and customer interactions.

Keywords

Digitization; Digitalization; Value Chain; Product-centric Traditional Insurance Value Chain; Licensed Individual Insurance Agent and Corporate Agent; Customer-centric Digitalized Insurance Value Chain; Bima Trinity; InsurTech Startups.

Introduction

Digitization, through the conversion of analog data into digital forms, now serves as a powerful catalyst for businesses, enabling them to optimize operations and derive deeper insights into customers' behavior. This paradigm shift from a product-centric approach to a customer-centric business value chain, empowers businesses to anticipate consumer needs with greater precision and deliver customized solutions with rapidity. Central to this digital transformation are strategies such as enhancing customer engagement via intuitive digital platforms, enriching products with advanced digital features for real-time monitoring and optimized functionality, and integrating cutting-edge technologies like Artificial Intelligence (AI) and automation into the core business processes. These initiatives equip enterprises to remain agile, adaptive, and competitive in today's swiftly evolving

market economy. *Digitalization*, on the other hand, goes beyond mere data conversion, signifying a comprehensive transformation of the entire business value chain. It streamlines operations by embedding advanced technologies across processes, enhancing not only internal efficiencies but also elevating customer interactions and service delivery. In financial service-oriented industries such as banking and insurance, digitalization is redefining their operational landscape by lowering the transaction costs, enabling data-driven decision-making processes through advanced analytics, and catalyzing innovations.

Thus, in today's fiercely competitive digital landscape, businesses are increasingly embracing customer-centric value chain models, placing customer satisfaction and retention at the forefront of their strategies. This paradigm shift from product-centricity to a customer-focused approach is evident across industries, including the insurance sector. The traditional model of insurance value chain, where insurers prioritized product development and distribution through insurance agents, with minimal emphasis on post-sale engagement, is now a relic of the past. Driven by rapid technological advancements and evolving consumer expectations, the insurance industry's value chain has already undergone a profound transformation, globally. Digitization has catalyzed a shift in focus, from merely offering an array of products to fostering meaningful engagement at every touchpoint of the insurance journey. Insurers now prioritize understanding customers' individual needs, lifestyles, and preferences, enabling them to design personalized policies, tailored to specific customer requirements. This customer-centric approach not only enhances business relevance but also strengthens long-term relationships, making customer retention a more strategic priority than mere one-off transactions. Digital tools have streamlined every aspect of the customer journey i.e. from browsing and comparing products online to purchasing policies and managing claims seamlessly. This transition offers substantial benefits, including lower transaction costs and significant time savings for consumers. Where policyholders once relied heavily on insurance agents for information and investment decisions, they now have direct access to explore, compare, and purchase policies effortlessly through company websites and other online sources. This evolution reflects the industry's shift towards greater accessibility, transparency, and customer empowerment in the digital age. Furthermore, post-sale services have become a pivotal component of the insurance value chain. Managing policies whether through claims processing, renewals, or cancellations, has increasingly shifted towards automation, enabling insurers to deliver seamless, efficient, and frictionless experiences. This continuous engagement not only enhances customer satisfaction but also cultivates greater loyalty over time. A noteworthy advancement in this evolving paradigm is the strategic use of behavioral insights and data analytics. By analyzing customers' psychological profiles and behavioral patterns, insurers can more accurately anticipate their needs and preferences. This proactive approach empowers insurers to offer tailored solutions and personalized advice, elevating the customer experience beyond the mere product provisioning. A deeper understanding of consumer behavior allows insurers to deliver differentiated services, fostering enduring relationships that go beyond transactional interactions. In essence, the modern insurance industry is now defined by a strong focus on customer-centricity, digital transformation, and hyper-personalization. Insurers are shifting away from conventional product-driven models towards dynamic, customer-focused strategies that prioritize holistic experiences and long-term relationship management. The success of contemporary insurers increasingly depends on their ability to adapt to these shifting dynamics and consistently exceed customer expectations in an ever-evolving marketplace.

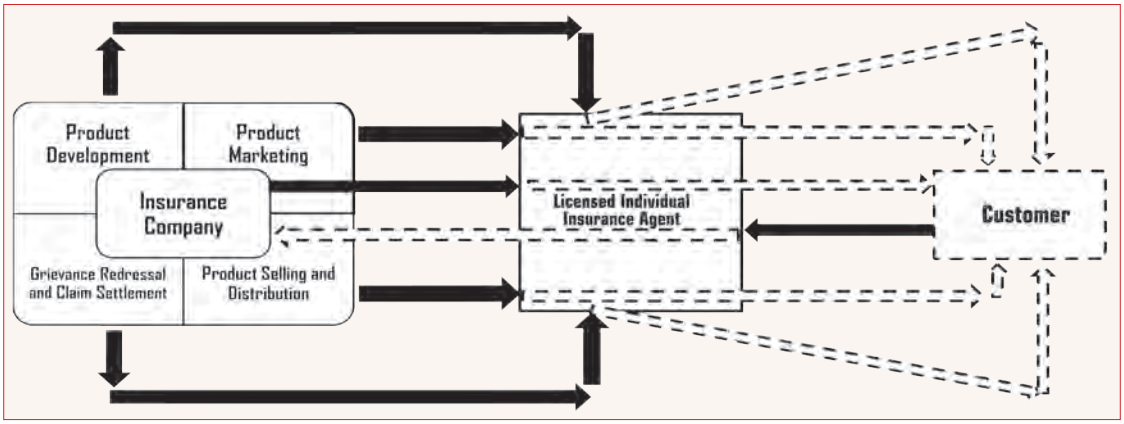
The remainder of this paper is arranged accordingly as *Section 2* outlines the traditional insurance value chain, supplemented by a *flowchart* to facilitate a clearer understanding, and *Section 3* delves into the transformation of the conventional value chain into the digitalized one, examining how emerging business synergies are reshaping the industry in the current digital era. Thereafter, *Section 4* offers a comprehensive overview of the recent advancements regarding digital penetration within the Indian insurance sector, and finally, *Section 5* presents the concluding observations, encapsulating the key insights drawn from the study.

Traditional Insurance Value Chain - A Product Oriented Approach

Prior to digital penetration, the insurance industry operated within a product-centric value chain, prioritizing the creation and distribution of insurance products rather than tailoring such offerings to meet the specific needs of customers. The process typically commenced with insurers formulating products based on their internal strategic objectives or market forecasts, often in isolation from direct consumer insights or individualized preferences. Customer needs were rarely consulted during the product development process, resulting in offerings, shaped more by institutional priorities than by market demand. Once the products were finalized, insurance companies deployed licensed individual agents as critical intermediaries to bridge the gap between the insurer and potential customers. These agents assumed a multifaceted role essential to the commercial success of the insurance products. They used to start their journey with rigorous training programmes provided by the insurer, designed to familiarize them with the intricacies of the policy, including its features, benefits, conditions, and exclusions. This education empowered agents to navigate the complexities of the product and effectively communicate its value proposition to its prospective clients. Following their preparation, agents engaged in direct, face-to-face interactions with customers, adopting a consultative approach to convey the relevance of the policy offerings. Their mission extended beyond mere salesmanship to encompass customer education, helping individuals comprehend how the policies aligned with their financial goals, risk tolerance, and investment aspirations. The process was deeply reliant on the agent's ability to foster trust and cultivate a sense of reliability, as the perceived effectiveness of the product was often inseparable from the credibility of the agent. Ultimately, the success of the insurance company hinged upon the agent's proficiency in converting prospective customers into loyal policyholders. This interpersonal, trust-driven approach defined the pre-digital insurance landscape, where the agent's skill in persuasion and relationship-building served as the linchpin of the insurer's performance. Throughout the life cycle of an insurance policy, individual agents thus continued to play an important role as the primary touchpoint for customers, acting as the frontline interface between the insurer and the policyholder. In the event of any challenges such as claims, renewals, or policy modifications, customers predominantly sought assistance from their agents. This structure ensured that communication flowed sequentially from the insurer to the agent and subsequently from the agent to the customer, allowing the insurance company to maintain engagements with its clientele. Similarly, when customer feedback or grievances needed to be escalated, the reverse process would unfold, agents would relay these concerns back to the insurer, functioning as conduits for both issue resolution and relationship management. This intermediary role positioned individual agents as the indispensable component of the traditional insurance value chain, as their responsibilities extended far beyond sales to encompass post-sale services, ongoing support, and customer care. These Agents not only facilitated the bidirectional flow of information but also played a crucial role in fostering customer satisfaction and retention. However, this model inherently constrained the insurer's direct access to the customer insights and preferences, given the reliance on agents to mediate most interactions. As a result, service delivery and feedback loops were often slower and less efficient, limiting the company's ability to respond dynamically to the evolving customer needs. The traditional value chain, along with its communication flow, is illustrated below in the form of an information *flowchart*.

Exhibit 1 above delineates the traditional insurance value chain, comprising of three integral components viz. the insurance company, the licensed individual insurance agent, and the customer. In this context, it is essential to mention that in the above picturized traditional insurance value chain flow chart, licensed individual insurance agents play a crucial role within the insurance intermediary network, proving and setting themselves apart from other insurance intermediaries such as licensed corporate agents (including brokers and banks), surveyors, and third-party administrators. Their unique position

Exhibit 1: Traditional Product-oriented Insurance Value Chain



underscores their vital contributions to the whole insurance process. Unlike the other intermediaries, licensed individual agents uniquely bridge the insurer and the customer, representing the insurer directly to facilitate marketing and sale of insurance products to the customers. Through this direct role, they play a critical part in securing business for the insurer. Conversely, corporate agents, surveyors, and third-party administrators function differently within this network. Corporate agents primarily represent their clients, helping them in arranging suitable insurance contracts with their preferred insurers. Surveyors and third-party administrators, on the other hand, are not involved in marketing or sales; instead, they serve other roles, such as claims assessment or support services. This distinction underscores why only licensed individual insurance agents are recognized here, as the key insurance intermediary, facilitating the flow of information between the insurers and the customers, relying on their specialized trainings and product knowledge obtained directly from the insurer. Consequently, their presence in the above insurance value chain remains essential, irrespective of the involvement of the other intermediaries, and hence, the value chain remains incomplete without their participation. Further, within this framework, a predominant focus is placed on the insurance products provided by the insurer, often overshadowing the significance of the customers. The traditional value chain is visually represented through distinct *Lines* that illustrate the flow of information here. *'Solid Black Lines'* signify direct exchanges of information among the insurer, agent, and customer, while *'Dotted Black Lines'* indicate incidental communication *(information exchange/flow between the insurer and the customer through the insurance agents)* pathways between the parties involved.

A notable aspect of this value chain is the substantial reliance of customers on the individual insurance agents for various interactions. Whether engaging in new product developments, marketing, sales, or customer support services such as grievance resolution and claims settlement, customers must navigate these processes through their insurance agents. These agents function as the primary conduit for the flow of information and services, ensuring that the insurer's offerings are effectively communicated to customers while simultaneously relaying customer needs back to the insurer. This intermediation by these insurance agents constitutes the backbone of the traditional insurance value chain. Thus, in this *flowchart*, the role of the licensed individual agents transcends mere transactions, rather it is vital for sustaining the flow of information and preserving the operational integrity of the entire insurance value chain.

The subsequent *Section* accordingly explores how digitization has transformed the traditional insurance value chain, reshaping it to become more customer-focused and responsive. It examines the ways in which digital technologies have been integrated into various stages of the

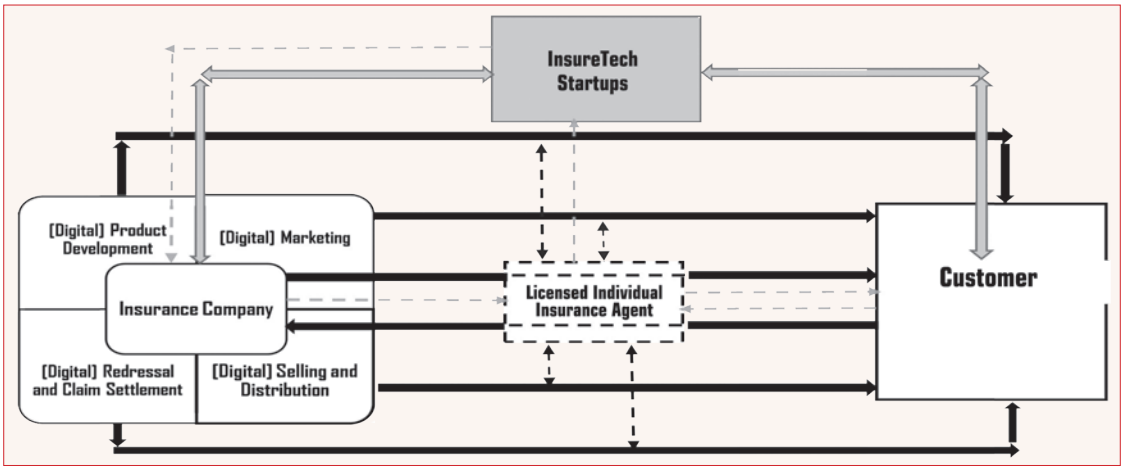
insurance process i.e. ranging from product development and marketing to policy issuance, claims handling, and customer service.

Digitalized Insurance Value Chain - A Customer Oriented Approach

With digital involvement, the insurance industry's focus has dramatically shifted from being product-centric to becoming customer-centric. In this new value chain, customers take the principal or major stage, and insurance products are developed based on a deep understanding of their needs and preferences. Insurance companies now invest heavily in market research and conduct detailed customer surveys to gather real-time insights into what customers want, enabling them to design and tailor products that align more closely with customers' expectations. Rather than relying solely on feedback from the insurance agents, companies now access customers' shareable data from direct digital interactions with the customers through their websites/ Chatbot / WhatsApp etc., allowing them for a more responsive and customer-driven product development process. The entire insurance value chain has thus been transformed through digitization. Products are now directly offered through digital platforms, such as websites and mobile apps, eliminating the need for too much reliance on the individual insurance agents. Customers can now easily access all the information they need about various policies, starting from their features to terms and conditions, without waiting for an insurance agent to explain the details. Websites and mobile-apps provide transparent, comprehensive information, making the insurance purchase process far more efficient and user-friendly. Tasks that were once cumbersome, such as paying premiums, collecting receipts, submitting Know Your Customer (KYC) documentation or lodging a claim, are now can be completed with just a few clicks. The automation of these processes not only saves customers' valuable time but also reduces the chances for human error. The entire process is now more seamless, accurate, and convenient for customers, and who can manage their insurance needs anytime, anywhere, without the intermediation by an insurance agent, unlike previously. This whole new value creation process is now depicted through the following flow chart in *Exhibit 2*:

In today's digital landscape, as illustrated in the *flowchart* above, the role of the licensed individual insurance agents has become increasingly peripheral (indicated by the '*Dotted Black Lines'*). A growing number of customers, particularly younger, tech-savvy individuals, prefer to navigate digital platforms independently. Consequently, these insurance agents now only assist those who may find the digital process difficult, including elderly customers and individuals with limited technological proficiency or a disinterest in the digitalized process.

Exhibit 2: Digitalized Customer-oriented Insurance Value Chain



They continue to provide personalized support to this particular type of demographic clients by helping them in understanding policies, guiding them through the purchasing journey, and facilitating claims and other services. However, their role has been gradually narrowing down over time, becoming increasingly limited to that of mere advisors. The growing inclination of customers to establish direct connections with the insurers through digitalized mechanisms for meaningful information exchange is illustrated by the *'Solid Black Lines'* in the above *flowchart*. This trend underscores a gradual shift, as digital adoption accelerates, with traditionally individual agent-dependent customer segments increasingly engaging directly with insurers via digital channels. As consumers become more proficient with technology and their confidence in digital ecosystems strengthens, their reliance on the individual insurance agents is expected to reduce further, signaling a profound transformation in customer-insurer dynamics. Notably, with the ongoing digital transformation within the insurance industry, customers are increasingly embracing the convenience and speed of self-service digital platforms. Besides, in this evolving landscape, a new player has already emerged in the name of *InsurTech startups*, represented in the *flowchart* by *'Grey'* colour. Presently, these technologically advanced firms, equipped with specialized expertise in the digital systems, offer their services and knowledge, only on demand. They currently operate on the periphery of the insurance value chain *(indicated by 'Solid Grey Lines)*, delivering targeted, technology-driven solutions to the insurers and the customers independently, for a fee. Although these startups are yet to be integrated fully into the core insurance ecosystem, they play a vital role as enablers, driving efficiency and optimizing processes across the industry. Presently, InsurTech startups are frequently found to provide expertise to the corporate agents (such as insurance brokers and banks), e-commerce platforms, travel agencies, and other entities, as well by embedding insurance products into their sales channels for a seamless customer experience *(The Economic Times Report, Dated January 19th, 2024)*. Looking ahead, these startups hold vast potential to evolve into essential partners within the digitalized insurance ecosystem, and the challenging reality is that as the InsurTech startups rise and digitization accelerates within the insurance value chain, while establishing more direct connections between the insurers and the customers, the role and relevance of the licensed individual insurance agents are increasingly at risk. Therefore, to integrate InsurTech startups into the core insurance framework while preserving the value and importance of these licensed individual insurance agents and other intermediaries, *strategic collaboration* among the insurer, the intermediary, and the InsurTech firm *(depicted by 'Dotted Grey Lines')* could be highly beneficial. Such partnerships or collaborations would enable the existing licensed individual insurance agents to adapt and remain vital in the digitalized landscape, while also providing insurers and customers with advanced, efficient, and technology-driven services. In this capacity, InsurTechs could bridge the gap between the insurers and the customers, driving end-to-end digitization across the insurance value chain. Their role could encompass mapping customer preferences, helping design innovative insurance products, and streamlining the buying and selling processes in a more agile, customer-centered framework. Additionally, they could extend support to post-sale services such as facilitating online premium payments, issuing digital receipts, handling customer complaints, and managing claims efficiently within the new value chain. With their increasing involvement, InsurTech startups could significantly deliver a digital-first experience that benefits all the parties involved in the digitalized value chain. This shift signals a transformative era for the insurance industry, where technology-driven innovation reshapes the development, marketing, sales, and servicing of insurance products, and thereby creating a more direct, responsive, and efficient relationship between the insurers and their customers.

This *Section* has thus delved deeper into the new aspect, highlighting the pivotal role of technology in transforming traditional insurance value chain into customer-centric one, ultimately ensuring that insurance providers remain competitive in today's increasingly digital environment.

Indian Insurance Industry and Digitization - Some Recent Developments

India is on a transformative path to becoming a global leader in the world insurance sector, intending to own the world's 6th largest insurance market by *2034*, according to a *Swiss Re Report-1/2023, entitled as "India's insurance market: poised for rapid growth"*. At the forefront of this shift is the Insurance Regulatory and Development Authority of India (IRDAI), which plays a proactive, visionary and regulatory role in driving the sector forward. With an ambitious goal of achieving *'Insurance for All by 2047'*, the IRDAI has introduced several bold reforms, promoted innovations, and aligned industry practices with emerging digital trends. Consequently, the Indian insurance sector is leveraging advanced technologies such as Artificial Intelligence (AI), Block chain, Big Data analytics, the Internet of Things (IoT), and Robotic Process Automation (RPA) to revolutionize its operations. These innovations enable insurers to develop personalized, customer-focused products while delivering seamless digital experiences through online platforms. As more consumers prefer online channels to purchase policies, insurers are adopting digital-underwriting, automated claims processing, and self-service portals etc. to enhance their operational efficiencies. Moreover, a wave of InsurTech startups is driving disruptive changes across insurance policy distribution, underwriting, claims management, and customer engagement, recently. According to the '*India InsurTech Landscape and Trends Report - 2023'*, prepared jointly by the *India InsurTech Association* and the *Boston Consulting Group,* startups like InsuranceDekho, Turtlemint, Zopper, WeRize, Gromo, and Pazcare are at the forefront presently, using digital platforms and technologies to address key challenges in the Indian insurance ecosystem. For instance, *InsuranceDekho* provides an integrated platform where consumers can compare and choose from a range of insurance policies, offering a personalized purchasing experience. *Turtlemint* not only provides comparison tools but has also developed a network of digital advisors to guide customers through complex insurance decisions. *Zopper* provides end-to-end solutions that empower insurers to distribute their products effortlessly and efficiently. *WeRize* takes a targeted approach, focusing on segment-specific insurance distribution through its specialized platform, while *Gromo*, a financial marketplace, empowers distributors to offer various products, including insurance, credit cards, and savings accounts, enhancing financial accessibility at the grassroots level. Meanwhile, *Pazcare* assists companies by simplifying the creation, implementation, and management of employee insurance and benefits programmes, ensuring a smooth experience for both employers and employees. (*India InsurTech Landscape and Trends Report, September-2023, India InsurTech Association + Boston Consulting Group*). Together, these innovations are reshaping the Indian insurance landscape, aligning it with the needs of modern customers while fostering financial inclusion and operational excellence, as well. These startups are not only transforming the Indian insurance landscape but also actively attempting to be partnering with the traditional participants, combining technology-driven solutions with legacy models to improve operational efficiency and customer service, staying within the value chain. Through collaborative efforts, insurers and InsurTech firms are expected to be co-developing innovative solutions to streamline operations and enhance consumer experiences in near future. Further, India's progress towards a comprehensive insurance coverage has been largely propelled by strategic initiatives from both the IRDAI and the government. These initiatives fall into three main areas namely, administrative reforms, regulatory reforms, and advancements in innovation and digitization. Each of these aspects is further discussed below.

1. Administrative Reforms - The Bima Trinity

The *'Bima Trinity'*, comprising of the *'Bima Vahak'*, *'Bima Sugam'*, and *'Bima Vistaar'* concepts forms a cornerstone of India's insurance strategy, particularly in extending insurance to the underserved and the rural populations.

Bima Vahak: This initiative focuses on improving insurance outreach in the rural and less-served areas

by using local representatives known as *'Vahaks'* with a particular emphasis on employing women. These *'Vahaks'* are to be trained to act as trusted advisors within their communities, bridging the gap between the insurance providers and the rural populations. By using familiar, local faces, the initiative would help to break down the cultural and trust barriers that often limit insurance adoption. The *'Vahaks'* would educate individuals about the various insurance products, assist them in selecting suitable policies, and help them in navigating the claim-settlement process. This localized approach aims not only at raising awareness but also ensuring that a growing number of people, particularly in the rural areas, can access essential financial protection.

Bima Sugam: Planned to be launched in *2025*, *'Bima Sugam'* is a digital marketplace designed to simplify the insurance ecosystem in India. It will provide a unified platform where users can compare, purchase, and manage insurance policies from different providers in one place. By integrating insurers, distributors, and regulators, *'Bima Sugam'* aims at offering greater transparency and convenience. It will streamline processes by reducing paperwork, accelerating policy issuance, and simplifying claims management. This initiative is especially targeted at tech-savvy consumers, including younger and digitally inclined populations, making it easier for them to engage with insurance services. By providing a one-stop platform for all insurance needs, *'Bima Sugam'* will foster trust, ease the customer journey, and promote greater insurance penetration across India.

Bima Vistaar: Expected to be operational by the first quarter of *2025*, *'Bima Vistaar'* focuses on providing affordable, comprehensive insurance products tailored to the needs of low-income households and rural populations. This initiative seeks to bundle different types of insurance such as health, life, and property insurance, into a single policy, and thereby offering holistic protection against various risks. '*Bima Vistaar'* simplifies the insurance process by offering products with low premiums and streamlined procedures, making them accessible to the economically vulnerable sections of society. By addressing the specific needs of the rural communities, the initiative promotes wider insurance adoption and provides a robust safety net for those most in need of financial protection.

Thus, collectively, the *'Bima Trinity'* represents a coordinated and strategic approach towards expanding the insurance coverage. By enhancing outreach, making insurance products easier to understand, and improving affordability, these initiatives intend to significantly increase insurance penetration across the country, particularly in the underserved regions.

2. *Regulatory Reforms - Driving Innovation and Global Alignment*

In recent years, IRDAI has introduced several regulatory changes in the Indian insurance sector to promote innovation, modernization, and alignment with the global standards. These reforms are aimed at enhancing the sector's competitiveness and credibility in the global arena.

Regulatory Sandbox Regulations, 2019: This Regulation became effective from *July 26th, 2019* vide Notification No. *IRDA/Reg/11/162/2019* (subsequently, modified through the *Insurance Regulatory and Development Authority of India (Regulatory Sandbox) (Amendment) Regulations, 2022*) to encourage innovation in the Indian insurance sector by providing a controlled environment where insurance companies can test new products, services, and technologies. The sandbox approach allows companies to experiment with innovative ideas, whether it is a new insurance product, a technological solution, or a novel customer engagement model. By doing so, the Regulatory Sandbox promotes faster adaptation to changing consumer needs and technological advancements, helping to modernize the Indian insurance sector.

Digital Personal Data Protection (DPDP) Act, 2023: This landmark legislation focuses on safeguarding consumers' digital privacy and data security, particularly important in the growing digital insurance market. As more people adopt online platforms to purchase and manage insurance policies, protecting their sensitive information becomes crucial. The DPDP Act ensures that insurance

companies and digital platforms adhere to the strict data protection standards, building trust among the consumers. By addressing privacy concerns, this Act encourages more individuals to engage with digital insurance products, further driving the digitization of the sector.

Exposure Draft on Insurance Fraud Monitoring Framework, 2024: This upcoming regulatory framework is aimed at curbing insurance fraud, a significant issue that undermines consumer trust and impacts the financial stability of insurers. The framework proposes stricter fraud monitoring mechanisms and reporting standards, helping insurers to detect and prevent fraudulent activities more effectively. By establishing a more transparent and secure system, this regulation ensures that consumers are better protected, and the integrity of the insurance ecosystem is maintained.

Adoption of Ind AS-117 Accounting Standard: In its notification *G.S.R. 492 (E),* dated *August 12th, 2024,* the Ministry of Corporate Affairs (MCA), Government of India, initially proposed the insurers to adopt *Ind AS-117* to align India's insurance contract accounting and reporting practices with the International Financial and Reporting Standard (IFRS-17). However, after considering the challenges within the current framework, the MCA has since revised its stance. The updated notification, *G.S.R. 602(E),* dated *September 24th, 2024*, permits insurers to continue using the existing *Ind AS-104* in preparing financial statements for consolidation by their parent, investor, or venture partner until the Insurance Regulatory and Development Authority formally implements *Ind AS-117*. Had *Ind AS-117* been adopted, it would have established a more standardized framework for recognizing, measuring, and reporting insurance contracts, enhancing both transparency and comparability in insurers' annual reports. This is particularly relevant as India's insurance market becomes increasingly integrated with the global financial system. The adoption of this standard is therefore, expected to strengthen the global competitiveness of Indian insurers and help attract additional foreign investment.

Proposed New Foreign Direct Investment (FDI) Limit: According to a recent report by the *Times of India on August 19th, 2024*, the government is considering raising of the FDI cap in the insurance sector from *74% to 100%.* If this proposal is approved, it could significantly reshape the industry. The increase in foreign investment would bring in more capital, advance infrastructure modernization, and encourage the adoption of cutting-edge technologies more swiftly. This policy change is also expected to intensify competition, drive innovation, and enhance the sector's efficiency. By aligning more closely with the global market, this initiative aims to stimulate growth and attract more international insurers to the Indian market, fostering increased competition, innovation, and consumer choice.

3. Innovation and Digitization - Transforming the Indian Insurance Landscape

To drive innovation and digitization, both the government and the IRDAI have implemented several key initiatives that focus on financial inclusion through digitized insurance schemes, especially for the marginalized communities.

Digilocker in the Insurance Sector:

Launched in 2021, digilocker is transforming India's insurance sector by aiming to lower costs, simplify document delivery, and improve service efficiency. This initiative enhances the claims process and strengthens customer engagement, leading to an overall improved customer experience. Insurance companies are adopting the digilocker system to provide secure digital storage solutions and are actively educating policyholders on how to easily manage their documents using this digital platform.

Digitization of Insurance Schemes:

In recent years, the government has introduced and modernized several insurance schemes, leveraging digital technology to make these benefits more accessible both online and offline. For example, the central schemes such as the Rashtriya Swasthya Bima Yojana, Pradhan Mantri Jeevan Jyoti Bima Yojana, Pradhan Mantri Suraksha Bima Yojana, and Atal Pension Yojana offer access through both online and offline platforms. Others, including the Pravasi Bhartiya Bima Yojana, Pradhan Mantri Fasal Bima Yojana,

Niramaya Health Insurance Scheme, and Agnipath Yojana, are available exclusively online. In addition to the central government initiatives, various state governments in India also operate their own insurance schemes, many of which have embraced digital transformation in line with advancements across the sector. These state-run programmes, now digitized, aim to increase accessibility, improve efficiency, and provide secure, streamlined services for policyholders. By leveraging digital platforms, these schemes make it easier for citizens to enroll, manage claims, and access benefits without the traditional hurdles. This shift aligns with the broader push towards a digitally integrated insurance ecosystem, ensuring that citizens, regardless of location, have equitable access to financial protection and support. By digitizing these schemes, the government has not only streamlined access for marginalized communities but also closed the gap between insured and uninsured groups. This push toward digitization is a step forward in promoting financial inclusion and ensuring that protective insurance benefits reach those who need them most.

Bima Manthan - the Insurance Hackathon: Since *2022*, the IRDAI has been hosting an annual insurance hackathon called *'Bima Manthan'*. This event brings together innovators, tech experts, and insurance professionals to develop technology-driven solutions for the sector. The hackathon focuses on identifying and implementing ideas that can simplify the insurance process, enhance customer experiences, and expand accessibility. By fostering a culture of innovation, *'Bima Manthan'* plays a key role in ensuring that insurance services evolve to meet the needs of the modern consumers, particularly through the use of technology.

India's insurance sector is thus undergoing a transformation driven by the administrative reforms, regulatory changes, and technological innovation/upgradations. With forward-looking regulations, supportive policies, and a growing emphasis on digitization, efficiency, and customer experience, the sector is poised for significant growth and long-term sustainability. These reforms and innovations are not only making insurance more accessible and affordable but also aligning India's insurance industry with the global standards, ensuring its future competitiveness.

Conclusions

This paper has thus successfully explored the transformation of the insurance industry value chain, with a particular focus on India's response to these changes. It highlights the industry's shift from a product-centric model to a customer-focused approach, which is essential for remaining competitive in today's fast-evolving and technology-driven business landscape.

Moreover, the study highlights the profound impact of digitization and the rise of InsurTech startups in reshaping the insurance landscape, demonstrating the crucial importance of customer-centric strategies in this ongoing evolution. Insurers today are actively embracing digital transformation, staying agile, and adapting to the new wave of InsurTech entrants. While upholding their core mission of providing financial security against uncertainties, insurers are now prioritizing accessibility and convenience. Digitization plays a central role in this endeavor, dismantling conventional barriers, optimizing processes, and expanding the reach of insurance services to a more extensive and diverse audience. Through the integration of digital tools, such as mobile applications, artificial intelligence, and online platforms, insurers are not only enhancing the customer experience but also refining service delivery to meet the evolving expectations of the modern customer. Traditional agent-led models are increasingly giving way to digital platforms that empower customers to research, compare, purchase, and manage their policies independently and in real-time

As the insurance industry transitions to a digital-first, customer-centric model, strategic collaboration and optimized positioning among the value chain participants have become essential for driving growth and ensuring sustainable success within the sector. Thus, it can be concluded that by integrating self-service capabilities and adopting advanced digital strategies, insurers are now poised to enhance customer satisfaction, elevate the overall experience, and secure lasting value to effectively navigate any challenges in the future.

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Enhancing Financial Reporting in the Insurance sector: Implications of AI technologies

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Abstract

The insurance industry in India has experienced a significant digital shift driven by advancements in technology, shifts in consumer preferences, and regulatory efforts. This transformation had a noticeable uptick in financial fraud cases, emphasizing the heightened importance of strong financial reporting practices. To overcome these challenges, this paper examines the impact of advanced AI (Artificial Intelligence) technologies such as Machine Learning, Predictive Analytics, Natural Language Processing (NLP), Robotic Process Automation (RPA), and Blockchain in transforming financial reporting practices in the insurance sector. By leveraging these innovative tools, insurers can enhance efficiency, accuracy, and transparency in reporting processes, leading to improved decision-making, risk management, and stakeholder trust.

Keywords

Insurance, Financial Reporting, Insurtech, Technology and AI.

Introduction

Insurance Sector Overview

The development of the insurance sector in India has been characterized by notable milestones and transitions throughout its history. Insurance in India traces its origins to the late 18th century, when British traders founded the first insurance company in Calcutta (now Kolkata) in 1818, with a primary focus on covering marine risks. The Post-Independence Era, the Insurance Act of 1938 laid the foundation for the regulation of the insurance sector in India. It established the framework for licensing, regulation, and oversight of insurance companies. The inception of the Life Insurance Corporation of India (LIC) in 1956, as a government-owned monopoly, marked a significant development aimed at providing life insurance services to the nation. However, the landscape of general insurance remained predominantly in private hands until the nationalization of general insurance companies in 1972. This initiative resulted in the establishment of four public sector general insurance companies as subsidiaries: National Insurance Co.

Ltd., The New India Assurance Co. Ltd., The Oriental Insurance Co. Ltd., and United India Insurance Co. Ltd. Throughout this period, the insurance sector functioned within a regulatory framework characterized by stringent government control and limited competition.

The commencement of the liberalization and privatization era in 1991 represented a seminal moment for the Indian economy, heralding extensive reforms that transformed various sectors, including insurance. These economic adjustments catalyzed significant evolutions within the insurance realm. Notably, in 1999, the establishment of the Insurance Regulatory and Development Authority of India (IRDAI) marked a pivotal milestone, as it emerged as an autonomous regulatory entity mandated to supervise and regulate the insurance industry.

The 1999 IRDA Act enabled private participation in the sector, leading to competition and innovation with state-owned entities. Multiple private insurers introduced diverse products, fostering market growth. Regulatory reforms focused on consumer protection, market efficiency, and foreign investment also boosted sector development. These reforms over the years have led to rising market size. Fig 1 depicts the growing market size of the sector from 2020 to 2023.

The insurance sector, particularly in India, has undergone a notable digital transformation characterized by technological advancements, evolving consumer preferences, and regulatory efforts. Insurtech startups have revolutionized traditional insurance models through tech-driven innovation, streamlining operations, and improving customer experiences. Digital platforms and mobile apps have become crucial channels for insurance distribution, sales, and customer service amid this growing technological trend. Insurers are, nowadays integrating technologies to enhance underwriting accuracy, streamline claims processing, bolster risk management, and boost customer engagement.

While some industries such as banking, healthcare, manufacturing and software development have been investing in artificial intelligence for years (Bughin et al., 2017), Studies note that the insurance sector is lagging behind worldwide (Eling et al., 2022). Hence the present research aims to study the potential application of various AI based technologies for financial reporting in the insurance sector. The revolutionary role of artificial intelligence (AI) in the insurance industry has received due attention, with most researches focussing on its applications in customer service, underwriting (Arguello, 2020; Kharlamova et al., 2024), and claims administration (Arguello, 2020; Neale et al., 2020). However, a significant but underexplored topic is the influence of AI on financial reporting, which is essential for transparency, regulatory compliance, and strategic decision-making in the insurance business.

Financial reporting is an essential tool for stakeholders, providing insights into an organization's financial health, risk exposure, and operational efficiency. This article investigates how AI technologies, such as machine learning (ML), predictive analytics, robotic process automation (RPA), and blockchain, are transforming financial reporting operations in the insurance sector.

Rising Financial Risk in the Insurance Sector- A major concern

Financial risk in the sector have been a matter of concern, with numerous instances reported over the years at different levels in the sector. It is an increasingly common threat that is becoming more difficult to address. Given its scale, diversity, product complexity, and breadth of distribution channels, the insurance business has become especially sensitive to financial crime risk. ***Policyholder fraud*** is a significant concern in the insurance industry, impacting both financial stability and the accuracy of financial reporting. For insurers, detecting and addressing fraud is critical to maintaining profitability, as fraudulent claims can inflate premium costs for legitimate policyholders. Financial reporting in the insurance sector is particularly affected, as insurers must account for the potential impact of fraud in their loss reserves and claims estimates. The accuracy of these estimates directly influences the reported financial health of the company, making it essential for firms to implement robust fraud detection systems. Such measures

may include AI-driven analysis of claims patterns, detailed audits, and the use of blockchain to ensure transparency and authenticity of claim data. Without effective fraud detection, insurers may face significant risk at various levels namely, ***Agent fraud*** in the sector can have serious implications for financial reporting. Fraudulent activities, such as misrepresentation, excessive policy turnover (churning), and the sale of fake policies, can distort an insurer's financial statements. Additionally, these fraudulent activities can lead to increased regulatory scrutiny and penalties, further complicating the financial reporting process. ***Insurer fraud*** is a significant concern within the insurance industry, affecting both insurers and policyholders. Insurance firms may engage in fraudulent activities such as diverting premiums to unauthorized accounts, falsifying financial statements, or manipulating claims to reduce payouts. These fraudulent practices can involve both the underwriting and claims stages, where companies may inflate or understate liabilities to create favorable financial statements. Additionally, insurers may use deceptive tactics to reject valid claims, such as providing false information about policy terms or misapplying exclusions. ***Identity theft*** is a significant concern in the insurance sector, as fraudsters may use stolen identities to either obtain insurance policies or file false claims. This type of fraud not only results in financial losses for insurance companies, but it can also lead to increased premiums and trust issues with customers. The financial repercussions can be substantial, with insurance companies facing higher operational costs related to investigating and managing fraudulent claims. Furthermore, inaccurate or fraudulent claims can distort the accuracy of financial reporting, affecting reserves, claims liabilities, and overall risk assessment.

Hence, the rising risk at various levels focus on the increased importance of financial reporting over time. Financial reporting aids in risk prevention by incorporating AI- based technologies to analyze vast datasets for detecting suspicious patterns. Moreover, it ensures compliance with regulatory frameworks, reducing legal risks and enhancing operational credibility. Transparent reporting bolsters investor confidence and protects policyholders, reinforcing trust in the industry.

The growing importance of Financial Reporting

The growing importance of financial reporting in the insurance sector is driven by increasing regulatory scrutiny, the need for greater transparency, and the complex nature of risk management within the industry. As insurers face a broader range of financial challenges, such as fluctuating market conditions, evolving regulatory requirements, and rising claims costs, precise financial reporting has become crucial in ensuring financial stability and maintaining stakeholder trust. Through detailed financial statements and disclosures these companies provide essential insights into their solvency, profitability, and overall risk exposure. This transparency not only satisfies regulatory standards but also fosters confidence among investors, policyholders, and regulators, supporting informed decision-making and long-term sustainability. In this context, the role of AI-based technologies is becoming more prominent, helping to streamline financial reporting processes and reduce the risk of fraud and errors.

1. ***Transparency and Accountability*****:** Financial reporting offers insight into insurance firm's financial status, activities, and overall performance, allowing stakeholders like policyholders, investors, regulators, and the public to evaluate its financial well-being, stability, and profitability. Through the disclosure of precise and dependable financial data, insurance companies exhibit responsibility to their stakeholders.
2. ***Investor Confidence*****:** Investors depend on financial reports to analyze the financial sustainability and potential for growth of insurance firms prior to making investment choices. Financial statements like the balance sheet, income statement, and cash flow statement aid investors in evaluating aspects such as profitability, liquidity, asset

quality, and risk exposure. Clear and comprehensive financial reporting boosts investor trust and attracts capital investment.

3. ***Regulatory Compliance***: Insurance firms must adhere to regulatory mandates that dictate the preparation and disclosure of financial reports in line with accounting standards and regulatory directives. Entities like (IRDAI) enforce the submission of regular financial statements and reports by insurance companies to guarantee conformity with regulatory norms. Adhering to regulatory reporting requirements helps insurance companies avoid penalties, fines, and regulatory scrutiny.

4. ***Risk Management***: Financial reporting has a critical role in risk management for insurance companies. By analyzing financial data and performance metrics, insurance companies can identify risks, their potential impact, and implement strategies to mitigate them. Financial reports provide inputs such as underwriting risks, investment risks, liquidity risks, and operational risks, enabling insurance companies to make informed risk management decisions.

5. ***Strategic Decision-Making***: Financial reports serve as valuable tools for management in evaluating the company's financial performance, setting strategic objectives, and making informed business decisions. Management uses financial information to assess profitability, allocate resources, optimize capital deployment, and develop business strategies. Financial reporting helps insurance companies level their strategic goals with financial objectives and monitor progress towards achieving them.

6. ***Stakeholder Communication***: Financial reporting facilitates communication and transparency between insurance companies and their stakeholders, including policyholders, regulators, employees, suppliers, and the public. By providing timely and relevant financial information, insurance companies build trust, manage expectations, and maintain positive relationships with stakeholders. Effective stakeholder communication enhances reputation, brand value, and market credibility.

Financial reporting is thus essential for insurance companies to provide transparency, accountability, and confidence to stakeholders, comply with regulatory requirements, manage risks, make strategic decisions, and communicate effectively with stakeholders. By preparing accurate and informative financial reports, insurance companies demonstrate their financial strength, resilience and stability in the competitive insurance market. Therefore, financial reporting in the insurance sector is not just a legal obligation but a strategic tool that supports regulatory compliance, fraud prevention, stakeholder confidence, and overall business stability. Accurate, timely, and transparent reports help mitigate risks and enhance the credibility of the sector thereby increasing investors' confidence.

Recent technological trends for financial reporting in the Insurance sector

The industry's financial reporting has seen a substantial transformation due to recent technological improvements, which have increased efficiency, accuracy, and transparency. To enhance decision-making and streamline operations, insurance companies are increasingly using technologies such as blockchain, robotic process automation (RPA), machine learning (ML), and artificial intelligence (AI). As a result, financial reporting processes are now more efficient, dependable, and compliant with industry standards, providing insurers with a competitive edge in a rapidly evolving market (Zarifis et al., 2019). The following highlights the AI tools utilized in the industry for financial reporting.

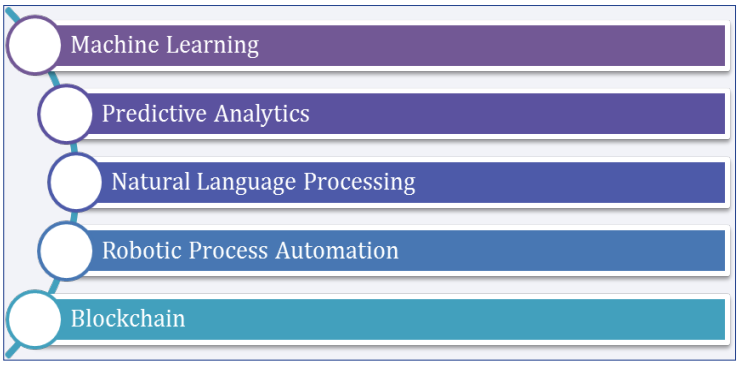

Figure 1: AI-based tools used in the insurance sector for financial reporting

1. **Machine Learning (ML):** Analyzing past financial data to identify trends and anomalies, ML algorithms help insurance companies make precise projections. They also assist with underwriting and risk assessment by analyzing large datasets to calculate premiums and the likelihood of claims. By automating tasks like document classification and retrieval, machine learning models enhance financial reporting. Example: Leading American insurance provider Allstate uses ML models for a number of tasks, such as customer segmentation, fraud detection, and claims analysis. These models make it easier to aggregate data in the context of financial reporting, which improves the precision of procedures for revenue recognition and loss estimation. AXA, another international insurance and asset management firm based in France, uses ML algorithms to analyze risk and guarantee regulatory compliances. By automating the financial report preparation process, these models enhance data accuracy and guarantee compliance with international accounting standards. Furthermore, another American insurance business, The Hartford, uses predictive algorithms to improve financial reporting and integrates ML into its risk analysis and underwriting procedures. This integration is in line with liability estimates and helps guarantee the accuracy of risk reserves.

2. **Predictive Analytics (PA):** The insurance industry is making use of various AI applications to solve business problems, but perhaps the most versatile is PA (Mejia, 2019). The ability to aggregate data from disparate sources for business intelligence allows business leaders in insurance to inform important decisions across departments. Max Kuhn's definition of predictive modeling: "the process of developing a mathematical tool or model that generates an accurate prediction." By projecting important financial parameters including income, costs, and profitability, PA models enable insurance firms to predict future performance and make data-driven choices. PA can strengthen the integrity of financial reporting by identifying possible fraud or abnormalities in financial data by identifying odd trends or behaviors. By utilizing historical data and predictive insights, it also optimizes budgeting and resource allocation, which raises the effectiveness of financial reporting procedures. Example: Aviva Canada, another well-known insurance provider, has implemented PA into their vehicle claims process using the "Vehicle Remedy Tool." This solution provides adjusters with rapid repair estimations, reducing customer cycle times and increasing overall customer satisfaction. Furthermore, it simplifies financial reporting by shortening claim settlement times and increasing cost monitoring efficiency. Another firm, Nirvana Insurance, which specializes in customized insurance solutions for fleet operators, utilizes PA to predict hazards and optimize pricing strategies, increasing the accuracy of revenue estimates and financial reporting.

3. **Natural Language Processing (NLP):** NLP algorithms possess

the capability to extract relevant information from unstructured data reservoirs such as financial reports, news articles, and regulatory documents. This capability yields significant insights for financial analysis and reporting, customer service, and risk management in the insurance industry (Sri, 2021). These algorithms can extract useful information from unstructured data sources such as financial reports, news stories, and regulatory papers. Furthermore, NLP automates regulatory compliance by rigorously scrutinizing regulatory texts to identify relevant requirements for financial reporting. Furthermore, NLP-powered chatbots may assist internal stakeholders in reading financial information, answering questions, and providing insights via a natural language interface. Example: Shift Technology, an AI-focused business, has created AI and NLP-based technology to help insurers identify fraudulent claims before they are paid out. FORCE program uses a variety of AI technologies, including NLP, to estimate the likelihood of fraud for each claim. The use of NLP increased case acceptance rates by 25%, increased the accuracy of risk assessments, and yielded insightful information that helped the insurance enhance its policies.

4. **Robotic Process Automation (RPA):** RPA bots can reduce human effort and errors by automating repetitive financial reporting processes like data entry, validation, and report generation. From data collection to report delivery, it can integrate with current applications and systems to optimize financial reporting procedures from start to finish. Routine reconciliation operations can be completed by RPA bots, guaranteeing the precision efficiency (Ashraf, 2024) and coherence of financial data across various systems and reports thereby providing valuable insights to decision-makers and users (Smeets et al., 2021). Example: Prominent insurance firms like Liberty Mutual and Allianz use RPA to compile data from several sources, evaluate profitability, and produce standardized financial reports. By automating repetitive processes like data validation and reconciliation, RPA bots improve the efficiency of month-end and quarter-end reporting. Additionally, by cross-checking financial data and creating audit trails, they can assist in ensuring adherence to Solvency II rules or International Financial Reporting Standards (IFRS). Additionally, IBM RPA was used by Lojacorr, the biggest independent insurance broking network in Brazil, to quickly and easily automate additional business and IT operations at scale.

5. **Blockchain**: Blockchain technology has the potential to completely transform the insurance industry by improving financial reporting's auditability, security, and transparency. Its usefulness also includes creating transparent and unchangeable ledgers to record financial transactions, policyholder information, and claims data. Blockchain technology has the potential to improve the dependability and legitimacy of financial reporting in the sector by strengthening data integrity and building trust. Example: Leveraging blockchain technology, Lemonade Insurance, a tech-driven business that prioritizes digital-first client experiences, implements parametric insurance models that are based on quantifiable events or conditions. These models use predetermined criteria to automatically pay claims. For example, smart contracts are used to initiate payments based on verified rainfall data in the case of weather-related claims for farmers. This method reduces the requirement for manual processing while increasing accuracy. In order to offer flight delay insurance, another business, AXA, has incorporated blockchain technology into its Fizzy platform. Customers no longer need to initiate claims because the blockchain uses smart contracts to automatically activate compensation payments when airline delay occurs.

Challenges Faced

Despite the obvious benefits of using AI technologies into financial reporting in the insurance industry, there are a few restrictions that must be addressed. One key difficulty is the large initial expenditure necessary to build and maintain AI systems, which may be prohibitively expensive for smaller insurers. Furthermore, the intricacy of modern technologies frequently needs specific skills and knowledge, creating a potential skill gap in the workforce. The reliance on data-driven models poses privacy and security concerns because AI systems receive and analyze sensitive financial and personal information. Furthermore, the ethical implications of AI decision-making, particularly in terms of transparency and accountability, remain essential. Regulatory frameworks are still evolving, and insurers may have difficulties in complying with uneven or complex laws governing AI and data use. Finally, algorithmic bias in AI systems may result in erroneous risk assessments and financial reporting, weakening the usefulness of these technologies if not adequately controlled and regulated. These constraints underline the importance of rigorous planning, regulation, and ongoing monitoring to ensure the appropriate and effective use of AI in the insurance industry.

Conclusion

Significant growth and innovation in India's insurance industry is indicated by rising profits, heightened awareness of financial security, and legislative reforms. Innovative AI technologies have the potential to revolutionize financial reporting in the insurance sector. The integration of cutting-edge technologies such as ML, PA, NLP, RPA, and Blockchain holds a strong promise for transforming financial reporting within the insurance sector. In an increasingly data-driven world, insurers may be able to maintain a competitive edge, build trust with stakeholders, and increase operational efficiency. Government regulations, corporate engagement, and institutional support are necessary to realize the full potential of AI technology to enhance financial reporting in the insurance sector. Governments must establish legal frameworks that safeguard data security and privacy while simultaneously encouraging innovation. Policies that promote standardization in the application of emerging technologies and investment in advancements in AI will lower risks and foster more industry cooperation. Additionally, businesses need to actively participate in embracing and incorporating new technology into their organizational framework. Businesses can enhance their financial reporting systems and support the stability and expansion of the insurance sector as a whole by investing in partnerships, training, and resources. To ensure that long-term technological advancements are applied effectively and ethically governments, regulatory bodies, and businesses must collaborate. In addition to providing new opportunities for financial reporting innovation and growth, adopting technology-driven solutions is essential for navigating the complexities of the insurance sector today's times.

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The Evolving Role of Insurance Branches in Digitalization - A Comprehensive Review

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Abstract

The insurance industry has historically relied on physical branches as primary touchpoints for policy management, fostering trust through in-person interactions. However, with India's insurance penetration below the global average and digital transformation reshaping the sector, insurance branches now face evolving roles. Branches are shifting from transactional centers to advisory hubs, emphasizing personalized support and community engagement. Digitalization enables self-service and cost efficiencies, but branches remain vital for complex cases, customer education, and crisis management. In this backdrop, the present paper explores the changing functions of insurance branches amidst digital trends, highlighting their continued importance in delivering customer-centric, trust-based services.

Keywords

Insurance Branches, Digitalization, Customer Trust, Advisory Services, Insurance Penetration.

Introduction

The insurance industry has long served as a critical safety net, providing financial security for individuals and businesses against unexpected losses and risks. Traditionally, the sector relied heavily on physical branches to facilitate customer interactions and manage operations. These branches served as the primary touchpoints for policy sales, renewals, claims processing, and customer support, establishing face-to-face relationships that built trust and loyalty. Insurance penetration and density are crucial metrics for measuring the status of insurance sector. Penetration reflects the ratio of premiums to GDP, while density indicates premiums per capita. India's insurance penetration decreased from 4.2% in 2022 to 4% in 2023, below the global average of 6.8%. The density slightly increased from $91 to $92 over the same period. India ranked 25th in penetration and 27th in density globally. Life insurance penetration was 3% of GDP in 2023, exceeding the global average of 2.8%. Life insurance density grew marginally from $69 to $70. However, non-life insurance penetration remained stagnant at 1%, far below the global average of 4%, with density unchanged at $2022. These figures emphasize India's lag behind global standards in insurance market development.

In the pre-digital era, physical branches were integral in connecting insurers with clients, as policy issuance, premium collection, and claims settlements required in-person interactions. This setup allowed customers to receive personal guidance, helping them navigate complex insurance products and coverage options tailored to their

needs. For insurers, branches acted as regional hubs for market expansion and localized services. However, the high dependency on physical branches also led to certain limitations. Operating costs for maintaining a branch network were substantial, and geographical constraints restricted customer access, especially in rural or underserved areas. This reliance on manual processes often slowed service delivery and increased the risk of human error, making it difficult for insurers to scale and efficiently manage growing portfolios.

In the light of the above, as digitalization began reshaping industries, the insurance sector recognized the potential to enhance efficiency, reduce operational costs, and reach a broader audience. Today, the role of physical branches has been redefined, evolving from transaction centers to advisory and support hubs as digital channels take on primary transactional functions.

Digitalization in the Insurance Sector – Motives

Digitalization in the insurance sector is driven by multiple motives aimed at enhancing efficiency, meeting customer expectations, and staying competitive. Some of the primary motives are presented below.

- Modern customers expect convenient, fast, and seamless service. Digital tools, such as mobile apps, online portals, and AI-driven chatbots, allow insurers to provide 24/7 service, quick responses, and personalized interactions.
- Self-service options enable customers to manage their policies, file claims, and access support independently, improving overall satisfaction.
- Automation of repetitive tasks (e.g., claims processing, policy issuance) reduces human involvement, decreases turnaround times, and minimizes operational costs.
- Data analytics helps optimize resource allocation, identify inefficiencies, and streamline processes, allowing insurers to lower expenses and operate more profitably.
- Digitalization enables insurers to expand their reach into previously underserved areas, such as rural or remote locations, through online and mobile platforms.
- It fosters inclusivity by allowing individuals with limited physical branch access to engage with insurers and purchase policies digitally.
- Advanced analytics and AI allow insurers to assess risks more accurately and predict potential issues. Digital tools can detect suspicious patterns in claims, minimizing fraudulent activities and helping insurers avoid significant financial losses.
- With access to real-time data, insurers can make more informed underwriting decisions and manage risk portfolios more effectively.
- The insurance industry faces stringent regulations that require efficient data handling and reporting. Digital solutions help insurers manage regulatory compliance by automating reporting and tracking changes in regulations.
- The ability to analyze real-time data on customer behavior and preferences fosters product innovation, such as usage-based insurance models (e.g., pay-as-you-drive) that meet specific customer demands.
- As InsurTech startups introduce innovative digital solutions, traditional insurers are motivated to adopt similar technologies to remain competitive.

Digitalization Trends in Insurance – An Overview

Digitalization trends in the insurance industry are transforming how insurers operate, engage with customers, and manage risks. Some of the key trends are identified and followed by an analysis of the same.

1) **Artificial Intelligence (AI) and Machine Learning (ML):** AI and ML are being used to automate tasks like underwriting, claims processing, and customer service. AI-driven chatbots and virtual assistants offer instant support, answer queries, and guide users through policy options, enhancing the customer

experience. Predictive analytics powered by ML helps insurers better assess risk profiles, anticipate claims, and make more informed underwriting decisions.

2) **Data Analytics and Big Data:** Insurers are leveraging vast amounts of data from various sources, such as social media, IoT devices, and customer interactions, to gain deeper insights into customer behaviors and preferences. Data analytics enables more personalized policy offerings, targeted marketing, and risk modeling, ultimately improving profitability and customer satisfaction.

3) **Internet of Things (IoT) and Wearable Technology:** IoT devices, like telematics in cars and wearable fitness trackers, allow insurers to gather real-time data on policyholders' behaviors and lifestyles. Usage-based insurance models, such as pay-as-you-drive or health-focused policies, can be designed based on this data, leading to more accurate pricing and rewarding low-risk behavior with lower premiums.

4) **Blockchain and Smart Contracts:** Blockchain technology offers transparent, tamper-resistant records that improve trust and efficiency in policy issuance, claims processing, and data sharing. Smart contracts, self-executing contracts stored on the blockchain, automatically trigger claim payouts when predefined conditions are met, reducing processing time and fraud.

5) **Digital Claims Processing and Automation:** Digital platforms streamline the claims process by allowing customers to file claims online, upload documents, and receive instant feedback. Automation minimizes the time and paperwork required for claims settlement. Claims automation, often supported by AI, assesses claims and can even approve lower-value claims in real-time, offering faster resolutions.

6) **Customer-Centric Mobile Apps and Portals:** Many insurers now offer mobile apps and online portals for policy management, claims tracking, and customer service. These self-service tools empower customers, providing them with flexibility and control over their insurance needs. These platforms also integrate reminders, payment alerts, and personalized policy recommendations to improve engagement and loyalty.

7) **InsurTech Partnerships and Ecosystems:** Collaborations between traditional insurers and InsurTech startups bring new technologies, products, and services to the market. Ecosystem models are emerging where insurers partner with health, automotive, and financial services companies to offer bundled services that cater to a broader range of customer needs.

8) **Cloud Computing for Scalability and Flexibility:** Cloud-based solutions enable insurers to scale resources as needed and reduce infrastructure costs. Cloud computing also enhances data accessibility and storage efficiency, providing real-time access to critical information. Insurers benefit from faster deployment of applications, improved collaboration, and enhanced cybersecurity features within cloud environments.

9) **Augmented Reality (AR) and Virtual Reality (VR) for Customer Education:** AR and VR tools are being tested for educating customers on complex insurance products or simulating various risk scenarios. In branches, AR and VR can make consultations more interactive, helping clients visualize coverage options and understand policies in an immersive way.

10) **Robotic Process Automation (RPA):** RPA is being used for repetitive tasks such as data entry, policy renewals, and regulatory compliance, allowing human employees to focus on complex, higher-value activities. By improving accuracy and efficiency, RPA supports cost savings and speeds up service delivery, especially in high-volume transactions.

Transformation of the Insurance Branch's Role – How?

The role of insurance branches is transforming significantly as digitalization redefines the industry. This transformation has shifted branches from traditional transaction centers into advisory hubs, focused on providing personalized support and enhancing customer experiences. However, how the role of insurance branches is evolving and they are identified below (Figure – 1) followed by a brief analysis of the same.

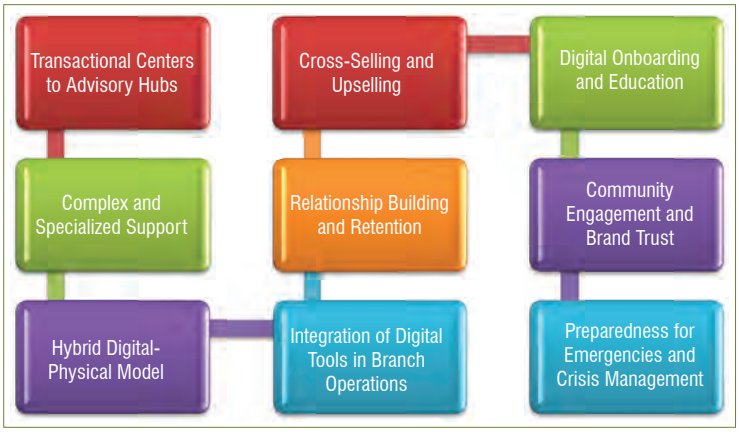

Figure - 1: Transformation of the Insurance Branch's Role – How?

1) **From Transactional Centers to Advisory Hubs:** Previously, branches primarily processed transactions like policy issuance, renewals, and payments. Today, as digital platforms handle these tasks, branches focus on customer education and personalized advisory services. Insurance agents in branches can now dedicate more time to complex policy consultations, claims guidance, and helping customers navigate comprehensive insurance products, creating a higher-value experience.

2) **Emphasis on Complex and Specialized Support:** Branches are increasingly handling complex inquiries, claims disputes, and bespoke insurance solutions that require in-depth human expertise. Digital channels might lack the nuanced understanding needed for these cases, making branch staff essential in addressing unique customer needs. For high-net-worth or commercial clients with specialized insurance requirements, branches serve as critical touchpoints, providing tailored consultations and support.

3) **Hybrid Digital-Physical Model:** Insurance branches are adopting a hybrid model that combines digital tools with in-person services. For example, customers may begin their journey online and then visit a branch to finalize a complex policy or discuss tailored solutions. Digital tools in branches, like self-service kiosks, online appointment scheduling, and virtual consultations, enhance convenience, creating a seamless experience across digital and physical touchpoints.

4) **Integration of Digital Tools in Branch Operations:** Branches are integrating digital tools such as Customer Relationship Management (CRM) systems, data analytics, and AI to personalize customer interactions and improve service efficiency. CRM systems allow branch staff to access comprehensive customer data, making it easier to offer personalized advice, recommend relevant products, and anticipate customer needs.

5) **Focus on Relationship Building and Retention:** Digital channels allow customers to perform routine tasks on their own, but branches offer the human element essential for building trust and long-term relationships. Branch representatives focus on providing empathy, understanding, and assurance qualities that foster customer loyalty. Insurance is often a long-term commitment, and branches play a key role in maintaining customer relationships by offering periodic policy reviews, in-person consultations, and tailored service.

6) **Role in Cross-Selling and Upselling:** Branch staff are well-positioned to cross-sell or upsell products based on clients' unique needs and life stages. For instance, if a customer is discussing auto insurance, branch advisors may also suggest complementary products like personal liability or health coverage. With access to customer data and insights from digital tools, branches can offer personalized product bundles and promotions, increasing customer value and enhancing revenue opportunities.

7) **Support for Digital Onboarding and Education:** Branches play an essential role in onboarding clients who are less digitally savvy, helping them understand and navigate digital platforms. Staff may educate customers on using mobile apps or online portals to manage their policies, file claims, or make payments, ensuring all customer segments can benefit from digital services.

8) **Promoting Community Engagement and Brand Trust:** Physical branches allow insurers to have a local presence, fostering brand trust within communities. They can host seminars, workshops, or client appreciation events to strengthen their local reputation and educate clients on financial wellness and risk management. By remaining active within communities, branches help insurers establish long-term connections and credibility, which are especially valuable in regions where face-to-face interactions are preferred.

9) **Preparedness for Emergencies and Crisis Management:** Branches remain vital during crises, such as natural disasters or public emergencies, when customers need immediate, in-person support to handle urgent claims. Local branches can provide reassurance and hands-on assistance, reinforcing trust and supporting customers when digital channels may fall short of meeting the emotional or urgent needs of the situation.

Insurance Branches in the Digital Shift – A Few Challenges

As insurance branches direct the digital shift, they face several challenges that impact their traditional operating models, employee roles, and customer interactions. However, some of the key challenges.

1) **Skill Gaps and Employee Training:** Many branch employees are accustomed to traditional, paper-based processes and may lack the technical skills required to operate new digital tools effectively. Training staff to use digital platforms, data analytics, and customer relationship management (CRM) systems is essential but can be costly and time-consuming. Resistance to change among employees also poses a challenge to adoption.

2) **Balancing Digital and Human Interaction:** As routine transactions shift to digital channels, branches need to find the right balance between digital efficiency and the human touch that customers expect, especially for complex or sensitive matters. Ensuring that branches provide meaningful, value-added interactions rather than simply duplicating digital services can be challenging and requires a redefined approach to in-person support.

3) **Maintaining Customer Relationships and Loyalty:** Digital interactions often reduce the frequency of in-person visits, making it harder for branch staff to build and maintain personal relationships with customers. With more touchpoints occurring online, branches must develop strategies to stay relevant and continue fostering loyalty through personalized support and high-quality, in-person service.

4) **Managing Operational Costs Amid Reduced Traffic:** Reduced branch traffic due to digital alternatives may lead insurers to reassess the costs of maintaining physical branches. However, closures can negatively impact customer trust, especially among clients who prefer face-to-face interaction. Balancing the costs of digital investments with the expenses of physical

infrastructure while maintaining accessibility for customers is a significant financial challenge.

5) **Cybersecurity and Data Privacy Concerns:** Digitalizing branch operations introduces cybersecurity risks as branches handle increasing amounts of customer data through digital systems. Ensuring that all staff are trained in cybersecurity best practices is crucial to preventing data breaches. Compliance with data privacy regulations requires stringent security protocols and monitoring, placing additional demands on branch operations.

6) **Adapting Legacy Systems to Modern Digital Platforms:** Many insurance branches still rely on legacy IT systems that may not integrate smoothly with new digital solutions, creating inefficiencies and limiting their ability to leverage digital tools fully. Upgrading legacy infrastructure can be costly and time-consuming, and any downtime or technical issues during migration can disrupt customer service and branch operations.

7) **Addressing Diverse Customer Preferences and Needs:** Not all customers are comfortable with digital interactions; some may prefer traditional, in-person services, while others expect seamless digital experiences. Meeting the varied preferences of customers across different demographics requires branches to adopt a flexible approach, offering both digital and in-person services without compromising on quality.

8) **Shifting Employee Roles and Redefining Branch Purpose:** As digital tools handle more routine tasks, the role of branch employees is evolving towards advisory, consultative, and complex support functions. This requires a shift in employee skill sets and mindset, which can be challenging to implement quickly. Redefining the branch's role as a customer-centric advisory hub rather than a transactional center demands a cultural change within the organization.

9) **Achieving Consistency in Omni-Channel Experience:** Customers increasingly expect a consistent experience across digital and physical channels. Integrating these channels to provide seamless support and information requires coordination and investment in digital infrastructure and CRM systems. Ensuring that customers receive the same quality of service and information across channels remains a complex challenge, especially when digital and physical interactions occur concurrently.

10) **Ensuring Continued Relevance of Branches:** With the rapid advancement of digital alternatives, the relevance of physical branches is questioned, particularly as customers become accustomed to managing their policies independently. Insurance providers must continually reassess the purpose of their branches, adapting them to serve as high-value customer experience centers that justify their operational costs and meet evolving customer expectations.

Evolving Insurance Branches – A Digital Future

As the insurance sector embraces digitalization, the future of insurance branches is poised to evolve significantly. Instead of becoming obsolete, branches are likely to transform to meet new customer expectations and leverage digital innovations. Thus, a look at the emerging trends and potential roles for insurance branches in a digital world.

1) **Hybrid Branch Models:** Branches will likely adopt hybrid models that blend digital and physical services. While digital channels manage routine transactions, branches will focus on providing personalized, high-touch services for complex cases, claims assistance, and advisory roles. This model allows customers to begin their journey online and transition seamlessly to in-person interactions when needed, creating an integrated, omni-channel experience.

2) **Advisory and Consultation Hubs:** As digitalization reduces the need for basic transaction handling, branches can shift toward becoming advisory

hubs. Customers visiting branches will increasingly seek guidance on complex policies, financial planning, and risk management. Branch staff will become more specialized, focusing on consultative roles that provide customized policy recommendations and in-depth support for specific insurance needs.

3) **Enhanced Customer Experience with Digital Tools:** Future branches will use digital tools to improve in-branch experiences. For example, interactive kiosks, virtual reality simulations, and AI-driven consultations can help customers visualize coverage options, making complex policies easier to understand. Mobile check-ins, appointment scheduling, and virtual consultation options will offer a more seamless, efficient branch experience, blending the convenience of digital with the trust of face-to-face interaction.

4) **Data-Driven Personalization:** Digital transformation enables branches to leverage data analytics to understand individual customer profiles, preferences, and needs. Branch staff will have access to insights that enable them to provide more relevant recommendations and personalized offers, enhancing customer satisfaction and loyalty. This data-driven approach also facilitates proactive customer engagement, as branches can reach out to clients with tailored policy updates or risk management advice.

5) **Community Engagement and Brand Building:** Physical branches will continue to serve as local hubs for community engagement and brand building. Hosting educational events, workshops, and financial wellness seminars can strengthen the insurer's relationship with the community. By positioning branches as trusted local resources for insurance information and support, insurers can foster a sense of loyalty and enhance their brand image.

6) **Role in Digital Onboarding and Education:** With the increasing shift to digital self-service options, branches can play a key role in onboarding and educating customers who may be less familiar with technology. Staff can guide customers on how to use mobile apps, online portals, and other digital tools to manage their policies and file claims. This educational role will be particularly valuable for older customers or those in underserved regions where digital literacy may be lower.

7) **Flexible Branch Formats and Mobile Branches:** Future insurance branches may not be limited to traditional brick-and-mortar offices. Some insurers are exploring flexible formats like smaller pop-up locations, mobile branches, and digital kiosks in high-traffic areas to reach more customers efficiently. Mobile branches can serve rural or remote areas, providing advisory services, claims support, and education in areas where digital infrastructure may be limited.

8) **Enhanced Crisis Support and Resilience Building:** During crises, such as natural disasters, branches will remain vital for providing in-person support to customers who need urgent assistance. Physical locations offer reassurance, rapid response, and a human connection in times of need. In such scenarios, branches may also serve as coordination centers for disaster response, connecting customers with resources and expediting claims processing in collaboration with digital support.

9) **Innovation Centers for Product Testing and Feedback:** Branches can serve as innovation hubs where insurers test new products, services, and technologies before full-scale deployment. Customers can provide immediate feedback on new features or policies, helping insurers tailor offerings based on real customer input. This iterative approach helps ensure that new digital tools and products align with customer expectations and improve the customer experience.

10) **Continued Emphasis on Trust and Relationship Building:** While digital platforms handle

transactional needs, physical branches remain crucial in establishing and maintaining trust, especially for complex or sensitive insurance matters. As customer expectations evolve, branches will focus on building long-term relationships, reinforcing trust, and providing reassurance. Personal interactions will remain irreplaceable in cases where customers seek deeper understanding, security, or empathy.

11) **Reduced Number of Branches with Strategic Placement:** As digitalization continues to grow, insurers may reduce the number of branches, but retain strategically located offices in key areas where in-person services are most valued. These branches will likely offer specialized, high-value services that justify their existence, ensuring that insurers can still offer physical touchpoints without a large and costly branch network.

Conclusion

The insurance industry's shift toward digitalization marks a pivotal transformation in its operational landscape. Traditional physical branches, once central to customer interactions, are evolving into advisory hubs focused on complex customer needs and personalized support. While India still lags in insurance penetration and density compared to global standards, digital tools and data analytics are poised to enhance efficiency and expand market reach. As insurers integrate technology, they must navigate challenges such as employee training and maintaining meaningful customer relationships. The future will likely see a hybrid model where branches serve as community touchpoints and knowledge centers, fostering trust and loyalty while leveraging digital innovations. By way of adapting to these trends, the insurance sector can improve customer experiences and remain competitive in an increasingly digital world. TJ

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Transforming the Insurance Landscape: The Impact of Digitization and Future Prospects

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Abstract

Digitization is a transformative force in the insurance industry, reshaping traditional business models and enhancing operational efficiency. This paper examines how digital technologies, such as automation, big data analytics, and artificial intelligence, revolutionize claims management, underwriting, and customer service, enabling insurers to streamline operations and improve customer experiences. However, this transition presents challenges, including cybersecurity risks, data privacy concerns, workforce adaptation, and regulatory hurdles. Insurers must balance data collection with compliance with privacy regulations like GDPR and reskill their workforce amid automation. Case studies of companies like Lemonade, Progressive, and MetLife illustrate successful digital transformations. Emerging trends, including AI, blockchain, embedded insurance, and Insurtech startups, signal a shift towards a more personalized and efficient insurance ecosystem, essential for maintaining competitiveness in a rapidly evolving market landscape.

Keywords

Digitization, Insurance, Risk Management, and Risk Assessment.

Introduction to Digitization in the Insurance Industry

Digitization has significantly transformed industries worldwide, and the insurance sector is no exception. As insurers increasingly adopt digital technologies, they are reshaping traditional business models, enhancing operational efficiency, and improving customer experiences. Digitization refers to the integration of digital technologies into business processes, enabling companies to streamline operations, leverage data for informed decision-making, and deliver better services. In the insurance industry, this transformation has taken the form of claims processing automation, big data analytics for risk assessment, and the rise of AI-powered customer service tools.

The relevance of digitization in the insurance industry lies in its potential to tackle long-standing inefficiencies, such as the slow manual processing of claims, reliance on paper-based

documentation, and limited customer engagement. Moreover, with emerging trends like usage-based insurance, blockchain-based smart contracts, and telematics in auto insurance, insurers are evolving to meet the demands of a digital-first consumer base. As such, digitization has become a critical factor in maintaining competitiveness in an increasingly dynamic market.

Overview of the Insurance Industry

The insurance industry has long been a cornerstone of financial security, providing coverage for individuals and businesses against various risks such as life, health, property, and liability. Traditionally, insurance operations were characterized by paper-based processes, face-to-face interactions, and labor-intensive workflows. Agents played a key role in selling policies, underwriting decisions were often manual, and claims processing involved a lengthy back-and-forth between policyholders, agents, and insurers. This model, though effective for decades, has been criticized for its inefficiencies, high operational costs, and slow response times, particularly in claims management.

The Growth of Digitization

The digital revolution began reshaping the insurance industry in the early 2000s, but it accelerated rapidly over the past decade with the advent of technologies like big data, artificial intelligence (AI), and cloud computing. As consumers became more accustomed to online services in other sectors (e.g., banking, retail), they began to expect the same level of convenience, speed, and personalization from insurance providers.

Key milestones in the rise of digitization within the insurance landscape include:

- **Online Platforms and Mobile Apps**: Insurers started offering self-service portals and mobile applications where customers could purchase policies, manage their accounts, and file claims digitally. This shift allowed insurers to provide real-time services and interact with customers at any time and place.
- **Telematics and Usage-Based Insurance**: In auto insurance, telematics technology (using devices like GPS trackers to monitor driving behavior) has enabled insurers to offer personalized, usage-based policies. These policies allow drivers to pay premiums based on their driving habits, offering more tailored coverage and improving risk assessment.
- **Automation and AI**: Insurance companies began automating routine tasks such as policy issuance, underwriting, and claims processing. AI-powered chatbots were deployed to handle customer inquiries, enhancing customer service by providing instant responses and support.
- **Big Data and Predictive Analytics**: Insurers increasingly use big data to improve underwriting and risk assessment. By analyzing vast amounts of data from various sources, insurers can better predict risks, set premiums more accurately, and identify potential fraud more effectively.
- **Blockchain and Smart Contracts**: Although still in its early stages, blockchain technology is being explored to facilitate secure, transparent transactions in insurance. Smart contracts, self-executing agreements written into code, have the potential to revolutionize claims management by automating and validating payouts without the need for intermediaries.

Uses of Digitalization

- **Identifying Multiple Insurance Policies**

Digitalization plays a transformative role in streamlining the management of multiple insurance policies. By leveraging advanced technologies such as blockchain, big data analytics, artificial intelligence which facilitates transparent and tamper-proof recording of transactions, ensuring trust and accuracy in data exchange. Insurers can track, identify and manage multiple policies held by customers. Since digital platforms enable centralized data repositories where policy information is stored securely and accessed in real time, by reducing errors and duplication.

- **Enhancing Insurer-Reinsurer Coordination**

Digital platforms improves communication, optimize risk sharing arrangements, and automate claims processing. Enhanced data integration and analytics enable

reinsurers to better assess risk exposures, respond quickly to claims, align coverage terms, fostering a more resilient and efficient insurance ecosystem.

Impact of Digitization on the Insurance Industry

a. Operational Efficiency

Automation of Routine Processes

Digitization has brought significant automation to the insurance industry, reducing the time and effort required for key processes such as claims handling, underwriting, and policy issuance. Traditionally, these processes were manual and time-consuming, requiring human intervention at various stages, leading to delays and potential errors. Today, automation technologies, such as robotic process automation (RPA) and artificial intelligence (AI), streamline these workflows by automating repetitive tasks.

- **Claims Processing**: Automation allows insurers to process claims much faster by automatically collecting and analyzing claim-related data. For example, AI-driven systems can assess the validity of claims using data from customer inputs and previous claim records, reducing the need for human review.
- **Underwriting**: Automated underwriting systems analyze data from various sources (e.g., credit scores, social media activity, driving behavior from telematics) to quickly assess risk and set appropriate premiums. This cuts down the time traditionally needed to evaluate and price risk, allowing insurers to issue policies in minutes rather than days.
- **Policy Issuance**: Digital platforms enable customers to select, purchase, and activate insurance policies online. Automated systems then handle the backend processes, issuing policies instantly without requiring manual checks or approvals.

Cost Efficiency

Digitization has led to significant cost savings in the insurance industry. By automating routine tasks, insurers can reduce their reliance on large workforces and physical office infrastructure, ultimately lowering operational expenses.

- **Reducing Administrative Costs**: Automation reduces the need for manual labor in administrative functions such as data entry, filing, and processing. This allows insurers to reallocate resources to more complex, value-driven tasks.
- **Minimizing Fraud**: Advanced analytics and machine learning can detect suspicious activity in real time, reducing the incidence of fraud, which is a major cost driver in the insurance industry. For example, predictive models can flag unusual claim patterns for further investigation.
- **Eliminating Paperwork**: Digitization allows for paperless operations, which not only saves on material costs but also streamlines processes and enhances data accuracy by reducing human error.

b. Enhanced Customer Experience

Self-Service Portals

Self-service digital platforms—both websites and mobile applications—have transformed how customers interact with insurance companies. These platforms empower policyholders to manage their accounts, make changes to policies, submit claims, and track their status without needing to interact with an agent or visit an office.

- **Convenience**: Customers can access insurance services 24/7, from anywhere, using their devices. This level of accessibility is especially valuable for tasks like renewing policies, making payments, or checking claim statuses.
- **Reduced Dependency on Agents**: While traditional insurance heavily relied on agents for customer interactions, self-service portals provide a more direct relationship between the insurer and the customer, offering convenience and speed in completing transactions.

AI-Powered Chatbots

AI-powered chatbots have become a cornerstone of customer service in the digital insurance landscape. These virtual assistants can handle routine customer queries, provide information, and even guide users through complex processes, such as filing a claim or choosing a policy.

- **24/7 Availability**: Chatbots ensure that customers receive immediate responses to their inquiries at any time of day. This improves customer satisfaction, especially in emergencies when quick information is critical.
- **Efficient Problem Solving**: Chatbots can handle a high volume of queries simultaneously, reducing the load on human customer service representatives. They can also escalate more complex issues to live agents when needed, ensuring a smooth and efficient experience for the customer.

Personalization

Data-driven technologies like AI and big data analytics enable insurers to offer highly personalized products and services. Insurers can analyze customer behavior, preferences, and risk profiles to tailor offerings that suit individual needs, rather than providing one-size-fits-all solutions.

- **Usage-Based Insurance**: In auto insurance, for example, telematics devices installed in vehicles track driving habits, allowing insurers to offer premiums based on actual driving behavior. This personalized approach appeals to customers seeking fairness and transparency in pricing.
- **Customized Recommendations**: Insurers can use data from various sources—social media, previous interactions, demographic data—to recommend products or coverage adjustments that align with the specific needs of each customer.

c. Risk Management and Claims Processing

Data-Driven Risk Modeling

The use of big data and predictive analytics has revolutionized risk management in the insurance industry. Insurers can now gather and analyze vast amounts of data from numerous sources, including social media, connected devices (like wearables), and historical claims records, to make more accurate risk assessments.

- **Improved Risk Assessment**: Predictive models can identify potential risks more precisely by analyzing historical data, behavioral patterns, and external factors such as climate or economic changes. This allows insurers to price policies more accurately, ensuring they are not under- or overestimating risks.
- **Proactive Risk Mitigation**: Analytics can help insurers identify emerging risks and suggest proactive measures. For instance, health insurers can offer personalized wellness recommendations to customers based on data from wearable devices, potentially reducing future health claims.

Faster Claims Settlement

Digitization has significantly sped up the claims settlement process, providing faster payouts and reducing disputes. Technologies like blockchain and automation play a key role in streamlining this process.

- **Automation in Claims Handling**: Automation helps in processing simple claims without human intervention, drastically reducing the time between filing a claim and receiving compensation. For example, in auto insurance, photos of damage can be uploaded by customers, analyzed by AI for repair estimates, and processed for payout—all within hours.
- **Blockchain for Claims Transparency**: Blockchain technology provides a secure, decentralized ledger that ensures all parties involved in a claim (insurers, policyholders, third-party assessors) have access to the same information. This transparency reduces the likelihood of disputes, as all transactions are automatically recorded and verified by the system.

Figure 1: Impact of Digitization on the Insurance Industry

Challenges of Digitization in Insurance

While digitization offers numerous benefits to the insurance industry, it also presents significant challenges that insurers must navigate carefully. These barriers, if not properly addressed, could undermine the full potential of digital transformation in the industry.

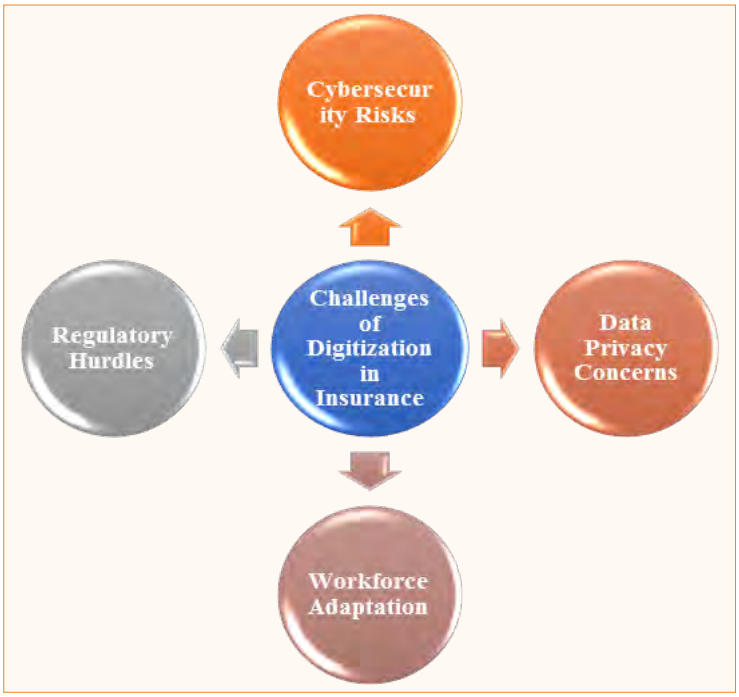


Figure 2: Challenges of Digitization in Insurance

Cybersecurity Risks

As insurance companies increasingly move operations online and collect vast amounts of sensitive customer data, they become prime targets for cyberattacks. The nature of digital insurance—where customer records, payment details, and sensitive information are stored and processed electronically—poses a high risk of data breaches.

- **Threat of Cyberattacks**: Hackers are continuously evolving their techniques, targeting insurance companies for valuable personal data such as Social Security numbers, medical records, and financial details. A successful breach could result in significant financial losses for the insurer and severe reputational damage.
- **Protecting Digital Infrastructure**: Insurance companies must invest heavily in cybersecurity measures such as encryption, multi-factor authentication, firewalls, and intrusion detection systems to protect their digital infrastructure from breaches. However, maintaining strong cybersecurity defenses in the face of constantly evolving threats remains a challenging and costly endeavor.
- **Impact on Customer Trust**: A data breach not only affects the company financially but also erodes customer trust, leading to loss of business. Insurance firms must take proactive measures to ensure that customer data is protected and that cybersecurity policies are up-to-date.

Data Privacy Concerns

With digitization comes the challenge of ensuring that customer data is handled in compliance with stringent privacy regulations, such as the General Data Protection Regulation (GDPR) in Europe and other regional privacy laws. These regulations are designed to give individuals control over their personal information and require companies to adhere to strict data protection standards.

- **Compliance with Privacy Laws**: Insurance companies must ensure that they collect, store, and process customer data in a way that complies with these regulations. Failure to do so can lead to hefty fines and legal consequences. For instance, GDPR imposes severe penalties on companies that mishandle personal data, making compliance a top priority for global insurers.
- **Balancing Data Collection and Customer Consent**: Insurers often rely on large amounts of data to offer personalized products and perform accurate risk assessments. However, they

must strike a balance between leveraging data and ensuring that they have explicit consent from customers to use their personal information. Navigating this balance while maintaining customer trust can be difficult, particularly as consumers become more privacy-conscious.

- **Data Ownership and Transparency**: Customers are becoming increasingly aware of their rights regarding data ownership. Insurers must be transparent about how they collect and use personal data, ensuring customers know their rights to access, modify, or delete their information.

Workforce Adaptation

The shift to digital tools and automation has significantly transformed the roles of employees in the insurance industry. While digital technologies can streamline processes and reduce costs, they also create challenges related to workforce adaptation.

- **Job Displacement**: Automation in areas such as claims processing, underwriting, and customer service is reducing the need for certain manual jobs. Employees in these roles may face redundancy or be required to transition to new roles within the organization. Insurers must manage this workforce transformation carefully to minimize disruptions and maintain employee morale.
- **Upskilling and Reskilling**: To stay relevant in a digital landscape, insurance companies need to invest in upskilling and reskilling their workforce. Employees must be trained in new technologies, such as AI, machine learning, and data analytics, to take on more complex and strategic roles. Insurers face the challenge of developing effective training programs and fostering a culture of continuous learning.
- **Change Management**: Digital transformation requires insurers to undergo significant changes in organizational structure and culture. Managing this transition—especially when some employees may resist changes to long-standing traditional practices—requires strong leadership and strategic planning.

Regulatory Hurdles

The insurance industry is heavily regulated, and as digital technologies evolve, insurers must ensure that they comply with a growing array of regulations governing data usage, consumer protection, and industry practices.

- **Navigating Complex Regulatory Frameworks**: As insurance companies digitize their operations, they must stay abreast of the ever-changing regulatory landscape. This includes ensuring compliance with existing regulations and adapting to new ones introduced as a result of emerging technologies, such as AI and blockchain. For instance, digital platforms that handle customer data must comply with GDPR or other relevant privacy laws, while the use of AI in underwriting and claims processing may be subject to additional scrutiny.
- **Adapting to Insurtech Disruption**: Insurtech startups are disrupting the insurance market by introducing innovative, digital-first solutions that may not fit within traditional regulatory frameworks. Insurance regulators may need to update laws to accommodate new models such as peer-to-peer insurance, usage-based insurance, or blockchain-based claims processing. For insurers, staying compliant while incorporating disruptive technologies presents a significant challenge.
- **International Regulatory Differences**: For global insurers, the challenge is even greater. Different regions have varying regulatory requirements, and insurers operating across borders must navigate a patchwork of regulations. This increases operational complexity and costs, as companies must adjust their systems and processes to comply with the specific laws in each jurisdiction.

Case Studies

Real-world examples of insurance companies that have successfully embraced digitization highlight the transformative impact of digital technologies. These case studies demonstrate how companies have utilized AI, telematics, and blockchain

to enhance operational efficiency, improve customer experiences, and streamline claims processing.

1. **Lemonade – AI-Powered Claims Processing**

Lemonade, a fully digital insurer, has gained widespread attention for its innovative use of artificial intelligence (AI) and machine learning to redefine the claims process. By leveraging AI, Lemonade has built a platform that automates everything from policy issuance to claims handling, making it possible for customers to receive payouts in a matter of minutes.

- **AI-Driven Claims Processing**: One of Lemonade's standout features is its AI-based claims process. The company uses an AI assistant named "Jim" to handle claims requests. When a customer files a claim through the mobile app, Jim verifies the claim against policy details, analyzes it for fraud, and, if it passes all checks, approves the claim in as little as 3 seconds. This automation drastically reduces the need for human intervention in most simple claims, allowing customers to experience near-instant service.
- **Fraud Detection**: AI not only speeds up claims processing but also enhances fraud detection. Lemonade's machine learning algorithms are trained on historical data to detect patterns of fraudulent activity. This system flags suspicious claims for further investigation, improving risk management.
- **Customer Satisfaction**: Lemonade's ability to provide quick, transparent, and efficient service through AI has significantly enhanced customer satisfaction, particularly among tech-savvy millennials. The insurer's digital-first approach has allowed it to build a strong reputation for innovation and customer-centricity.

Lemonade's use of AI demonstrates how digital technology can streamline operations, cut costs, and provide an exceptional customer experience, reshaping the insurance landscape.

2. **Progressive Insurance – Usage-Based Insurance with Telematics**

Progressive Insurance is a leader in the adoption of telematics for usage-based insurance (UBI), specifically in the auto insurance sector. By leveraging telematics technology, Progressive introduced its Snapshot program, which monitors drivers' behavior and adjusts insurance premiums based on real-time driving data.

- **Telematics-Based Premiums**: Progressive's Snapshot program uses telematics devices installed in policyholders' vehicles to track driving habits such as speed, braking patterns, time of day, and mileage. Based on this data, the company offers discounts to safe drivers, allowing them to pay premiums that reflect their actual risk level rather than generalized risk factors such as age or location.
- **Fairer Pricing Model**: The use of telematics allows Progressive to offer a more personalized and transparent pricing model. Drivers who demonstrate safer driving habits can benefit from lower premiums, while riskier drivers are charged higher rates. This incentivizes responsible driving behavior, reducing the likelihood of accidents and claims.
- **Customer Engagement**: Progressive's Snapshot program enhances customer engagement by providing regular feedback to drivers through a mobile app. Drivers can monitor their driving scores, track their potential discounts, and make informed decisions about improving their driving behavior. This real-time interaction fosters a stronger relationship between the insurer and its customers.
- **Claims Accuracy**: Telematics data also provides crucial information in the event of an accident, enabling Progressive to assess claims more accurately. By analyzing driving patterns and impact data, the company can quickly determine fault, helping to settle claims more efficiently.

Progressive's use of telematics showcases how insurers can harness data to offer personalized, usage-based insurance, creating a fairer pricing structure while promoting safer driving habits.

3. **MetLife – Blockchain for Transparent Claims Handling**

MetLife, one of the largest global life insurance companies, has been

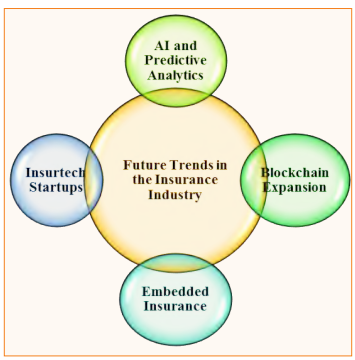
exploring the use of blockchain technology to improve transparency and efficiency in claims handling. By leveraging blockchain's decentralized, tamper-proof ledger system, MetLife aims to streamline the claims process, reduce fraud, and provide more secure and transparent transactions.

- **Blockchain for Claims Processing**: MetLife's pilot project, conducted in collaboration with other blockchain firms, focuses on using smart contracts to automate life insurance claims. In this system, policyholders' death certificates are automatically uploaded to the blockchain, which triggers the smart contract to verify the claim's legitimacy. Once verified, the claim is automatically processed, and the payout is made without the need for manual intervention or lengthy paperwork.
- **Transparency and Security**: Blockchain's decentralized nature ensures that all parties involved in the claims process (insurers, policyholders, beneficiaries, third-party validators) have access to the same real-time data, providing transparency at every step. Since blockchain records cannot be altered or tampered with, the system enhances the security and trustworthiness of claims handling, reducing the risk of disputes.
- **Faster Settlements**: By removing the need for manual checks and third-party validation, blockchain significantly speeds up the settlement process. Policyholders' beneficiaries can receive payouts faster, improving customer satisfaction during what is often a sensitive time.
- **Fraud Prevention**: Blockchain's transparent ledger system reduces the risk of fraudulent claims. Every transaction is timestamped and recorded, creating an immutable audit trail that can easily be traced back if any inconsistencies arise.

MetLife's exploration of blockchain demonstrates how emerging technologies can revolutionize claims processing by providing faster, more secure, and transparent transactions, leading to enhanced customer trust and streamlined operations.

Future Trends in the Insurance Industry

The insurance industry is on the cusp of significant changes driven by technological advancements and evolving consumer demands. Emerging trends like AI, blockchain, embedded insurance, and Insurtech startups are poised to reshape the industry, enabling more personalized, efficient, and customer-centric services.



AI and Predictive Analysis

Artificial Intelligence (AI) and predictive analytics are revolutionizing the way insurers assess risk, underwrite policies, and interact with customers. As AI continues to advance, its ability to process vast amounts of data will improve risk modeling, leading to more accurate underwriting decisions and dynamic pricing models.

- **Advanced Risk Predictions**: Predictive analytics powered by AI allows insurers to analyze data from diverse sources, including IoT devices, social media, and health data, to create more accurate risk profiles. By identifying risk trends and predicting future events (e.g., accidents, health issues), insurers can offer better-tailored policies that reflect each customer's unique risk level.
- **Real-Time Underwriting**: AI will enable real-time underwriting, allowing insurers to adjust premiums based on the latest available data, such as behavioral changes (e.g., improved driving habits). This dynamic approach to pricing can make insurance more responsive and personalized, ensuring that customers pay premiums that reflect their current risk rather than static, generalized rates.
- **Fraud Detection**: AI will continue to enhance fraud detection by analyzing patterns and identifying anomalies in claims submissions. As machine learning algorithms improve, they will be able to

predict fraudulent activity with greater accuracy, reducing losses for insurers and improving overall profitability.

The integration of AI into insurance processes will further automate routine tasks, reduce human error, and optimize resource allocation, ultimately leading to lower costs for insurers and more efficient services for customers.

Blockchain Expansion

Blockchain technology, though still in its early stages of adoption, has immense potential to transform the insurance industry, particularly in the areas of claims processing, contract management, and fraud prevention. As blockchain expands, its most promising application may be the development of smart contracts.

- **Smart Contracts for Claims Automation**: Smart contracts could evolve to handle entire claims processes autonomously. For instance, if an insured event occurs (e.g., car accident, natural disaster), the smart contract would automatically verify the claim's validity, assess the damage based on predefined parameters, and initiate payment—all without the need for human intervention. This could drastically reduce the time and costs associated with traditional claims processing.
- **Decentralized Insurance Models**: Blockchain also opens the door to decentralized insurance models, where peer-to-peer (P2P) insurance becomes more viable. In such a model, policyholders can pool their resources together on a decentralized platform, and claims can be verified and paid out transparently using blockchain. This has the potential to reduce overhead costs and increase transparency in the claims process.
- **Enhanced Data Security**: Blockchain's secure and immutable ledger system provides enhanced data protection, reducing the risk of tampering or fraud. As insurers handle vast amounts of sensitive customer data, blockchain can ensure that data is secure, while also offering transparency to all stakeholders involved in a transaction.

The future of blockchain in insurance is likely to see further integration with AI and other emerging technologies, potentially transforming the industry into a more decentralized, secure, and efficient ecosystem.

Embedded Insurance

Embedded insurance refers to the seamless integration of insurance products into non-insurance transactions, such as when purchasing electronics, booking travel, or even buying a car. This trend allows customers to acquire insurance coverage instantly as part of a broader purchase process, offering convenience and simplifying the decision-making process for consumers.

- **Insurance as a Service**: Embedded insurance is essentially "insurance as a service," where coverage is built into products and services without requiring customers to seek out standalone insurance policies. For example, when booking a flight, customers are offered travel insurance as an add-on during the checkout process. This convenience increases adoption rates, as customers can quickly and easily protect their purchases.
- **Partnerships with E-Commerce Platforms**: Companies across industries, from e-commerce giants like Amazon to financial services providers, are integrating insurance into their platforms. These partnerships enable insurance companies to tap into vast consumer bases and offer tailored insurance products at the point of sale. This trend will likely continue to grow, as insurers and non-insurers collaborate to deliver value-added services to customers.
- **Personalized Insurance Offers**: By leveraging data from digital purchases, companies can offer highly personalized insurance coverage. For instance, consumers purchasing electronics may be offered device protection plans, while those renting cars can be instantly offered auto insurance for the duration of the rental. This personalization enhances customer satisfaction while creating new revenue streams for insurers.

The rise of embedded insurance is set to change how customers interact

with insurance, making it a more seamless, invisible, and convenient part of everyday transactions.

Insurtech Startups

The rapid growth of Insurtech (Insurance Technology) startups is creating significant disruption in the traditional insurance market. These tech-focused companies are introducing innovative, customer-centric solutions that challenge legacy insurers to rethink their business models and embrace digital transformation.

- **Innovative Business Models**: Insurtech companies often operate with digital-first business models that rely on AI, big data, and automation to streamline processes. For example, startups like Lemonade have created fully digital insurance platforms that use AI to offer instant policy quotes, process claims, and underwrite risks, all within minutes. This level of speed and efficiency is setting new standards in the industry.
- **Microinsurance**: Some Insurtech startups are pioneering microinsurance models, which offer coverage for specific, short-term needs. This includes insurance for specific trips, events, or possessions, allowing customers to purchase coverage on-demand. Microinsurance is particularly appealing to younger consumers who prefer flexible and temporary insurance solutions over long-term commitments.
- **Customer-Centric Platforms**: Insurtech firms often prioritize user experience, offering intuitive digital platforms, transparent pricing, and faster claims processes. These startups focus on improving pain points in traditional insurance, such as lengthy paperwork, slow claims handling, and opaque policies, ultimately delivering a superior customer experience.
- **Collaboration with Traditional Insurers**: While some Insurtech startups compete directly with established insurers, others partner with traditional companies to offer innovative products and services. These collaborations allow legacy insurers to leverage cutting-edge technology while maintaining their core customer base and brand strength.

Insurtech startups will continue to drive innovation and competition in the insurance industry, pushing incumbents to accelerate their digital transformation and adopt more customer-centric approaches.

Concluding Remarks

The digitization of the insurance industry has ushered in a new era of efficiency, customer-centricity, and advanced risk management, transforming traditional practices through automation, AI-driven processes, and data analytics. While challenges such as cybersecurity risks, regulatory complexities, and workforce adaptation remain, innovative solutions like Lemonade's AI-powered claims processing, Progressive's telematics, and MetLife's blockchain initiatives highlight the immense potential of digital tools to revolutionize the sector. As emerging trends like embedded insurance and Insurtech startups gain momentum, insurers must continue to embrace technology to stay competitive and deliver personalized, seamless, and efficient services that meet the evolving demands of a digital-first marketplace. TJ

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Use of Digital Platform by Life Insurance Companies of India: Opportunities and Challenges

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Abstract

The use of digital technology in the insurance sector is gradually transforming the nature and style of operation of life insurers to enhance efficiency and improve customer service. Digital technology plays a crucial role in streamlining processes such as policy issuance, premium collection and claim settlement. However, the life insurance sector of India faces several hurdles, including legacy systems, resistance to change among employees, regulatory challenges and limited digital literacy, especially in rural areas. The present study makes a modest attempt to study the opportunities and challenges of using digital platforms by life insurance companies of India. The findings reveal that while digital technology offers significant opportunities, such as, operational efficiency and market expansion, it also demands strategic investments, capacity building and regulatory support. The study concludes with recommendations to overcome obstacles and leverage digital tools for the long-term success of life insurance companies operating in India.

Keywords

Artificial Intelligence, Blockchain, Cyber Security, Digital.

Introduction

The insurance sector of India has witnessed spectacular growth in the recent past. Given the rapid growth of the insurance sector in India, particularly in life insurance, it is crucial to modernize operations. With technological advancements making information readily available at our fingertips, aligning the insurance sector with the digital landscape is essential for enhancing customer convenience and accessibility (Kumar, 2024). This shift will facilitate easier access to information about insurance policies and related services.

In 2022, India ranked as the 10th largest insurance market globally, with a premium volume of $131 billion, accounting for 1.9% of the global insurance premium. The market is projected to ascend to the sixth position by 2032, as it is one of the fastest-growing insurance markets worldwide. The strong growth outlook is attributed to factors such as robust economic development, rising disposable

incomes, a youthful population, increasing risk awareness, digital penetration and regulatory development. India's life insurance sector has shown steady premium growth over the years. In 2022-23, the industry reported a premium income of ₹7.83 lakh crore, reflecting a 12.98% increase. Private life insurers achieved a 16.34% growth in premiums, while the public sector insurers posted a 10.90% increase (IRDAI, 2023).

In recent years, India has witnessed a significant surge in the number of Insurtech start-ups. These innovative initiatives leverage advanced technologies and novel business models to address long-standing challenges within the industry, enhance customer relations, and facilitate a comprehensive digital transformation of the insurance sector. At the core of this disruption lies the intersection of insurance and technology, giving rise to a new wave of Insurtech start-ups that are redefining the industry's dynamics (Satuluri, & Radhika, 2021). Across various lines of insurance, these start-ups are introducing disruptive solutions in areas such as distribution, underwriting, claims settlement, and customer engagement, fundamentally reshaping how insurance services are delivered and experienced.

Review of Literature

Khare (2012) highlighted the improvement in technological attributes of online insurance Web sites could improve customers' service usage. Acharya & Hebbar (2016) observed that the success of insurance advisors in the coming days would depend upon their acceptance to cope up with the digital environment since digital connectivity would allow for better customer engagement. Satuluri (2024) highlighted major advancements in the insurance industry through the adoption of artificial intelligence, blockchain, and analytics, emphasizing their role in driving innovation and efficiency across the sector. Liu (2024) highlighted the nature and style of transformation of organizational structure by insurance companies to keep the same relevant in the age of digital transformation. The study also pointed out the need for adopting appropriate strategies by insurers to remain competitive keeping in view the digital environment in the insurance sector. Musaigwa (2022) revealed the impact of digital transformation on operational efficiency and customer service. The study found that barriers to traditional systems could be minimized through the adoption of digitalization of life insurance companies. Kumar (2024) provided an in-depth analysis of the application of digital technologies, such as artificial intelligence and cloud computing, within the insurance sector. By reviewing scholarly articles, industry reports, and regulatory documents, the study identified insurers' IT requirements and explored various interconnections among digital technologies. The findings underscore the necessity for insurers to adopt a comprehensive digital strategy to fully leverage these technological advancements. Tomasi and Ilankadhir (2024) found that knowledge of digital insurance, relative advantage, and perceived trust positively impact the adoption of digital insurance among micro-entrepreneurs in Uganda. However, the study revealed that perceived social influence does not significantly affect adoption. These findings contribute valuable insights to the literature on digital insurance adoption among micro-entrepreneurs, helping policymakers and managers identify key factors that influence successful implementation. Desikan and Devi (2021) highlighted the importance of the adoption of digital technology by life insurance companies and digital transformation would enable the insurers to explore innovative approaches to enhance organizational efficiency.

Objectives of the Study

1. To explore the opportunities of current digital initiatives in the life insurance sector of India.
2. To gauge the challenges associated with the use of digital platforms by life insurance companies of India.

Initiatives to Promote Digital Environment by IRDAI

In response to these changes, the Insurance Regulatory and Development Authority of India (IRDAI) has initiated several measures to promote digital platform through Insurtech.

One of the key initiatives is **Bima Sugam**, a digital insurance marketplace designed to simplify the insurance ecosystem. This platform allows users to purchase,

renew, manage, and claim insurance policies spanning life, health, and motor insurance conveniently from a single interface. By eliminating intermediaries, Bima Sugam aims to reduce commission costs and mitigate the risk of mis-selling. Furthermore, it provides a unified dashboard for policyholders to track all their policies, ensuring a seamless service experience. This initiative aligns with IRDAI's mission of achieving "Insurance for All by 2047" and is anticipated to revolutionize insurance access, much like UPI has transformed digital payments (IRDAI, 2023).

Another significant initiative is the **IRDAI Hackathon**, known as Bima Manthan 2022. This inaugural event focused on "Innovation in Insurance," encouraging participants to develop technology-driven solutions to address critical challenges within the sector. Areas of focus included automated death claim settlements, prevention of miss-selling, fraud detection, and enhancing insurance penetration in underserved regions. Winners of the hackathon received not only cash prizes but also collaboration opportunities with insurers and access to the IRDAI Regulatory Sandbox, enabling them to test their innovations in real-world scenarios. This event is part of IRDAI's broader strategy to drive digital transformation and improve customer service through innovative technology-driven initiatives (IRDAI, 2023).

In the line of initiatives taken up by IRDAI, the biggest life insurer of India, i.e., Life Insurance Corporation (LIC) of India has been actively pursuing digital transformation to enhance customer experiences and streamline operations. Some of the key initiatives include:

DIVE Project (Digital Innovation and Value Enhancement)

Launched in late 2023, the DIVE project aims to overhaul LIC's digital operations by focusing on customer acquisition through agents, bancassurance, and direct sales channels. This project will help modernize LIC's engagement with stakeholders, including customers, agents, and employees, offering smoother digital experiences and improved efficiency.

Collaboration with Infosys for NextGen Digital Platform

In 2024, LIC appointed Infosys to build a cloud-native, modular, and AI-enhanced digital platform. The platform is designed to deliver hyper-personalized customer interactions and omnichannel engagement. It will support various business applications, such as customer apps, digital branches, and portals, facilitating better integration with fintech companies and partners.

Cloud and AI Integration

The new infrastructure, leveraging Infosys Cobalt and Topaz, enables faster adoption of innovative solutions, including AI-powered tools, to gain insights into customer behaviour and enhance operational efficiency. This shift also helps LIC align with evolving market demands, offering customers rapid and personalized services.

The life insurance industry is undergoing a significant transformation, driven by digital technology that is redefining service delivery and improving customer experiences. This paper examines the challenges and opportunities associated with the use of digital platforms in the life insurance sector, focusing on key obstacles faced by insurers and highlighting potential pathways for growth and innovation.

Opportunities of Using Digital Platforms by Life Insurance Companies

Fulfillment of New Expectations

Digitization is the beginning of digitalization of life insurance sector and it can ultimately help companies meet the expectations of new-generation customers. In recent years especially after COVID-19 pandemic, the expectations of customers have shifted largely in favour of online services and transactions. COVID-19 pandemic has created a marked change in favour of digital transformation and many people during the COVID period find it comfortable to adopt digital platforms for doing financial transactions. Life Insurance companies are also expected to respond to this new normal situation in order to provide better services using digital platforms.

Fast Service and Saving of Time

Time is the most precious thing in the present busy world. Most of the customers are also busy in their professional and social life and in this situation, they expect fast and easy interactions with service providers.

The digitization for digitalization of the insurance sector is a positive step toward meeting the expectations of customers efficiently. Customers in order to save their valuable time prefer to connect with their service provider from a comfortable remote location instead of visiting the relevant branch of the insurance company. The creation of effective online platforms by the insurance company will certainly go a long way to provide a fast and easy digital experience for its customers without wasting much time on valued customers.

Cost Effective in the Long Run

In order to remain competitive, the use of digital platforms in the life insurance sector is the need of the hour. But digitization is necessary for digitalization which, in turn, will help acquire new customers in a geographically scattered markets and retain the existing policyholders at a reduced cost. Further with the help of digital platforms marketing of new products or services will also be effective and the cost per policyholders will be lower in the long run. The objective of cost reduction will be fulfilled in the long run if traditional channel of business is gradually replaced by digital channel.

Simplified Policy Management through Digital Platforms

Digital platforms are simplifying policy management by offering policyholders a one-stop solution for all their insurance needs. These platforms provide easy access to policy information, payment gateways, and claim submissions, all from a single interface. The integration of mobile apps and online portals has made it convenient for customers to manage their policies, make premium payments and track claim status in real-time, significantly improving customer satisfaction and engagement.

Advanced-Data Analytics for Risk Assessment

Advanced data analytics is playing a crucial role in the term life insurance industry's digital transformation of risk assessment processes. By leveraging big data, insurers can gain deeper insights into individual risk factors, leading to more accurate policy pricing. Predictive analytics allows insurers to forecast future trends, assess risks more accurately, and develop more competitive insurance products. This data-driven approach not only enhances underwriting precision but also enables insurers to identify new market opportunities and tailor their offerings accordingly.

Blockchain for Enhanced Security and Transparency

Life insurance companies are increasingly adopting blockchain technology to improve security, reduce fraud, and enhance transparency. By enabling secure record-keeping, blockchain facilitates the seamless and transparent processing of claims and payments. This technology also simplifies the underwriting process, making it faster and more efficient. The decentralised nature of blockchain ensures that all parties have access to the same information, thereby increasing trust among policyholders, insurers, and other stakeholders.

Challenges of Using Digital Platforms by Life Insurance Companies

Lack of Requisite Skill and Expertise

The lack of expertise may act as a crucial barrier to the objective of digital transformation of life insurance companies. The complexities of digital transformation demand a new set of skills and in the absence of requisite expertise and skills may hinder the progress of digital transformation of the company at least in the short run. The organization needs to impart training to the existing employees and new employees with specialized skills and knowledge are to be recruited to use digital platforms.

Expectations of New Generation Customers

The nature and type of expectations of existing and potential customers are changing with the progress of digitalization in western countries. New generation policyholders are also aware of such developments in the age of internet and social media coverage. Like other sectors, the mood and preference of millennials and GEN- Y policyholders of India are in favour of improved customer service through digitalization. In order to catch the millennials and especially GEN-Y policyholders, digital services generally play a significant role and any lapse in this aspect may create an uncomfortable situation for this group of policyholders.

Employees Resistance

In order to make a digital transformation in life insurance companies, total change is needed within the organization. However, the management often experiences strong resistance to such changes from the employees working at the lower level of the organizational hierarchy. A good number of people doing a particular type of work for one or two decades, generally hesitate to accept radical changes since they are not prepared to come out from their comfort zone. Many employees apprehend that digitization and the growing initiatives for using digital platforms will put more stress upon them and the natural corollary is resistance to change.

Internet Connectivity in Rural Areas

The use of digital platforms in life insurance sector is not so easy keeping in view the vast rural area of India. Except for the rural areas which are located in the hinterlands of the city and towns, internet connectivity itself is still a great issue for various rural and remote areas of different states of India Though the country is fast changing, appropriate internet connectivity in different parts of rural areas of various states are yet to ensure for providing digitalized service without any interruption.

Cyber Crime and Cyber Security

The use of digital platforms by life insurance companies is not free from risk. The security issue is a vital issue for organizations adopting digital platforms and it is even more important if the organization belongs to the financial sector. The incidence of cybercrime of varied nature is on the rise and the life insurance companies adopting digital processes must ensure complete protection of data and valuables by implementing a higher degree of cyber security measures in order to reduce the enormous risks and adverse consequences of cyber-crimes.

The Road Ahead

Role of the Government

The government plays a critical role in creating a supportive regulatory environment for digital insurance innovations. Initiatives such as Digital India and Aadhaar have enabled digital customer onboarding, eKYC, and simplified verification processes. Government efforts to promote financial inclusion and insurance penetration, particularly in underserved rural areas, support broader access to digital insurance services. Research suggests that government-backed policies provide the necessary infrastructure and encourage investment in Insurtech.

Role of IRDAI (Insurance Regulatory and Development Authority of India)

IRDAI, as the industry regulator, sets guidelines and frameworks to foster a safe digital ecosystem for insurance. By launching initiatives like the Bima Sugam platform and Bima Manthan hackathons, IRDAI encourages innovations that enhance accessibility, streamline claims processing, and prevent fraud. It also supports digital literacy and infrastructure development, particularly through sandboxes that allow companies to test innovative solutions. IRDAI's focus is to ensure that digital insurance grows in a customer-centric and secure manner. As insurance access expands, insurers must address digital literacy challenges and connectivity issues, particularly in rural areas. Strategies to close these gaps will be essential for achieving "Insurance for All by 2047," which remains a long-term vision for IRDAI.

Role of Individual Life Insurance Companies

Life insurance companies are at the forefront of implementing digital solutions to improve customer service, sales, and policy management. They are investing in AI-driven chatbots, mobile apps, and online policy management portals to create a seamless user experience. These companies also focus on leveraging data analytics for risk assessment, underwriting, and fraud prevention, which improves operational efficiency and customer satisfaction. Research shows that digital transformation within these companies has boosted customer engagement and retention.

Role of Agents

Despite the rise of digital platforms, agents remain integral to the insurance ecosystem, especially in rural areas where digital literacy may be low. Digital tools are enabling agents to provide faster, more accurate information and support policyholders with purchasing and managing their policies online. Training and development programs by companies are equipping agents with digital literacy skills to enhance

customer interaction and build trust in the digital insurance model.

Role of Policyholders

As end-users, policyholders' adoption of digital tools is critical for the success of digital insurance initiatives. Increased digital awareness and literacy help customers understand and use online platforms for purchasing, renewing, and claiming policies. Studies indicate that digital tools have improved policyholders' engagement and satisfaction by providing ease of access and transparency.

Conclusion

While Insurance and digital transformation go hand in hand in 2024, it signifies a pivotal shift towards more personalized, efficient, and secure services. Embracing these technological advancements is essential for insurers to meet the evolving expectations of modern consumers and maintain a competitive edge. Digital technology is reshaping the insurance industry, opening up numerous opportunities for innovation and increased efficiency. Through advancements such as AI, cloud computing, big data analytics insurers can enhance processes, refine products, and strengthen customer interactions. Successfully navigating this transformation requires insurers to develop comprehensive digital strategies that address challenges related to data privacy, legacy systems, and evolving customer expectations. The industry's future hinges on its ability to adopt these digital changes and capitalize on the opportunities they present. TJ

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Digital Disruption and its's impact on Millennial's Buying Behavior

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Abstract

This present paper examines the impact of digital interruption on consumer preferences, focusing on online shopping, financial investments, and insurance purchasing behaviours. The digital revolution in the present era has impacted consumer behaviour, particularly among Millennials, a generation characterized by their deep accumulation with technology. Representation of the primary data, including a survey of 124 participants and personal interviews with 50 IT professionals, the paper shed light on the role of social media platforms, online payment systems, and Omni channel strategies in this digital era. One of the core findings of the present paper highlight the trust that Millennials have in the advice of their co-workers. Millennials are showing a growing inclination towards personal and value-oriented financial products, along with a heightened understanding of insurance options. Implications of targeted virtual participation and a two-step progressive process are the key points of the paper which provide possible strategies for structuring e-commerce. The financial and insurance organization strives to investigate the changing digital landscape in our country.

Keywords

Disruption, Millennials, Satisfaction, Investments, Social Media, Payment Systems.

Introduction

The rapid development of the digital technology has significantly transformed consumer behaviour by altering how people engage with marketplaces and decide what to buy. Virtual payment mechanisms and social commerce structures are illustrations of technologies that reflect the broader tendency of virtual disruption. Consumer gratification, simplicity of use and confidence are becoming more substantial and influential factors in handling customer varieties in virtual ecosystems.

The paper also examines numerous facets of digital disruption. The use of "Buy Now, Pay Later" services

demonstrate the desire for flexibility among younger consumers, while the emergence of social media influencers underscores the importance of peer recommendations in decision-making. Yet, despite a wealth of studies on various aspects of this change, such as the potential for digital bills and the use of the topmost technologies of time in e-commerce, little is known about how these elements combine to influence consumer behaviour and the way of life. The study offers an in-depth understanding of how online transformation redefines consumer contact in the digital age. Millennials make up 34.99% of our county's population, with 38.09% of them living in cities across pan India. Scientific progressions have shaped the contemporary generation, often referred to as "virtual natives," by influencing their handling, investing, and buying decisions in our country.

Review of Literature

Digital disruption has a significant impact on consumer behaviour. Digital disruption significantly influences online shopping behaviour across various sectors. Current published literature emphasizes how important technology is changing the middle-class environment. Research by Kuppuraj and Ravichandran (2014), highlights that enhancements in digital platforms promote a shift away from traditional purchasing behaviours. The growing assimilation of social networks and mobile trade is hastening this shift. This empowers a marvellous purchasing enjoy thru focused commercials and an easy-to-use interface.

The research also tinted the impact of digital transformation on customer hopes. According to Nabieva, N. M. (2021), meeting the needs of tech-savvy customers requires speed, customization, and security. Mathaba, R., & Mkhize, N. (2018) clarify in their report that behavioural economic models employ cognitive biases such as social proof. Use cognitive biases such as social proof. And how do default settings influence consumer decisions? The impact of digital disruption varies based on the factors such as location and population. Rajesh, R. (2018) highlights the need for multicultural views to understand variations in customer choices and adoption rates. Furthermore, as new technology like blockchain and artificial intelligence hold to broaden, longitudinal research is essential to capturing converting styles.

Although the studies offer a sturdy foundation, there are still unanswered questions on the durability of online shopping trends and the moral ramifications of facts-driven advertising strategies. In order to sell innovation and gaining the trust of consumers, the trust deficit and assurance has to be addressed.

Research Methodology

The study's main emphasis turned out to be the digital transition. The primary data for the study was gathered through an online survey. Demographic data is part of this study. Other crucial factors to take into account are the structure of online buying, budgetary requirements, and social media use. Taking into account customer behaviour in several contexts' views of customers on their preferences for payments and online shopping is crucial to participate in social networks and invest.

The research instrument used for applying and finalizing the results was a structured questionnaire that included Likert scale items and dated questions. The question aims to assess how often respondents shop online. What references and advice do they need before shopping? How do they pay? and how to use social networks We posed additional questions about insurance and investment behaviour to obtain a more comprehensive understanding of financial behaviour in the two digital domains. We evaluated the degree of consistency or inconsistency between the statement and different aspects. We assessed online customer behaviour using a Likert scale.

Discussion of Data Analysis and Results

The paper has collection of responses from a variety of races, genders, and educational levels. This sheds light on the tastes and habits of the Indian shoppers through online sources. 50% of the interviewees were of the age of 41- 44 years, 32% were between 29–35 years while 18% were between 23 -28 years. Most of the respondents were from IT and financial sector.

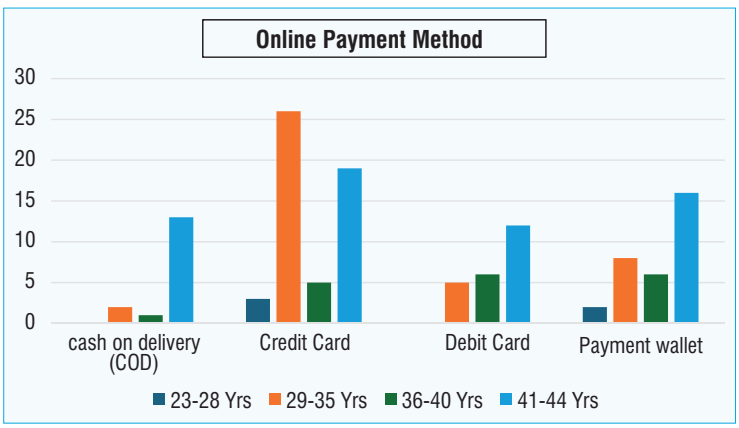
They exhibit varying degrees of involvement in digital platforms and online financial services. These

segments therefore present unique financial and online shopping habits. It is intriguing to note that the gender distribution shows a very even division. This allowed the study to observe differences in preferences and actions based on gender. Men are more likely than women to invest in financial products like mutual funds and Demat accounts. This continues to suggest gender-specific behavioural patterns in digital engagement. Women intend to prefer traditional methods of communication, such as phone calls and texts for social interaction.

Online Shopping Behaviour

The frequency of online buying is a crucial component of online customer behaviour. With 67% of those in the 29–35 age range making monthly purchases, this group showed the greatest frequency of online buying. Increased discretionary money, improved technical proficiency, and a propensity for the ease of online buying are characteristics of this age group.

It is important to pay attention to the payment preferences in this area. Credit card transactions were chosen by a sizable majority (42%) while payment wallets emerged as a popular alternative (25%). The widespread use of digital wallets reflects an increase in confidence in digital and cashless payment methods, which is supported by the worldwide upsurge in the use of mobile payments (Chuen, 2019). This reflects the tastes of tech-savvy customers and is consistent with the growing digitalization of financial transactions.



Count of How would you like to pay, while doing an online transaction (Figure 1)

Changing Demographics: Tapping Millennials in this Digital World

Introduction to Millennials: Millennials (also known as Generation Y) are the generation born between 1980 and 1996. They are the first generation to have grown up entirely immersed within the digital generation, which has substantially formed their individualities and created lasting political, socio-cultural insolences. Millennials display considerable and unique tendency, placing them aside from their predecessors. This technology is closely prejudiced with the aid of era and the internet, making them a completely unique and persuasive patron institution whose behaviour is often discussed however no longer fully understood.

Millennials' Relationship with Technology

Millennials are often referred to as "Digital Natives" because they have grown up surrounded by digital technology. Their rapid adaptation to technological tools such as computers and the internet sets them apart from older generations, often labeled as "Digital Immigrants."

A 2014 global study by Telefonica revealed that mobile technology is crucial to Millennials, not just for entertainment but also for research and education. 46% of United States of America's Millennials and over 60% of Latin America's Millennials use their devices for educational purposes. Furthermore, 72% of Millennials own a smartphone, and 28% have a tablet, with these numbers steadily increasing in recent years. Millennials are most likely to use the internet and engage with social networking sites. This generation's positive attitude toward technology, particularly their belief that technology makes life easier and more efficient, sets them apart from older generations.

Media Consumption and Advertising Preferences

Millennials are attracted to a wide style of media and often engage with

blogs, evaluations, and social networks to express their hobbies. They have grown up in a media-saturated, brand-conscious global and have developed awesome responses to commercials. Unlike previous generations, Millennials have a tendency to dislike being immediately focused on by traditional commercials and like alternative resources of statistics which include word-of-mouth and peer evaluations.

Millennials in India

In India, Millennials make up 34.99% of the total population, with urban Millennials constituting 38.09% of the population.

Age	Total	Rural	Urban
Total Population	1210.85M	833.75M	377.11M
Population in 18-38 Age	423.66M	280M	143.65M
% Share	34.99%	33.58%	38.09%

Table 1: Segment-wise Millennials Population Percentage (India, 2011 Census)

Telecommunication Growth in India

The telecommunication zone in India has experienced rapid increase, with the number of mobile phone subscribers growing exponentially from 3.58 million in 2001 to 1143.93 by 31st March 2023. The total number of Rural mobile subscribers is 516.38 million while the total number of Urban subscribers is 627.54 million.

Internet Usage in India

India has a sizeable boom in net usage, with 954.40 million internet subscribers as on 31st March 2024 while it was only 251.59 million as on 31st March 2014. As per Table 2, the upward push in broadband and wireless internet connections has transformed the digital panorama, especially for Millennials.

Period	Narrowband	Broadband	Total Internet Subscribers
As of 31.03.2013	149.7M	15.07M	164.81M
As of 31.03.2014	190.7M	60.87M	251.58M
As of 31.03.2015	203.2M	99.2M	302.33M
As of 31.03.2016	192.9M	149.8M	342.65M
As of 31.03.2017	145.7M	276.5M	422.19M
As of 31.03.2018	81.35M	412.60M	493.96M
As of 31.03.2019	73.42M	563.31M	636.73M
As of 31.03.2020	55.75M	687.44M	743.19M
As of 31.03.2021	47.21M	778.09M	825.30M
As of 31.03.2022	36.59M	788.29M	824.88M
As of 31.03.2023	34.69	846.56M	881.25M

Table 2: TRAI Annual Reports

Digital Disruption and Empowerment

With faster internet speeds and more connectivity, the mobile era has become a big digitally disruptive pressure. For Millennials in India, this technology has provided seamless entry to the virtual world, where many choices are available to take an informed decision. Millennials are particularly active on social media platforms and take pleasure in making their own choices. However, they are also encouraged by way of their social connections online, which impact their purchasing decisions and lifestyle choices.

Exploratory Research Insights

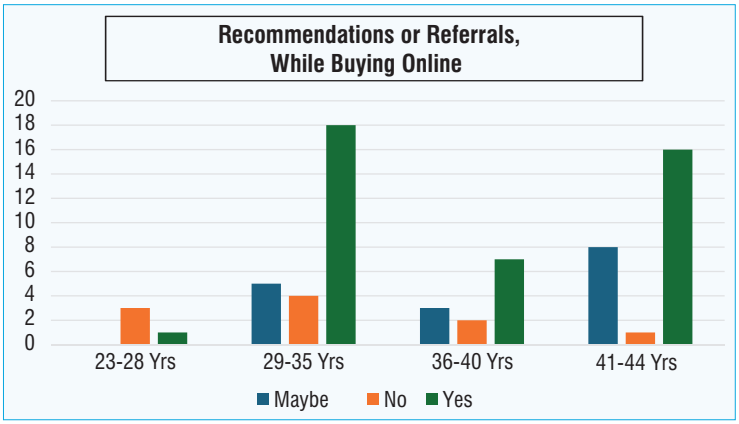
To look at Millennials' looking for possibilities for life coverage, we conducted personal interviews with the IT professional in the age band of 28–44 years. The findings were very surprising that even though many of them owned motor insurance, but fewer have opted for life insurance due to its voluntary nature and a loss of instant perceived want. Respondents highlighted several boundaries to existence insurance adoption, including delayed marriage, dual-earnings households, and long-term contracts of Life Insurance. Peer influence emerged as a critical factor, with initial policies often purchased on a relative's insistence rather than self-driven motivation. Millennials expressed a preference for convenience, transparency, and value-driven products, aligning with their fast-paced lifestyles and digital familiarity.

For insurers, engaging this demographic requires leveraging omni-channel strategies and influencer marketing to build trust and address the product's relevance. Loyalty programs and personalized experiences also stood out as effective ways to foster brand connections. Feedback loops through continuous digital interactions were emphasized as crucial for long-term customer retention. Millennials' focus on convenience and user-centric designs suggests that future distribution models must prioritize ease of access, self-service platforms, and meaningful engagement. A Customer centric engagement have to better align with their values and selection-making options, building loyalty and driving sustained boom.

Influence of Recommendations

The importance of pointers in online buying choices turned into a startling discovery. In the 29–35 age range, round 67% of respondents stated they usually ask for references or pointers before taking a decision to purchase. This is part of a larger fashion known as social evidence, wherein earlier than creating a purchase, human beings are greatly suffering from the critiques of their peers, influencers, and net opinions (Chen et al., 2011). This phenomenon is explained by using the increasing influence of e-trade communities and social media structures on how customers make decisions. Online ratings and peer opinions have taken significant role in influencing customers' alternatives to make purchases online.

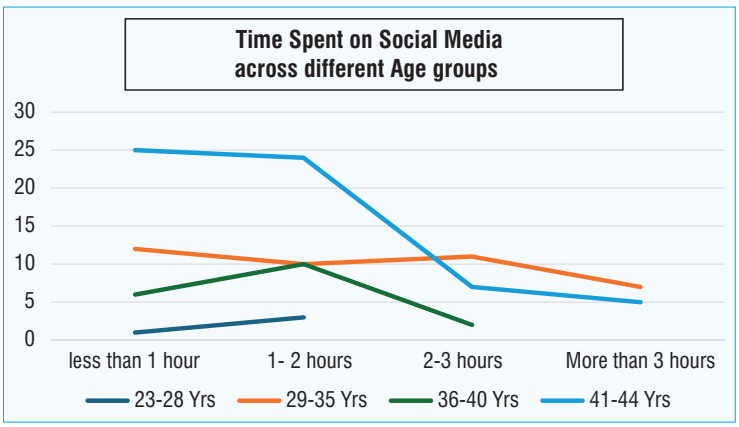
The age-smart evaluation indicates that despite the fact that older organizations are extra willing to make judgments on their own or based totally on past reports; more youthful clients placed a splendid deal of reliance in peer views and internet hints.



Count of Before buying a product online, do you always look for recommendations or referrals (Figure- 2)

Social Media Usage and Its Impact

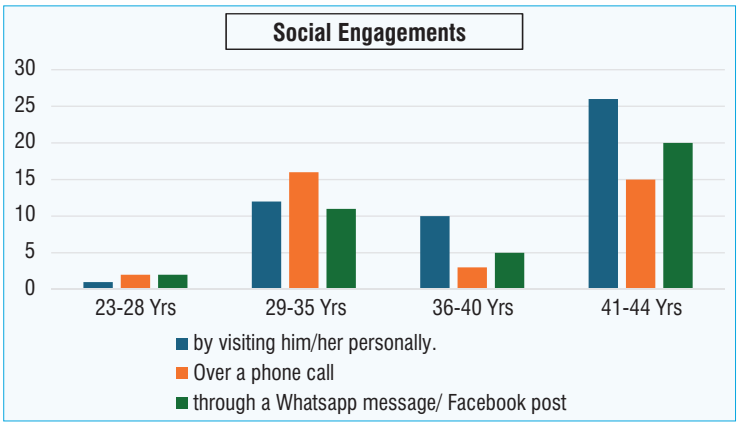
According to the information, 40% of respondents inside the 23–28 age bracket spends 1-2 hours a day on social media websites like Facebook, Instagram, and YouTube, demonstrating the critical position social media plays in influencing current customer behaviour. These systems have advanced into quintessential resources for acquiring facts on goods, services, and even monetary investments, similarly, to being used for social interaction (Mangold & Faulds, 2009).



Time Spent on Social Media across Different Age Groups (In Hours) (Figure- 3)

Additionally, the survey also confirmed that at least each one of the respondents is active on Facebook and Instagram, as a part of social media platform. This is in step with the influencer advertising trend, which makes use of social media

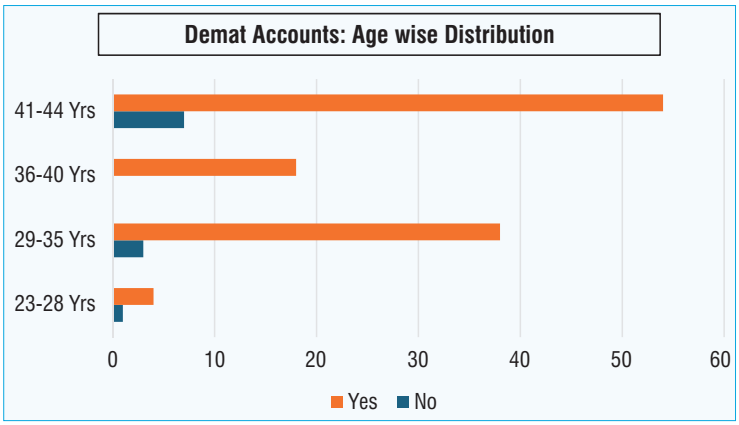
stars to assist companies reach a much wider audience. Younger customers' high levels of involvement on these platforms may indicate that businesses seeking to reach this market ought to provide social media advertising procedures pinnacle precedence with a purpose to growth engagement and conversion.



Count of How they wish close relative/friend, who stays in own city (Figure- 4)

Investment Behaviour

Investment behaviour, specifically having a Demat account and investing in stock markets, confirmed clear generational patterns. The 93% of the respondents in the age band of 29-35 years are having the Demat accounts.



Count of How many of the respondents have Demat accounts (Figure- 5)

This is in keeping with young generation's increasing interest in the online trading and an inventory market investment, that's being pushed by the increase of fintech packages and convenient get right of entry to buying and selling platforms (Dube et al., 2010).

Furthermore, the studies suggest that the respondents in the age band of 41-44 years are looking for safe investment opportunities. With the more available information, the respondents are investing in the stock market by comparing the possible returns and taking calculated risks depending on their risk appetite. It became evident from the survey that a significant percentage of respondents, particularly the ones between the ages of 29 and 35, invest in the mutual funds. This choice for mutual funds is steady with studies showing that their dependent design and diversification cause them to invest in this popular investment vehicle (Sehgal, 2021).

Insurance Preferences

As mentioned, millennial, also referred to as Generation Y, showcase wonderful trends that differentiate them from previous generations. They are well informed, and willing towards do-it-yourself (DIY) solutions, reflecting a choice for transparency and moral practices in their choice-making. This generation increasingly relies on online reviews and peer recommendations when purchasing products, underlining the growing importance of customer engagement, particularly in the insurance sector, where engagement remains low. The "pay-as-you-live" concept, combined with advancements in financial inclusion, affordable smartphones, high-speed internet, and the rise of digital payments, has acted as a catalyst for the adoption of digital insurance solutions.

Primary data collected from 50 IT professionals revealed significant insights into Millennials' preferences and behaviours. They demonstrated substantial knowledge of various insurance products, including term

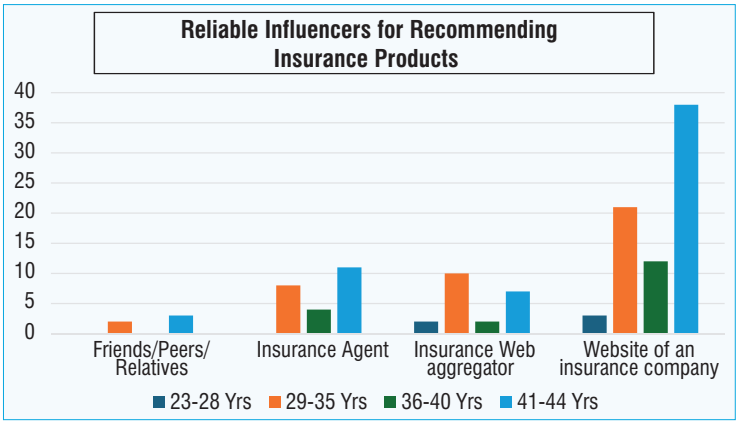
plans, ULIPs, health insurance, motor insurance, and riders, often facilitated by employer-provided group policies. This group values customizable base insurance products with the flexibility to add riders, allowing them to feel empowered and perceive greater value for money. Their familiarity with financial merchandise, which include fairness and mutual price range, is largely attributed to see discussions, social media, and online resources. Notably, ULIPs enchantment to Millennials due to their transparency, flexibility in fund allocation, and clear disclosure of costs on the outset. However, the rising average age of marriage—31-32 years for men and 27-28 years for women, has contributed to delayed consideration for saving based life insurance products, as higher costs and reduced returns discourage saving-focused policies at later stages of life.

In our primary survey sixty present of respondents said that the websites of insurance companies were the most reliable source of information about insurance products. Compared to conventional channels like insurance agents, which were used by just 19% of the respondents, this is a substantial change.

The Millennials are significantly searching the Insurance Companies and web aggregator's websites to get reliable information about the various Insurance products, their features and related services. They can easily compare the various available insurance products on different parameters.

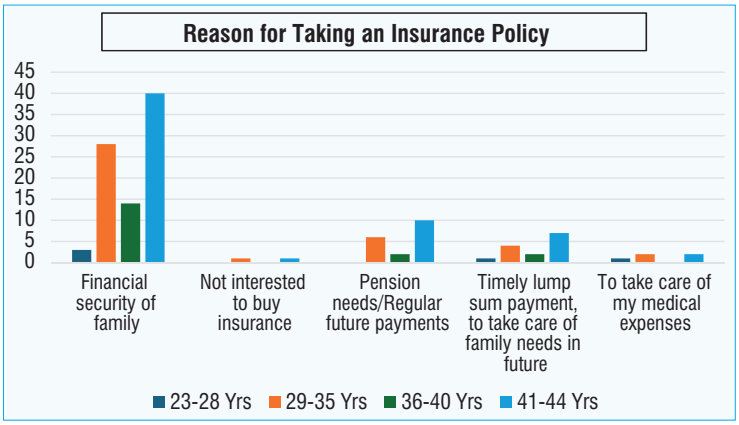
The online premium calculators, available on these websites are empowering them to calculate their premiums and add different Riders, as per their needs. The online interactions are being made user friendly by the insurance providers for better customer engagement, so that the customers can take informed decisions.

The deeper customer engagement will also help the insurance companies in better understanding the customer needs and providing a customized product.



Reliable influencers for recommending Insurance products (Figure- 6)

This study emphasizes how consumers are increasingly depending on digital platforms and internet research to make well-informed financial product selections. It is consistent with the larger trend of digital disruption in financial services, as customers are turning to online tools and resources instead of middlemen to get information. The primary motivation for acquiring insurance was the family's financial stability (69%), which was followed by medical costs (4%). This suggests that customers continue to place a high value on life insurance, especially those who see it as a means of long-term financial planning and protecting their dependents' future.



Insurance purposes (e.g., financial security, medical expenses (Figure- 7)

There are many noteworthy patterns in the use of social media and financial investment. This research illustrates online consumer behaviour in Indian forums. There is a growing trend in digital participation. This is especially true among young and middle-aged customers who are learning about online financial tools such as Demat accounts and mobile payment systems.

The boom of social media structures, in particular Facebook and Instagram, shapes purchaser buys choices by using evaluations and suggestions as critical factors. The report also notes a trend toward virtual research for economic investments and insurance, suggesting that financial institutions are striving to evolve to their customers' preference for virtual reports. To attain purchasers where they spend most of their time online, groups must prioritize digital structures. These results spotlight the significance of digital transformation within the monetary services enterprise. The same is true of customer conduct. It offers useful facts to businesses and regulators looking to negotiate a hastily converting virtual financial system.

The observer's conclusions spotlight the profound outcomes of virtual disruption in the retail and banking industries by exposing noteworthy patterns in online purchaser behaviour. Important findings consist of the elevated use of social media in choice-making about purchases, the developing self-belief in virtual payment systems, and the changing investing styles introduced approximately with the aid of readily available financial technology.

These findings suggest important implications for industry and regulators. Improving consumer enjoyment and growing social media integration are important strategies for e-Commerce companies seeking to attract digital local purchasers. Financial establishments want to focus on leveraging generation to provide flexible, stable, and custom-designed offerings that meet the changing wishes of clients. Future research must have a look at more-cultural comparisons and comprehensive fashions because the digital ecosystem continues to adapt to higher recognize how consumers behave globally in an era-disrupted international. Stakeholders can embody those traits and correctly negotiate the demanding situations of the virtual economic system, driving innovation and long-term patronage.

Conclusion

There is a paradigm shift in the buying behaviours of the Millennials, which is primarily influenced by the digital disruption. This shows that how a growing technology is revolutionizing the retail customers and their choice-making.

The spread and speed of Internet, smartphones, growing digital payments and the social media platforms have created awareness for taking informed decisions virtually at any point of time, after accessing their needs.

The simple and standardized insurance products with the options of various available riders can be developed for the Millennials to choose from and empower them to take informed decisions. The "Pay as you Live" concept can be brought in with the prior consents of the customers for better customer engagements.

Important conclusions highlight how vital seamless accessibility and personalization are influencing online buyer behaviour. Businesses at the moment are better equipped to domesticate extra purchaser involvement due to the fact to the mixture of digital ecosystems with predictive analytics and targeted advertising and marketing techniques. But the survey additionally suggests variations in virtual adoption with socioeconomic, demographic, and cultural characteristics, highlighting the need of inclusive and flexible techniques to reach a range of customer groups.

The sustainability of intake habits, ethical dilemmas in algorithmic targeting, and recording personal data has to be addressed firs after the Digital Personal Data Protection (DPDP) Act a 2023. Building purchaser believes and guaranteeing honest entry to the virtual marketplace rely upon resolving these issues, as the basic principle of Insurance is "Utmost good faith".

To similarly recognize their long-term implications on customer conduct, destiny research must deal with longitudinal studies, move-cultural comparisons, and the incorporation of latest technology like block chain and the metaverse. Businesses and policy makers may additionally effectively negotiate the intricacies of the virtual economic system and establish a more sustainable and equitable online market with the aid of embracing innovation while tackling ethical and realistic problems. TJ

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Digitization Driving Change: A New Era for the Insurance Industry

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Abstract

The insurance industry is undergoing a profound transformation driven by digitization, reshaping the way companies operate, interact with customers, and deliver services. Digitization in insurance encompasses the integration of digital technologies—such as artificial intelligence, machine learning, big data, and blockchain—to enhance operational efficiency, improve customer experience, and streamline claims processing. This shift has enabled insurers to better understand and predict consumer needs, allowing for more personalized and flexible products and services. Digitized data analysis facilitates faster underwriting, risk assessment, and claim settlements, resulting in significant cost savings and improved customer satisfaction. Additionally, digitization has democratized access to insurance, reaching underinsured populations and promoting financial inclusion.

However, the digital shift also presents new challenges, such as data privacy concerns, cybersecurity risks, and the need for regulatory adjustments. Insurers must balance innovation with strict adherence to compliance standards to protect customer data and maintain trust. This article explores the multifaceted impact of digitization on the insurance sector, examining both the opportunities and challenges that accompany this transition. Through case studies and industry analysis, it highlights the transformative potential of digital adoption in enhancing service delivery, operational resilience, and competitive advantage in a rapidly evolving market. Understanding these impacts is crucial for stakeholders aiming to leverage digital advancements to drive sustainable growth and adaptability within the insurance industry.

Keywords

Digitization, Insurance Industry, Customer Experience, Data Privacy, Operational Efficiency.

Introduction

The insurance industry, now experiencing a rapid transformation due to digitization. In an age where digital technologies are reshaping entire industries, insurance companies are no exception. Digitization, encompassing technologies like artificial intelligence (AI), big data, the Internet of Things (IoT), and blockchain, has meaningfully impacted how insurance companies operate, engage with customers, and manage risks. As digital technologies reshape various sectors globally, insurance is embracing advancements to enhance operational efficiency, customer engagement, and service delivery. From streamlined underwriting processes to personalized policy offerings, digital innovations are altering the very fabric of how insurers interact with customers and manage risks.

The impact of digitization in the insurance sector is multifaceted.

It encompasses data analytics, artificial intelligence, blockchain, and the Internet of Things (IoT), which collectively enable insurers to gather and analyze large volumes of data. This data-driven approach enhances decision-making processes, optimizes claims management, and introduces new, agile business models. Moreover, digitization allows insurers to cater to evolving consumer expectations, particularly those of younger, tech-savvy generations who value convenience, transparency, and speed in service delivery.

While digitization offers substantial benefits, it also presents challenges, including data privacy concerns, cybersecurity risks, and the need for regulatory adaptations. As the insurance industry adapts to these shifts, it must balance innovation with the trust that policyholders place in their insurers. This article delves into the transformative effects of digitization on the insurance industry, exploring both the opportunities and challenges it brings, and examining how insurers can strategically navigate this digital era to remain competitive and resilient.

Objective & Methodology of the Study

The purpose of this study is to analyses "Digitization and Its Impact on the Insurance Industry"

- To analyse how digitization has transformed core insurance operations
- To evaluate the effects of digital tools on customer experience and satisfaction
- To assess the impact of data analytics and AI in risk assessment and personalization
- To identify the challenges and opportunities digital transformation presents to insurers

The current study is based on descriptive design and qualitative in nature. The research study is based on secondary data method. The desired data have been collected from different sources such as industry reports, academic journal articles, government publications, and statistical data from reliable financial and insurance regulatory bodies. This methodology allows for an in-depth understanding of current trends and impacts within the insurance industry based on secondary sources, offering a comprehensive perspective on the effects of digitization on insurers' operational and strategic dimensions.

Digital Transformation in Insurance – Importance

As customers become increasingly tech-savvy, their expectations from insurance companies are also changing. They now expect insurers to offer personalized, real-time services, and support through multiple digital channels. Digital transformation can help insurers to provide a seamless customer experience and gain a competitive edge in the market. Traditional insurance processes are often complex, time-consuming, and prone to errors. By embracing digital transformation, insurers can streamline their workflows, automate repetitive tasks, and reduce the risk of errors, thereby improving operational efficiency. Digital transformation can involve many areas depending on the specific organization or industry, but generally, the four main areas of digital transformation are:

Customer Experience is the foundation of digital transformation. With the advancement of technology, customer expectations have also increased. Digital transformation aims to deliver a personalized, seamless, and consistent experience across all channels to the customers. Digital transformation can help organizations streamline their operational processes and increase efficiency. This includes automating manual processes, optimizing the supply chain, and leveraging data analytics to make better business decisions.

Digital transformation can lead to new business models and revenue streams. This includes adopting new business models such as subscription-based or outcome-based models, developing new products and services, and exploring new markets. Digital transformation is not just about technology but also about people. Organizations need to foster a culture of innovation, collaboration, and continuous learning.

Digitization of Core Insurance Operations

Digitization has revolutionized the operational efficiency of insurance companies. Traditionally, insurance processes were manual and time-consuming, involving paperwork, in-person meetings, and a considerable amount of administrative effort. Today, digital tools have automated

these processes, from policy underwriting and claims management to customer onboarding. Key areas impacted include:

Underwriting: Advanced data analytics and artificial intelligence (AI) have revolutionized the underwriting process by automating risk assessment. Insurers can now analyze large datasets, including demographic, behavioral, and historical claims data, enabling them to more accurately assess risk profiles, make faster decisions, and create more personalized policies.

Claims Processing: Digitization has automated the claims processing workflow, reducing human error and speeding up claims resolution. Digital claims systems use AI-powered algorithms to verify claims, assess damages, and process payments quickly. Customers can now file claims online or through mobile apps, where documentation and tracking are simplified, creating a smoother experience.

Policy Management: Digital policy management systems allow insurers to manage the full policy lifecycle from issuance and updates to renewals in a centralized, automated system. Policyholders can access and manage their accounts online, update information, and even renew policies automatically, improving accessibility and convenience.

Customer Service: With digital tools like chatbots, mobile apps, and online customer portals, insurance companies can provide 24/7 support, addressing customer queries instantly. Chatbots use natural language processing (NLP) to answer questions, handle routine inquiries, and direct customers to appropriate services. This transformation has elevated customer satisfaction by making services more accessible and responsive. Overall, digitization has improved operational efficiency, enabled faster decision-making, and enhanced the customer experience. Insurers can focus on high-value tasks, reduce operational costs, and offer more innovative products, positioning them to adapt to evolving market demands.

Digitalization on Customer Experience and Satisfaction

Customer expectations in the insurance industry have evolved alongside technological advancements. Today's customers demand more personalized, efficient, and seamless experiences, and digitization enables insurance companies to meet these expectations in several ways. Some key ways digital tools enhance the customer journey include:

Mobile Apps and Online Portals: Customers can now access their insurance information anytime, anywhere through mobile apps and online portals. These platforms allow policyholders to manage their accounts, make payments, check claim statuses, and even renew policies without the need for in-person interaction. This convenience increases customer engagement and satisfaction by providing flexibility and control over their policies.

Personalized Services through Data Analytics: Insurers use data analytics and AI to deliver more personalized experiences. By analysing customer behaviour, preferences, and demographics, insurers can recommend tailored policies, offer customized discounts, and send relevant reminders or updates. This personalization leads to better alignment with customer needs, fostering loyalty and satisfaction.

Chatbots and AI-Driven Customer Support: Chatbots and virtual assistants, powered by natural language processing (NLP), provide instant support for routine inquiries, policy information, and claim updates. These tools enhance accessibility by delivering quick responses 24/7, addressing customer queries immediately and helping customers feel supported at all times, especially during emergencies.

Faster Claims Processing: Digital claims platforms allow customers to file claims through mobile apps or websites, eliminating the need for extensive paperwork and manual processing. Claims can often be verified and processed in a matter of hours or days, rather than weeks, which significantly improves customer satisfaction. Some insurers even use AI to assess claims and determine payouts automatically, further speeding up the process.

Enhanced Transparency and Communication: Digital tools improve transparency by providing customers with real-time updates on their policies, claims, and any changes to terms or conditions. Automated notifications and easy access to policy details increase customer confidence and trust in their insurer, contributing to a positive experience. By offering enhanced convenience,

personalization, faster service, and greater transparency, digital tools have elevated customer satisfaction and loyalty in the insurance industry, setting a new standard for customer experience.

Data-Driven Decision Making

The rise of big data has been a game-changer for the insurance industry. Insurance companies have access to massive amounts of data from various sources, such as social media, customer interactions, IoT devices, and financial transactions. By analyzing this data, insurers can make more informed decisions and predict trends more accurately.

Data analytics and artificial intelligence (AI) have transformed the insurance industry by improving risk assessment accuracy and enabling more personalized services, leading to more targeted products and optimized pricing. Key impacts include:

Enhanced Risk Assessment: Traditionally, risk assessment relied on limited data and manual processes. With data analytics, insurers can now analyze vast amounts of data from various sources, such as customer demographics, health records, financial history, and behavioral patterns, to better understand risk profiles. This approach enables a more accurate, data-driven understanding of risk, leading to fairer premiums and minimized losses for insurers.

AI-Powered Predictive Modelling: AI models use machine learning algorithms to predict future risks based on historical and real-time data. Predictive analytics help insurers anticipate events like natural disasters, market changes, or customer claim likelihoods, enabling them to adjust coverage or pricing accordingly. These AI-driven insights allow insurers to make proactive decisions, improving portfolio performance and reducing the need for sudden premium increases.

Personalized Policies and Dynamic Pricing: AI and data analytics allow insurers to offer personalized policies that cater to individual needs, providing tailored coverage and pricing based on unique customer data. For instance, in auto insurance, telematics data from vehicles can be analyzed to create usage-based insurance (UBI), where safer drivers enjoy lower premiums. Health insurers may offer dynamic pricing based on activity levels or health monitoring, rewarding customers who maintain healthy behaviors.

Customer Segmentation and Targeted Marketing: Insurers can use AI to segment customers into different risk categories and design targeted marketing strategies. By analyzing patterns in purchasing behavior, lifestyle, and demographics, insurers can identify ideal customer segments and create targeted offers or incentives. This data-driven personalization enhances customer engagement and loyalty by addressing specific needs.

Fraud Detection and Prevention: AI algorithms play a critical role in identifying potential fraudulent claims by analyzing patterns and anomalies in claims data. Machine learning models can flag suspicious activities, helping insurers detect and prevent fraud before payouts are made. This not only protects the insurer's finances but also ensures that honest customers receive timely claims support without increased premiums due to fraudulent losses.

Overall, data analytics and AI empower insurers to assess risks more precisely, offer tailored products, and proactively manage their portfolios. These advancements lead to fairer pricing, increased customer satisfaction, and stronger financial resilience for insurers.

Opportunities & Challenges of Digital Transformation in Insurance Industry

Digital transformation in the insurance industry offers significant opportunities, but it also brings several challenges that insurers must navigate to stay competitive and meet evolving customer expectations. Key challenges and opportunities include:

Opportunities

Improved Operational Efficiency: Automation and digital workflows reduce manual tasks, cutting down processing times and operational costs. Automated underwriting, claims processing, and policy management allow insurers to handle high volumes more efficiently, freeing up resources for strategic and customer-focused activities.

Enhanced Customer Engagement and Personalization: Digital tools, such as AI and data analytics, enable insurers to offer personalized services based on customer preferences and behavior. Personalization enhances

customer engagement by providing tailored policy options, real-time support, and dynamic pricing models, which in turn improves customer loyalty and retention.

Access to New Markets and Segments: Digital platforms allow insurers to reach underserved or niche markets, such as remote or lower-income communities, by offering micro-insurance or usage-based insurance products. By expanding access and providing affordable, flexible insurance options, insurers can grow their customer base in previously untapped markets.

Advanced Risk Management and Fraud Detection: AI and data analytics empower insurers to better assess and manage risk while enhancing fraud detection capabilities. Predictive models help anticipate potential risks, while machine learning algorithms detect anomalies in claims that could indicate fraudulent activity, safeguarding both insurers and honest customers.

Challenges

Cybersecurity and Data Privacy Risks: With increasing digitalization comes a heightened risk of cyberattacks and data breaches. Insurers handle vast amounts of sensitive customer information, making them prime targets for cybercriminals. Ensuring robust cybersecurity and complying with stringent data privacy regulations is essential to protect customer trust and avoid legal repercussions.

Legacy System Integration: Many insurers operate on legacy IT systems that are incompatible with newer digital technologies. Integrating advanced digital tools with outdated systems can be costly and complex, often requiring a complete system overhaul. The transition phase can be disruptive and may affect service quality if not managed carefully.

Regulatory Compliance: As digital tools evolve, insurers must adhere to changing regulatory requirements governing data protection, transparency, and ethical use of AI. Meeting these regulations requires ongoing investment in compliance, training, and technology upgrades, which can strain smaller or traditional insurers.

Cost of Digital Transformation: Implementing advanced technologies such as AI, machine learning, and big data analytics is capital-intensive. Many insurers face challenges securing the resources and expertise necessary for such transformation, especially smaller companies with limited budgets.

Changing Workforce Dynamics: The adoption of digital tools may lead to shifts in workforce requirements, with a growing demand for digital and technical skills. Insurers face challenges in retraining existing staff, recruiting new talent, and managing change to ensure a smooth transition. The industry needs to adapt its culture and skillsets to embrace this new digital-first environment.

By strategically navigating these challenges, insurers can capitalize on digital transformation to offer more innovative, efficient, and customer-centered services. Embracing digital tools positions insurers for sustained growth, resilience, and market leadership in an increasingly tech-driven landscape.

Conclusion

Digitization is fundamentally reshaping the insurance industry, driving innovation and efficiency across core operations. The integration of AI, data analytics, and digital tools has enhanced insurers' ability to assess risk accurately, personalize policies, and improve the customer experience. From streamlined claims processing to personalized services, digital transformation has enabled insurers to offer more responsive, convenient, and accessible solutions. However, this evolution also presents challenges, including cybersecurity risks, regulatory compliance, and the complexities of integrating legacy systems with new technologies. Successfully navigating these obstacles requires significant investment in technology and talent, alongside a commitment to maintaining customer trust through data privacy and transparency. Ultimately, insurers who embrace digital transformation effectively are positioned to achieve greater agility, meet evolving customer expectations, and maintain competitiveness in a rapidly advancing landscape. By balancing innovation with regulatory and ethical considerations, the insurance industry can continue to build resilient, customer-focused models that adapt to the demands of the digital age. TJ

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Insurance Industry Transformation: The Role of Digitization and AI

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Abstract

The digital revolution in this fast-paced world touches not only individuals but industries as well. The digitalization in the insurance industry, however, proves to be noteworthy for redefining the industry standards and framework. It is accelerating service delivery, revolutionizing customer interaction, and improving the accuracy of risk assessment.

Digitization in insurance is also helping the industry reduce manual work and replace it with automated operations. From filling claims with papers to now a completely digital process, every part of the industry operation is more efficient, seamless, and accurate.

Before digitization, the insurance industry was mostly paper-based. It was following with manual processes for policy management, claims processing, and customer service. It resulted in slow turnaround times and a difficult customer experience. After digital transformation, the industry uses technology like artificial intelligence, machine learning, and online platforms to streamline operations. It enables faster claims processing, personalized customer interactions, and real-time policy management, greatly improving efficiency and customer satisfaction.

When we talk about the impact of digitization on the insurance industry as a whole, we consider not just the rewards but the risks, as well. While it has unlocked new efficiencies and solutions, new risks are no longer lurking but acting prohibitively. The key obstacles that the insurance industry is facing currently are cybersecurity issues and the need for continual technical progress.

The cost of cybercrimes globally, on the other hand, is expected to reach $10.5 trillion this year. These risks pose an imminent threat to India's growing economy with the central government keen to introduce more insurance initiatives. Looking into the impact of digitization on the insurance industry and the following trends guarantees resilience and continued development in a world getting more and more digital.

Keywords

Digitalization in Insurance Industry, Digitization in Insurance, Impact of Digitization on Insurance Industry, Insurance Industry Trends, Insurtech.

1. Introduction

The insurance industry has long been a crucial foundation of financial security and risk management in India. The penetration of India's insurance industry today is 4% of the GDP. This is why the industry positions itself as a crucial industry for individuals, enterprises, investors, and the economy itself.

Table 1: Insurance Penetration (Premiums as % of GDP)

Year	Life	Non-life	Total (Life and Non-life)
FY16	2.7	0.7	3.4
FY17	2.7	0.8	3.5
FY18	2.8	0.9	3.7
FY19	2.7	1.0	3.7
FY20	2.8	0.9	3.7
FY21	3.2	1.0	4.2
FY22	3.2	1.0	4.2
FY23	3.0	1.0	4.0
FY24	2.8	1.0	3.8

***Source:** IBEF Case Study*

This table shows the steady growth of the insurance industry in India and its contribution to the economy. Many factors are driving this industry's growth in 2025, including economic growth, rising middle class, innovation, and regulatory backing. By the year 2028, total insurance premiums will expand by 7.1% in real terms, higher than the global (2.4%), developing (5.1%) and advanced (1.7%) market averages.

However, before the advent of digitization, the industry faced various problems that inhibited its growth and efficiency. These problems not only highlighted the inefficiency of existing processes but also stressed the compelling need for digital transformation.

Key Challenges of the Insurance Industry before Digitalization

- **Manual Processes**: Claims processing, underwriting, and policy management relied primarily on manual operations and paper-based documentation. It resulted in longer turnaround times, greater operational expenses, and a larger likelihood of errors. The burdensome nature of these processes made it impossible to organize and retrieve information efficiently.
- **Customer Service**: Customer interactions were generally limited to face-to-face meetings or phone calls, often restricted to business hours. This traditional manner of communication led to increased wait times and limited access to services. As a result, customer involvement and satisfaction were often sacrificed.
- **Risk Assessment**: Insurers depended on historical data and manual analysis for risk assessment, which resulted in less reliable judgments. The lack of real-time data made it challenging to make informed decisions, leading to probable underpricing or overpricing of policies. This inefficiency in risk assessment harmed the profitability of insurance companies and their capacity to offer competitive policies.
- **Fraud Detection**: Detecting fraudulent operations was labor-intensive and relied on manual checks and audits. The sluggish detection process caused the insurance industry to make fraudulent claims, leading to huge financial losses.
- **Marketing and Distribution**: Traditional marketing approaches, such as print media, direct mail, and in-person sales, were costly and limited in their ability to target specific customer categories successfully. Distribution channels were restricted to physical locations and agents, making it tough for insurers to expand their reach and tap into new markets.
- **Data Management**: Managing enormous amounts of data in a paper-based system was a significant difficulty. Insurers grappled with data silos, redundant information, and ineffective data retrieval methods. It impeded their ability to get insights from data and make data-driven decisions.
- **Operational Efficiency**: The reliance on manual processes resulted in poorer operational efficiency. Insurers faced greater operational expenses, lengthier processing times, and limited scalability. This inefficiency impeded their capacity to respond promptly to market shifts and customer needs.
- **Regulatory Compliance**: Keeping up with legislative changes and ensuring compliance was a difficult and time-consuming task. Manual processes and paper-based paperwork made it difficult to maintain correct records and verify compliance with requirements.

Importance of Digitization in Today's World

The combined effect of these challenges underlined the essential need for digitization in the insurance business. They also emphasized the industry's inability to keep pace with the increasing demands of the modern world. Therefore, the bridge to digitalization was drawn on the premise that integrating digital technology will address these difficulties and deliver major gains across the board.

Digitization offers a means to streamline processes through automation, reducing turnaround times and minimizing errors. Digital documentation and cloud storage solutions relieved the load of physical paperwork. In return, this enabled efficient record-keeping and information retrieval. Digital tools and mobile apps also transformed

customer service by giving 24/7 access to services and boosting customer involvement.

Table 2: Digital vs. Traditional Insurance Comparison

Factors	Traditional Insurance	Digital Insurance
Purchase Process	In-person, paperwork-intensive	Online, hassle-free, quick
Documentation	Physical, prone to damage and misplacement	Digital, safe and easily accessible
Underwriting	Manual and time-consuming	Automated and faster
Customer Service	In-person, phone calls	Online chat, email, apps
Cost	Higher premiums due to overhead	Lower premium
Transparency	Low as information is not readily accessible	High as details are available online
Claims Process	Manual and slow	Online and quick
Accessibility	Office hours only	24x7 via digital platforms

Source: bajajfinserv.in/insurance

Advanced analytics, AI, and machine learning are now changing risk assessment by enabling exact evaluations based on real-time data. Predictive analytics and sophisticated algorithms, on the other hand, are enhancing fraud detection, allowing insurers to identify and mitigate fraudulent actions proactively.

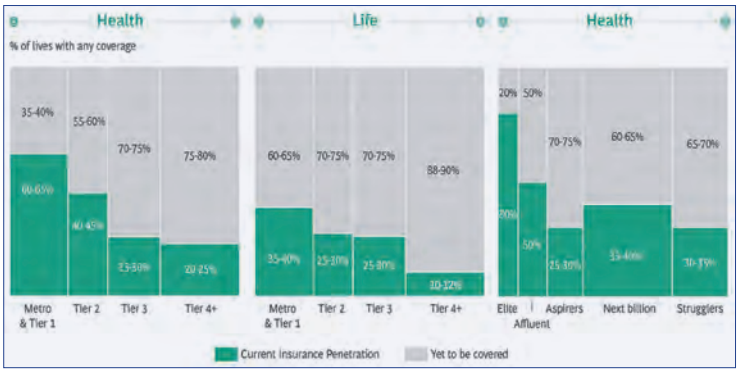
2. The Digital Transformation of Insurance Industry

Before the introduction of technology, the insurance sector relied significantly on old procedures and manual processes. The paper-based and labor-intensive tasks led to major inefficiencies and increased operational expenses. Customers had to attend branch offices for services, resulting in high wait times and limited access to assistance.

By bridging the gap through digitalization, the industry has overcome its typical challenges and created new prospects for growth, efficiency, and customer satisfaction. The march towards digitization has not only altered the insurance market but also paved the way for a more robust and innovative future.

Key Milestones in the Digitization Journey

- **Early 2000s**: The Insurance Regulatory and Development Authority of India (IRDAI) was established in April 2000. It was followed by the deregulation of the insurance business that paved the stage for more private sector participation and competition. This period witnessed the development of rudimentary digital tools for record-keeping and client administration.
- **The mid-2000s**: The rise of internet usage led to the establishment of online portals for customer support and policy management. Insurers began offering online access to insurance information and premium payments.
- **Late 2000s**: The usage of advanced analytics and data management systems started gaining popularity. Insurers began leveraging data analytics for better risk assessment and fraud detection.
- **2010s**: Mobile apps and chatbots were created that transformed customer service and interaction.
- **The mid-2010s**: Blockchain technology and smart contracts started being studied for secure and transparent transactions. Insurers began experimenting with blockchain-based solutions for insurance issuance and claims processing.
- **Late 2010s**: The integration of AI and ML altered several parts of the insurance sector. AI-powered chatbots, predictive analytics, and automated underwriting become more widespread.
- **2020s**: The COVID-19 epidemic expedited the digital transformation of the insurance business. Remote labor, computerized claims processing, and virtual customer service became necessary. Insurers utilized digital tools to secure company continuity and enhance consumer experiences.

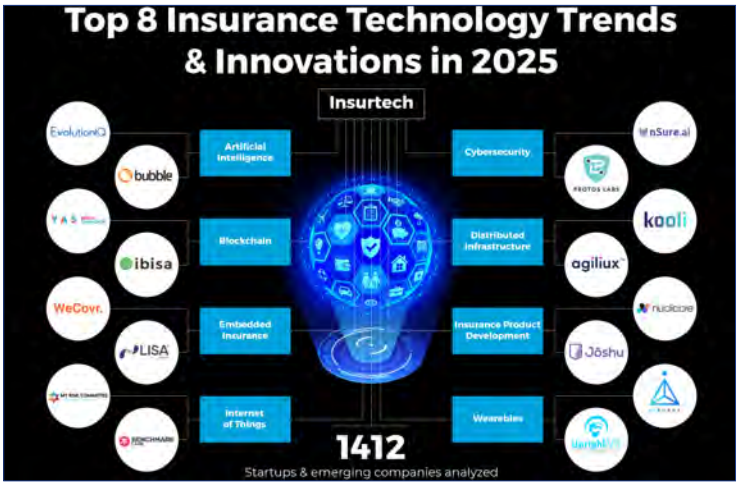


Source: IndiaInsurtech

The insurance penetration across different geographies is also rising in India. Metro and Tier 1 regions have 60-65% health insurance penetration, while Tier 4+ locations have 20-25%. Life insurance follows a similar pattern but covers less. Social classes also differ, with Elite Affluent having 80% health insurance and Strugglers 30-35%.

Current State of Digital Adoption in the Insurance Sector

Today, the insurance business is at the forefront of digital transformation, employing new technology to boost productivity, customer service, and risk management. Digital tools and automation are making claims processing and policy management faster. Besides all these, online portals and chatbots enable 24/7 customer assistance and self-service options, boosting consumer engagement and satisfaction.



Source: Startus-insights

Insurers are using big data to understand client behavior better, analyze risks more precisely, and customize insurance policies. Big data analytics has greatly boosted accuracy and efficiency in underwriting and claims processing. The advent of InsurTech, or the use of technology to innovate and challenge the existing insurance paradigm, is another trend. InsurTech startups are creating a threat to traditional insurers with their new business models and customer-focused solutions.

AI and ML are also significant tools in digital transformation. Big data analytics, AI, and ML have transformed risk assessment and fraud detection, enabling insurers to make informed decisions based on real-time data.

The insurance business has seen a tremendous transition through digitization. As the sector continues to embrace new technology, it is well-positioned to address future challenges and opportunities in an increasingly digital environment.

3. Benefits of Digitization for the Insurance Industry

Customer preferences are changing rapidly in this modern world. Unlike before digitalization, customers today seek good service, convenience, comfort, and a faster-claiming process. They expect a hassle-free, self-service, and mobile-savvy experience, are mobile-savvy. They are also happy to acquire policies from InsurTech companies if they provide these experiences.

41% of insurance customers choose a convenient purchasing method. 47% of customers rely on digital sources to make a purchasing decision, 67% prefer social media to compare insurance products, and 35% believe that claim processing is a challenge.

Digitization in insurance is ensuring that insurers bridge the gap between the service and expectation. However, it's not just the insurers that are benefitting but also the insurers. Digitization is allowing more people access to insurance, and so decreasing protection gaps. For insurers, gains from better underwriting, risk mitigation, and risk measurement from digitization of insurance improve the quality and efficiency of their business.

1. Enhanced Operational Efficiency

Digitization has considerably boosted operational efficiency within the insurance business. By automating manual procedures, including claims processing and policy management, insurers cut turnaround times, minimize errors, and enhance overall efficiency.

Digital tools and technology, such as digital documentation and cloud storage, have replaced the need for substantial physical storage. It enables efficient record-keeping and information retrieval. As a result, insurers can allocate resources more effectively, streamline workflows, and achieve higher levels of efficiency in their operations.

2. Improved Customer Experience

One of the most striking benefits of digitalization in the insurance industry is the improvement in customer experience. Traditionally, it has been the most demanding and difficult task for insurance companies. Digital tools, online portals, mobile apps, and AI-powered chatbots have transformed how insurers connect with their clients.

These digital solutions enable 24/7 access to services, allowing clients to manage policies, process claims, and obtain information at their convenience. Personalized communication and targeted services, enabled by modern analytics and consumer data insights, have further boosted customer engagement and satisfaction. The change to digital customer service has made interactions more fluid, efficient, and responsive, establishing deeper relationships between insurers and their clients.

3. Increased Accuracy in Risk Assessment and Underwriting

Digital technology has revolutionized the way insurers analyze risks and underwrite policies. Big data analytics, AI), and ML enable insurers to evaluate large volumes of data in real-time, resulting in more accurate risk estimations.

Predictive analytics and sophisticated algorithms provide insights into risk patterns and trends, enabling more precise pricing and underwriting decisions. This greater precision not only enhances the profitability of insurance firms but also ensures that clients receive fair and competitive rates based on their unique risk profiles.

4. Faster Claims Processing

The digitization of claims processing has reduced what was once a difficult and time-consuming operation. Automated workflows and digital platforms enable insurers to process claims more quickly and accurately. Customers can now submit claims online or through mobile apps, submitting relevant documentation electronically.

AI-powered systems examine claims, verify facts, and detect potential fraud to accelerate the approval process. This streamlined method reduces the administrative load on insurers and enhances the overall claims experience for clients. Faster claims handling not only enhances client happiness but also helps insurers retain their reputation for reliability and efficiency.

5. Cost Reduction and Increased Profitability

Digitalization in the insurance industry offers huge cost-saving opportunities for the insurance business. By automating tedious processes and eliminating paperwork, insurers cut operational costs and efficiently allocate resources. Digital marketing initiatives like targeted internet ads and social media campaigns are more cost-effective compared to traditional marketing methods.

The use of digital distribution channels also allows insurers to reach a bigger audience without the need for extensive physical infrastructure. Moreover, the improved accuracy in risk assessment and fraud detection decreases financial losses, contributing to higher profitability. Overall, the implementation of digital technologies enables insurers to operate more cost-effectively, optimize revenue, and achieve sustainable growth.

6. New Revenue Opportunities

Digital transformation presents insurance companies with a multitude

of new revenue prospects. By employing data analytics, insurers can obtain deeper insights into customer preferences and habits, enabling them to design innovative insurance products and services that cater to individual needs.

For instance, data-driven analysis can discover developing market trends and client expectations, allowing insurers to create bespoke insurance solutions that resonate with target populations. Also, the integration of the Internet of Things (IoT) is transforming the market by enabling insurers to offer pay-as-you-go insurance plans based on real-time data. This tailored approach not only boosts customer happiness but also creates new revenue sources by delivering flexible pricing models.

4. Challenges of Digitization for the Insurance Industry

While digitization offers significant benefits for the insurance company, it also poses some challenges. Here are all the challenges associated with Digitization in insurance:

1. Cybersecurity Risks

As the insurance business embraces digital transformation, cybersecurity concerns have become a key concern. In 2024 alone, India reported almost 7,000 cyber frauds every day. In the insurance industry, these cyberattacks grew by 33% compared to the last year.

The increased reliance on digital platforms and the storage of enormous volumes of sensitive consumer data make insurers great candidates for hackers. It is why cyberattacks such as data breaches, ransomware, and phishing attempts pose substantial hazards to the security and integrity of client information.

2. Data Privacy Concerns

Alongside cybersecurity risks, data privacy concerns have also arisen as a crucial issue in the digital age. The gathering, storage, and processing of sensitive consumer data present substantial privacy issues.

Compliance with data privacy requirements, such as the General Data Protection Regulation (GDPR) and other regional data protection legislation, is vital to protect customer information.

3. Regulatory Compliance

The insurance industry operates inside a stringent and highly regulated framework, and digitization adds additional regulatory concerns. Insurers must negotiate complex regulatory requirements related to data protection, cybersecurity, and digital transactions. Compliance with rules such as GDPR, the Insurance Regulatory and Development Authority of India (IRDAI) requirements, and other regional legislation is crucial to avoid legal penalties and maintain customer trust.

4. Technology Infrastructure

Building and sustaining a resilient technology infrastructure is a big problem in the digital age. Insurers must invest in contemporary IT systems, cloud computing, and digital platforms to support their operations. Legacy systems that are not compatible with new technology pose integration issues and may require major investment to upgrade or replace.

5. Managing Digital Transformation and Legacy Systems

Managing the digital revolution while retaining legacy systems is a challenging and resource-intensive endeavor. Many insurers still rely on antiquated legacy systems that are deeply integrated into their operations. Integrating new digital technologies with old systems can be difficult and may demand significant investment in IT infrastructure and resources.

5. Solutions to Overcome Challenges of Digitization in the Insurance Industry

Here is how the InsurTech and insurance companies in India can overcome common challenges associated with digitization:

1. Addressing Cybersecurity Risks

To mitigate cybersecurity risks, insurers must employ effective cybersecurity safeguards. Investing in modern security technology, such as encryption, firewalls, and detection systems for intrusion, is vital to protect against cyber threats. Conducting frequent security audits and vulnerability assessments also helps uncover possible gaps and resolve them proactively.

Implementing multi-factor authentication and strong access controls guarantees that only authorized associated employees can access critical data. Additionally,

insurers should build thorough incident response procedures to rapidly and effectively respond to cyber occurrences. Cyber insurance is becoming more and more important as the digital terrain grows, and the hazards connected with it also keep growing. It is why the Indian government has doubled its budget for cybersecurity from ₹00 crore in 2023-2024 to ₹759 crore in 2024-2025.

2. Ensuring Data Privacy Compliance

To address data privacy concerns, insurers must establish clear data privacy policies and maintain compliance with relevant requirements. It includes both the General Data Protection Regulation (GDPR) and regional data protection laws. Obtaining express client agreement for data collection and utilization is vital to ensure transparency.

Insurers should employ data minimization practices, ensuring that only relevant data is gathered and stored. Regularly evaluating and updating data privacy rules and processes helps ensure continued compliance. Providing training and awareness programs for staff on data privacy best practices and regulations is also vital to building a culture of data protection within the firm.

3. Navigating Regulatory Compliance

To handle regulatory compliance, insurers must stay updated on developing regulatory environments and implement effective compliance frameworks. Regularly monitoring regulatory changes ensures that insurers remain compliant with new obligations. Developing thorough compliance policies and procedures helps standardize processes across the organization.

Conducting regular internal audits and risk assessments identifies any compliance gaps and enables prompt remedy. Insurers must establish a dedicated compliance team or officer to ensure continual oversight and management of regulatory compliance. Engaging with industry associations and regulatory authorities is equally important to provide useful insights and recommendations on best practices for compliance.

4. Building a Resilient Technology Infrastructure

Building and maintaining a resilient IT infrastructure is essential for effective digitization. Insurers must invest in modern IT systems, cloud computing, and digital platforms that are adaptable and flexible to support future growth and technological improvements. Conducting detailed audits of existing technology infrastructure also helps identify areas for improvement and prioritize important upgrades.

Implementing effective backup and disaster recovery procedures protects continuity in the case of system failures or cyber events. Partnering with trustworthy technology providers and adopting industry best practices helps establish a secure and reliable technological infrastructure that enables seamless operations and data management.

5. Managing Digital Transformation and Legacy Systems

Managing digital transition while maintaining legacy systems demands a strategic and phased strategy. Insurers should design a thorough digital transformation roadmap that defines key objectives, priorities, and dates. Identifying essential areas for modernization and prioritizing them in the transformation journey helps minimize disruption.

Implementing a staged strategy enables for progressive integration of new digital technologies with legacy systems, ensuring the continuity of operations. Effective change management tactics, including clear communication, staff engagement, and training programs, are crucial to drive the uptake and acceptance of new technology.

6. Future Trends and Predictions

The insurance industry is on the brink of a technological revolution, with many emerging technologies ready to revolutionize its operations and products. Blockchain technology, for instance, offers the potential to enhance transparency, security, and efficiency in insurance transactions through smart contracts and decentralized ledgers.

The Internet of Things (IoT) is another game-changer, enabling insurers to collect real-time data from linked devices, such as telematics in vehicles and wearable health monitors, to offer personalized insurance solutions and proactive risk management.

The deployment of 5G technology is permitting quicker data transmission, providing seamless connectivity and improved user experiences. As these technologies continue to evolve, insurers must embrace innovation and adapt to stay competitive in the digital age.

1. Artificial Intelligence's Role in the Insurance

AI and ML are playing a pivotal role in digitizing the insurance sector. AI-powered chatbots and virtual assistants (VAs) are transforming customer service by delivering quickly, 24/7 support and answering common requests efficiently. Machine learning algorithms are also helping insurers to examine vast volumes of data, detect trends, and generate accurate predictions, leading to more precise risk assessments and underwriting choices.

AI-driven automation is accelerating claims processing, cutting turnaround times, and minimizing errors. AI and ML are also helping in fraud detection, with powerful algorithms capable of recognizing suspicious actions and anomalies in real time. The integration of AI and ML will continue to drive innovation and operational efficiency, revolutionizing the insurance market.

2. Predictive Analytics and Big Data Applications

Predictive analytics and big data applications are likely to alter the way insurers analyze risks, design products, and communicate with clients. By embracing the power of big data, insurers can obtain greater insights into client behavior, preferences, and risk profiles. Predictive analytics also enables insurers to foresee future trends, identify emerging hazards, and adapt insurance plans to match individual needs.

For example, telematics data from connected vehicles can be utilized to give usage-based insurance coverage, rewarding safe driving behavior with lower premiums. Additionally, big data analytics can boost consumer segmentation and targeting, allowing insurers to conduct individualized marketing campaigns and improve customer retention. The ongoing evolution of predictive analytics and big data applications will help insurers make data-driven decisions and stay ahead in a competitive market.

3. The Future of Customer Engagement and Service Delivery

A seamless, omnichannel experience now defines the future of customer interaction and delivery of the service in the insurance business. Insurers are embracing digital platforms, mobile apps, and social media to provide customers with quick access to services and information anytime, anywhere. Personalized communication and real-time interactions will be important to creating good consumer relationships moving forward.

Insurers must utilize advanced analytics and AI to anticipate client demands, offer proactive solutions, and create a highly personalized experience. Additionally, leveraging the augmented reality (AR) and virtual reality (VR) technology will allow creative methods to communicate with consumers, such as virtual policy walkthroughs and immersive risk assessment simulations. The emphasis will be on building a customer-centric strategy that values convenience, transparency, and responsiveness.

Case Studies: Real-World Examples of Digitization in Insurance

1. Digital Transformation at LIC, HDFC Life, and ICICI Prudential

LIC's Journey Towards Digitalization

Life Insurance Corporation of India (LIC), the country's largest insurer, has been progressively integrating digital solutions to enhance customer service, policy management, and claims processing. Traditionally reliant on an agent-driven model, LIC is now adopting a **phygital (physical + digital)** approach, blending its extensive agent network with digital tools.

Key Digital Initiatives by LIC:

- **LIC Mobile App & Portal:** The MyLIC app and the LIC e-Services portal enable policyholders to access policy details, pay premiums, and initiate claims digitally.
- **Digital Onboarding & e-KYC:** Implementation of e-KYC verification and digital documentation has streamlined the policy issuance process, reducing turnaround times.
- **AI-based Customer Support:** Integration of AI-driven chatbots

assists customers with queries, decreasing reliance on physical branches.

- **Cloud-based Operations:** Migration of a significant portion of policy management systems to cloud computing has enhanced data security and operational efficiency.
- **Digitization of Claims Processing:** Introduction of paperless claim submissions has expedited settlements, leading to a notable reduction in processing times.

Impact of Digitization at LIC:

- A substantial portion of premium collections now occurs via online payments.
- Customer grievances related to policy servicing have decreased due to digital interventions.
- Enhanced reach in rural areas through digital tools provided to agents and mobile app-based services.

Source: Digital Transformation In Indian Insurance Industry

HDFC Life: Pioneering AI & Automation in Indian Insurance

HDFC Life, a leading private life insurer in India, has proactively embraced digital transformation to elevate customer experience and operational efficiency.

Key Digital Innovations by HDFC Life:

- **AI-driven Underwriting:** The company has introduced AI-based underwriting systems that assess applications in real-time, enabling policy approvals within minutes for low-risk customers.
- **360-degree Digital Sales Model:** HDFC Life offers a fully digital customer onboarding journey, allowing prospective clients to purchase policies through an entirely online process.
- **Chatbots & Voice Assistants:** The AI-powered chatbot, HDFC Life Assist, manages a significant portion of customer queries without human intervention.
- **Blockchain for Fraud Prevention:** The company has piloted blockchain technology to create tamper-proof customer records, mitigating fraud risks.

Impact of HDFC Life's Digital Strategy:

- A significant percentage of new policies are issued without manual intervention through automated underwriting.
- Claims settlement times have been reduced, thanks to AI-enabled fraud detection and expedited approvals.
- Millions of customers actively utilize digital self-service portals for policy-related transactions.

Source: HDFC Life – Technology Enabled Business Transformation

ICICI Prudential Life: Leveraging InsurTech for Customer Engagement

ICICI Prudential Life has been at the forefront of digitization by integrating AI, big data analytics, and customer experience platforms to redefine its insurance offerings.

Major Digital Transformations at ICICI Prudential Life:

- **Robo-Advisory Platform:** The company launched "LiGo," an AI-driven chatbot that assists customers with policy queries, claims, and premium payments.
- **Mobile-First Strategy:** Development of a seamless mobile app experience enables customers to purchase policies, pay premiums, and track investments effortlessly.
- **Voice Analytics for Customer Support:** Implementation of AI-powered voice analytics monitors and enhances the quality of customer interactions.
- **Data-Driven Personalization:** Utilization of AI and big data analytics allows for personalized insurance product recommendations based on customer behavior patterns.

Impact of Digital Innovation at ICICI Prudential:

- A significant portion of customer transactions now occurs through digital platforms.
- Customer complaints have decreased due to improved response times facilitated by AI-driven solutions.
- Increased market penetration in Tier-2 and Tier-3 cities through digital onboarding tools.

Source: Digital Transformation In Indian Insurance Industry

2. Case Study: Acko – India's First Fully Digital Insurer

Founded in 2016, Acko is India's first digital-native insurance company, operating entirely online without agents or branch offices. The company leverages technology for policy issuance, pricing, and claims processing.

Key Features of Acko's Digital Model:

- **AI-Based Risk Pricing:** Utilization of big data and AI enables customized premiums for individual customers based on their behaviors and profiles.
- **Seamless Digital Claims Processing:** Claims can be filed via user-friendly digital platforms and are often settled swiftly.
- **B2B Embedded Insurance:** Acko partners with platforms like Amazon and Ola to offer integrated insurance products such as device protection and ride insurance.
- **Usage-Based Insurance (UBI):** Introduction of innovative products like "Pay-As-You-Drive" car insurance, where premiums are based on actual usage.

Impact of Acko's Digital Disruption:

- A high percentage of claims are processed within 24 hours.
- The company has acquired over 70 million customers within a few years.
- Operational costs are minimized due to the absence of physical infrastructure.

Sources: Acko Case Study | Google Cloud, Digital Insurance in India: a landscape view

3. Case Study: Lemonade Inc. – The Global Digital Insurance Pioneer

Lemonade Inc., a U.S.-based InsurTech company founded in 2015

Case Study: Lemonade Inc. – The Global Digital Insurance Pioneer

Lemonade Inc. is a **U.S.-based InsurTech company** that has disrupted the traditional insurance market with its **AI-driven, customer-first approach**. Unlike conventional insurers, Lemonade operates as a **fully digital insurance provider**, leveraging **artificial intelligence (AI), behavioral economics, and blockchain technology** to streamline policy issuance, claims processing, and customer engagement.

How Lemonade's Business Model is Different from Traditional Insurers

1. AI & Chatbot-Driven Policy Issuance

- Unlike traditional insurers that rely on **manual underwriting and agent-driven sales**, Lemonade offers an **entirely digital customer onboarding experience**.
- Customers can purchase **home, renters, pet, life, and auto insurance** policies **within 90 seconds** via the Lemonade mobile app or website.
- The AI-driven chatbot **"Maya"** handles policy recommendations, underwriting, and issuance, making human intervention unnecessary in most cases.
- **Impact:** This significantly reduces **operational costs**, enabling Lemonade to offer **lower premiums** compared to traditional insurers.

2. 5-Second Claims Approval via AI

- Lemonade's AI-powered claims assistant **"Jim"** processes **simple claims in just 5 seconds**.
- Customers can file a claim via **video recording**, where AI analyzes the claim's authenticity using facial recognition, pattern analysis, and fraud detection algorithms.
- For complex cases, AI pre-screens the claim and forwards it to a **human adjuster**, improving efficiency.
- **Impact:**
  - **30% of claims are settled instantly** without human involvement.
  - **Fraudulent claims detection is significantly improved**, reducing claim-related losses.

3. Behavioral Economics-Based Pricing

- Lemonade **revolutionized the insurance business model** by introducing a

flat-fee structure instead of the traditional profit-driven approach.

- Unlike conventional insurers, which **profit from unpaid claims**, Lemonade **takes a fixed percentage (25%) of premiums** for administrative costs and donates any unclaimed funds to charity through its **"Giveback Program"**.
- **Impact:**
  - This structure **removes the conflict of interest** between insurers and policyholders, as Lemonade has no incentive to reject valid claims.
  - Customers feel more **engaged and trusting**, leading to **higher renewal rates and customer retention**.

4. **Blockchain-Enabled Transparency & Security**
   - Lemonade uses **blockchain technology** to enhance data security, policy issuance, and fraud prevention.
   - Blockchain ensures that **policy contracts cannot be tampered with**, reducing the risk of **insurance fraud and disputes**.

Impact of Lemonade's AI-Driven Model on the Insurance Industry

- **Over 1.5 million policies issued** across the U.S. and Europe in just a few years.
- **Claims processing time reduced by 90%** compared to traditional insurers.
- **Customer acquisition cost is 10x lower** than that of conventional insurers, as digital processes eliminate intermediaries.
- **High Net Promoter Score (NPS):** Customers rate Lemonade's experience significantly better than traditional insurers.

Global Expansion & Market Disruption

Lemonade started with **home and renters insurance in the U.S.**, but has rapidly expanded into:

- **Auto insurance** (Lemonade Car)
- **Pet insurance** (Lemonade Pet)
- **Life insurance** (Lemonade Life)

The company has also **expanded into European markets**, including **Germany, France, and the Netherlands**, bringing its disruptive model to international markets.

Key Takeaways for Traditional Insurers

Lemonade's success demonstrates:

- The power of **AI and automation** to streamline insurance operations.
- The effectiveness of a **customer-centric, behavioral economics-driven model**
- The importance of **fraud detection and digital-first claims processing**
  How **blockchain** can enhance transparency and policyholder trust

Conclusion

Lemonade Inc. stands as a prime example of **how technology can reinvent insurance**, moving away from legacy systems and agent-driven models to a **data-driven, customer-focused**, and **highly automated** insurance provider.

Sources:

1. Lemonade Inc. Official Website: www.lemonade.com
2. CNBC - How Lemonade Uses AI in Insurance: CNBC Report
3. McKinsey Report on Insurtech Disruptors: McKinsey & Co.

Summary

India's GDP is predicted to surpass Germany and Japan by the end of this decade with a CAGR of 6.9%, up from 6.5% in 2024. This economic growth is producing increased incomes and expansions. It is encouraging the expansion of the country's insurance sector. This is why the insurance industry will play an important role in the growth of the economy.

A dynamic regulatory landscape and advances in digital ecosystems will strengthen industry product innovation and distribution. The increased financial and risk awareness will further drive insurance demand in the country.

On the cusp of this development, insurance companies and InsurTech need to consider the impact of digitization on the insurance industry. No insurance company has yet completed a digital transformation. However, the one that completely utilizes the power of digitalization

Table 4: Insurance Markets' Ranking According to Total Premium Pool

Rank	Country	Total premium volume			Market Share
		2023*	2024e	2025f	2023e
1	United States	3,227	3,424	3,584	44.9%
2	China	724	812	893	10.1%
3	United Kingdom	375	401	420	5.2%
4	Japan	363	370	382	5.0%
5	France	283	292	303	3.9%
6	Germany	245	255	264	3.4%
7	South Korea	186	194	205	2.6%
8	Canada	171	176	185	2.4%
9	Italy	159	165	171	2.2%
10	India	136	149	162	1.9%
11	Netherlands	93	98	102	1.3%
12	Brazil	84	92	98	1.2%
13	Spain	83	88	92	1.2%
14	Taiwan	78	80	84	1.1%
15	Australia	74	76	79	1.0%

Source: Swissre Press Release

will be better position to have a competitive advantage in the growing industry.

The Indian insurance industry stands at a crossroads, with both opportunities and challenges. To develop a strong, future-proof ecosystem that endures in a dynamic market, companies must focus on expanding profitability and driving innovation. Doing so could assist them in building more resilience and creating additional value.

At the same time, insurers will need to establish robust capabilities to address growing risks through quick innovation while assuring efficiency and productivity through simplification, standardization, and digitization. TJ

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New Age Enterprise Risk Management – Navigating Unchartered Territories and Steering Clear of Blind Spots – A Paradigm Shift

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Mr. Delzad Dinyar Tanaz Jivaasha has 21 professional qualifications and certifications to his credit and has a rich and diverse work experience of 17 years in leadership positions across varied and diverse organizations, covering core domains in Enterprise Risk Management, Operational Risk Management, Market Risk Management, Environmental, Social and Governance (ESG) Risk Management, Climate Risk Management, Business Continuity Planning & Crisis Management, Finance & Accounts & Legal and Compliance.

A. Introduction

Enterprise Risk Management (ERM) is a mechanism to look at risks holistically and evaluate the same at an entity level, with the perspective of identifying material risks which can de-rail the business and thereafter putting in place robust mitigation plans in collaboration with the business and support functions.

The fundamental objective of ERM is to add value to all stakeholder functions in the organization through identifying & treating existent and potential risks, to ensure successful attainment of all business objectives and strategic plans.

A core aspect to be appreciated is that ERM is neither an audit nor a compliance activity. It is a business partner in the growth story of an organization and focuses on ensuring that the business navigates smoothly even in the face of choppy and rough waters.

In the world of VUCA (Volatility, Uncertainty, Complexity and Ambiguity) and BANI (Brittle, Anxious, Non-linear and Incomprehensible), if there is one thing which would ensure that the company balance sheet is protected and the entity continues to maintain its leadership position built over years of perseverance, innovation and commitment to stakeholders – the same is ENTERPRISE RISK MANAGEMENT.

Integrating ERM into the strategy and day-to-day workflow is of utmost importance for the long term viability and sustainability of an organization.

If there is one function which plays the role of **THE EYES AND EARS OF THE BUSINESS – IT IS THE ERM FUNCTION.**

As organizations continue to deal with a plethora of new and emerging risks confronting the long term sustainability and viability of an entity, it is exceedingly crucial and important to ensure that risk management is the driving force behind all decisions.

The upcoming sections deals with planning for the next 10 years (albeit a very difficult thing to do given the changing paradigms!!) to assess the core focus areas of risk management, ensure that organizations run the mile with respect to evaluating the blind spots and successfully navigating the choppy waters of global and national business.

B. Four Pillars of Enterprise Wide Risk Management – A futuristic perspective

Companies need to re-calibrate and re-invent strategies, to keep pace with the external world. Horizon scanning plays a key role here, amongst other factors.

New Age Risk Management demands a strong focus on emerging areas and in the coming decade needs to be focused on the following four critical pillars, amongst other core areas too:

i. **Artificial Intelligence – Governance and Risk Management**

If there is one technology which is penetrating every aspect of business and making its presence felt in no uncertain terms – it's Artificial Intelligence (AI)! Whether as a Company, or as individuals, or as any other form of entities – we don't quite have choice. Artificial Intelligence will have to embraced.

A core aspect of this embracing will be putting in place governance frameworks and risk management practices around the deployment and management of Artificial Intelligence.

Comprehensive risk assessments at very regular intervals of time sounds very good to hear. Having said the same, an overkill needs to be avoided! Therefore, detailed risk assessments at pre-defined intervals of time along with feather touch risk assessments between the above referred detailed risk assessments would have to be integrated to monitor the effectiveness of AI and gauge the concurrent relevance of the AI models.

The day is not far where every Company will have a Chief Artificial Intelligence (AI) Officer – another critical C-Suite Executive position given the need of the hour.

Organizations will need to be ahead of the curve in three area's:

1) Having in place a **Board Approved AI framework** which lays down the broad norms for AI Governance, including deployment and regular re-calibration coupled with enterprise wide risk management.
2) Ensuring **integration of AI specific risks in the Entity Level Risk Registers** with a drill down to the maximum extent possible.
3) Putting in place **Key Risk Indicator's** which will throw early warning signals and red-flags around issues related to the sphere of AI implementation & related risks.

AI and machine learning tools can also monitor risks and predict how they might develop in the future, enabling mitigation strategies to become more proactive.

ii. **ESG Risk Management – Keeping a Hawk's Eye on Climate Change Risk Management**

A word which needs little introduction is ESG – **E**nvironmental, **S**ocial and **G**overnance.

Many organizations refer to the above as Sustainability too and integration of ESG considerations into the Enterprise Risk Management Framework of the organizations is crucial and critical.

Organizations are increasingly being questioned by all stakeholders including the investor communities on their ESG Risk Management practices.

A core aspect is ensuring that ESG Risk Management is integrated by all stakeholder functions into the Risk and Control Self-Assessment (R & CSA) Activity which is an activity jointly anchored by the First Line of Defence Functions and the Enterprise Risk Management Functions.

The R & CSA activity aim's at classifying the inherent and residual risk levels into Very High, High, Medium and Low Risk categories, based on design and operating effectiveness of controls.

Conceptualizing, tracking, monitoring and reporting Key Risk Indicator's around every area of ESG can play a key role in effective ESG Risk Management.

A core aspect to consider here is also the far reaching ramifications the world has witnessed with respect to Climate Change Events. Focusing on Climate Change is not an option, it is a necessity to give a better future to generations to come. Organizations can play a big role here.

Increasingly, companies across the world, are strengthening their activities around climate change

risk management and reporting the financial impact of Climate Change as part of the Annual disclosures in the Integrated Reports and ESG Reports.

Inclusion of Climate Change considerations into the Internal Capital Adequacy Assessment Process would be the key. Assessing the anticipated impact on the Company's outflow's, profitability and capital requirement, in the event of a climate change event would be a core aspect of climate risk management strategy.

It would be useful for companies to classify the impact of Climate Change on a Short Term, Medium Term and Long Term Time Horizons.

The Task Force on Climate Related Financial Disclosures (TCFD) recommendations are regarded as the benchmark in Climate Risk Disclosures. TCFD was a group set up on the request of the G20 nations by the International Financial Stability Board (FSB). FSB has now asked the IFRS Foundation to take over the mantle from TCFD.

A crucial element of Climate Risk Management is to integrate Physical Risk Management & Transition Risk Management as a part of its Strategic Decision making and overall organization strategy as contained hereunder:-

- **Physical Risk Management**

  It is crucial to undertake a physical risk assessment with respect to assessing and monitoring the levels of exposure to acute and chronic climate change events.

  We have observed the effect of the climate events in the past few years and it is reflected in the frequency and severity of the losses due to such events. To the historical trends companies should also factor in the expected future impact and frequency and budget for the same.

  From an opportunity perspective, Companies can leverage and offer climate change friendly products and services to their customers.

- **Transition Risk Management**

  Organizations can play a leadership role and capture opportunities as countries across the globe transition to a low carbon economy, which also brings with it its own set of challenges.

  Every company must endeavour to undertake a deep dive analysis on Transition Risk based on the parameters selected with guidance from the TCFD.

  The focus should be on understanding the transition risk drivers such as policy and legal risk, technology risk, consumer demand and market risks as well as associated transition costs.

  Engagement with stakeholders to analyse the key development and potential associated impact of climate risk on the economy is crucial including providing regular updates on the same to the Board mandated appropriate committees.

iii. Risk Management Interconnections – A true game changer

The myriad of risks an organization is exposed to cannot be looked at in isolation and must be assessed holistically to derive an entity level impact. **Businesses are increasingly interconnected with partners, vendors and suppliers across global markets, complicating various type of risks. When there is significantly more risk in one of the risk categories it can have a ripple effect that impacts other risk categories too**.

Companies must contend with the connectivity of risks.

The business impact of a natural disaster, the ongoing wars between various nations, higher and lower interest rate regime's or other global geo political developments can cascade across an entire supply chain worldwide and also impact a plethora of risk groups and categories for every industry and every organization.

To derive the impact, it is crucial for the Enterprise Risk Management Function stakeholders to have strong knowledge, skill sets, talent and subject matter expertise with respect to interconnections between the various categories of risk. Without connecting the dots and without establishing a 360 degree analysis of every risk category, it is highly improbable that the risk assessment would be complete and reliable. This equally puts a focus on ensuring that the right talent pooling and management is done for the ERM function.

The ERM function also needs to place a strong focus on culture building to ensure that the key stakeholders of every function are well trained and upto speed w.r.t assessing and evaluating the interconnections between various risks. ERM is a collaborative effort involving all stakeholder functions across the Company.

iv. Country Risk Management

Businesses are increasingly going global with every passing day and the dynamics of business are no longer restricted to the borders of any one country. This brings with it certain complexities which need to be managed because only assessing the financial strength and goodwill of a counterparty is not enough. It needs to be suitably integrated with the stability and resilience assessment of a country, since it has a key role to play in the viability of an organization.

Economic, social and political conditions coupled with events over a period of time (including but not limited to fluctuations in the currency of a foreign country vis-à-vis the home country and default related events associated with the foreign country) in a country need to be thoroughly analysed.

The objective of the analysis is to do a risk posture profiling of every country and take an informed decision before transacting business with stakeholders of a particular country. Investments in countries also need to be timed carefully and risk assessment is a step towards achieving this objective.

The analysis also aims at fructifying the quantum and extent of exposure an organization should have in each country. These exposure levels need to be monitored, tracked and reported to the Board mandated Committees.

Country Risk Management can also form part of the Terms of Reference of the Risk Management Committee of the Board.

Therefore, developing models based on key matrices and risk based weightages being assigned to each of the matrices zeroed in, is a critical aspect of country risk management.

C. Conclusion

ERM is about being proactive and not reactive. Hence it is important to continually review existing ERM practices, keep examining changes in business conditions, economic environment, systems and processes and ensure than ERM is upto speed on the needs and requirements of the business.

An organization which adopts ERM in its true spirit, is certain to withstand the test of time and evolve into a respected Company and market leader.

Core risk groups such as Credit Risk, Market Risk, Operational Risk, Business Risk, Strategic Risk, Technology Risk, Strategic Risk, Regulatory Risk and Reputation Risk have always been and will always be critical to every company. Along with these risk groups, the other risk groups which have emerged, as explained above, equally need to be given cognizance to ensure that risk levels stay within defined appetite and tolerance thresholds.

ERM is an imperative and organizations which have ERM as their foundation stone will continue to experience healthy top line and bottom line growth along with ensuring protection of all stakeholder interest's. TJ

ENTERPRISE RISK MANAGEMENT = ORGANIZATIONAL VIABILITY, SUSTAINABILITY AND A COMPETITIVE EDGE IN TODAY'S ERA

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Note to the Contributors:

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Guidelines to the Contributors:

1. Manuscript submitted to the Editor must be typed in MS-Word. The length of the Manuscript should be 3000-2500 words of the primary content (excluding bibliography).

2. General rules for formatting text:

   i. Page size : A4 (8.27" X 11.69")

   ii. Font: Times New Roman - Normal, black

   iii. Line spacing: Double

   iv. Font size: Title - 14, Sub-titles - 12, Body- 11 Normal, Diagrams/Tables/Charts - 11 or 10.

3. The first page of the Manuscript should contain the following information of the Author(s) –

   i. Title of the paper

   ii. Name of the Author(s)

   iii. Email address

   iv. Photo

   v. Brief profile - The profile will include 2 to 3 lines about author's professional qualification and experience in the field.

4. **Abstract:** A concise abstract of maximum 150 words is required. The abstract should adequately highlight the key aspects or state the objectives, methodology and the results/major conclusions of analysis. The abstract should include only text.

5. **Keywords:** Immediately after the abstract, provide around 3-6 keywords or phrases.

6. **Tables and Figures:** Diagrams, Tables and Charts cited in the text must be serially numbered and source of the same should be mentioned clearly wherever necessary. All such tables and figures should be titled accurately and all titles should be placed on the top after the number. Example: Table 1: Growth Rate of Insurance Premium in India (1997-2010).

   Heavy econometric article must be supported by NTS (non-technical summery). Contributor of the article must also send working sheets of econometrics presented.

7. **Sample Size:** No restricted sampling is allowed. Minimum sample size should be 100 and above.

8. **References:** all the referred material (including those from authors own publication) in the text must be appropriately cited. All references must be listed in alphabetical order and sorted chronologically and must be placed at the end of the manuscript. The authors are advised to follow American Psychological Association (APA) style in referencing.

   - **Reference to a Book:** Author. (Year). *Title of book.* Location: Publisher.

     Example: Rogers, C. R. (1961). *On becoming a person.* Boston: Houghton Mifflin.

   - **Reference to a Journal publication:** Author(s). (Year). Title of the article/ paper. *Journal name*, volume (issue), page number(s).

     Example: Smith, L. V. (2000). Referencing articles in APA format. *APA Format Weekly, 34(1),* 4-10.

- **Reference to a Web Source:** Author. (Date published if available; n.d.--no date—if not). Title of article. *Title of website*. Retrieved date. From URL.

  Example: Landsberger, J. (n.d.). Citing Websites. In *Study Guides and Strategies.* Retrieved May 13, 2005, from http://www.studygs.net/citation.htm

- The references should be selected references.

9. Usage of abbreviations in the text should be avoided as far as possible and if used should be appropriately expanded.

10. The Manuscript submitted must be original work and it should not have been published or submitted for publication elsewhere. The author(s) are required to submit a declaration to this extent in the format specified in Appendix 1, while submitting their Manuscript.

11. Once article is published in any particular issue (e.g. January-March issue) then next contribution of particular author will not be accepted for immediate issue of the Journal (i.e. April-June issue).

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13. Contribution(s) should reach the designated email address at III on or before 31st October (January-March issue), 31st January (April-June issue), 30th April (July-September issue) and 31st July (October-December issue).

14. Please send your manuscripts to <journal@iii.org.in> with subject line as "Contribution for "The Journal" January/April/July/October (Mention Year) issue.

15. All enquiries related to the submissions should be addressed only to the Editor.

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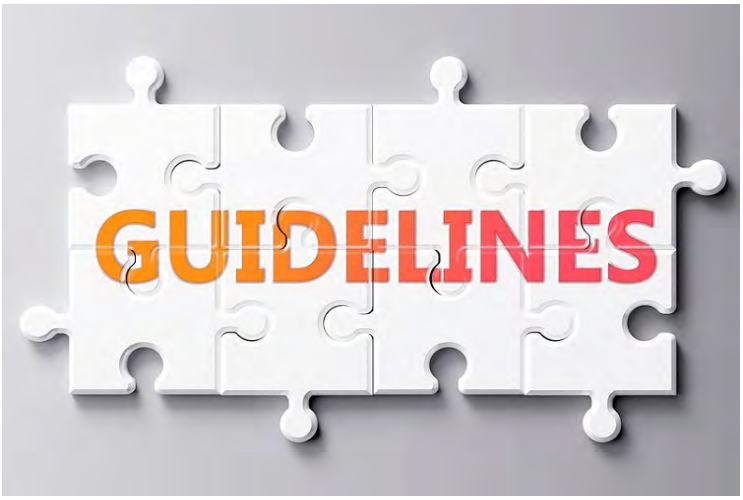

Appendix I

Declaration by Authors

I/we (Full Name of **the Author(s)**

1) ……

2) ……

3) ……

hereby declare that I/we are the author(s) of the paper titles "……
……."

(Title of the paper), which is our original work and not the intellectual property of anyone else.

I/we further declare that this paper has been submitted only to the Journal of the Insurance Institute of India and that it has not been previously published nor submitted for publication elsewhere.

I/we accept responsibility for the statistics presented in the article, and the Institute may refer specific queries about the statistics to me/us as needed.

I/we have duly acknowledged and referenced all the sources used for this paper. I/we further authorize the editors to make necessary changes in this paper to make it suitable for publication.

I/we undertake to accept full responsibility for any misstatement regarding ownership of this article.

……	……	……
(Signature Author I)	(Signature Author II)	(Signature Author III)
Name:	Name:	Name:
Date:		
Place:		

Courses offered by College of Insurance (COI)

Post Graduate Courses in collaboration with University of Mumbai

- **Post Graduate Diploma in Health Insurance (PGDHI)**
  - The Post Graduate Diploma in Health Insurance (PGDHI) is a one year part time post graduate (two semesters) program.
  - The PGDHI Course comprises *7 Papers and a Research Project.*
  - The Course covers all aspects of Health Insurance including health economics, product development, rating, risk evaluation, human anatomy, diagnostics, underwriting, claims processing, importance of data analytics, fraud prevention and functioning of Third Party Administrators (TPAs).
- **Post Graduate Diploma in Insurance Marketing (PGDIM)**
  - The Post Graduate Diploma in Insurance Marketing (PGDIM) is a one year part time post graduate (two semesters) program.
  - The PGDIM Course consists of 8 Papers and a Research Project.
  - The Course covers various topics relating to Insurance Marketing including Principles of Economics and Economic Environment, Risk Management and Underwriting of Life/ General/ Health Insurance lines, Understanding Buyer Behaviour, Marketing, Communication, Branding with specialization in Life Insurance or General Insurance.

Certificate Courses offered by College of Insurance (COI)

CC1 - Certificate course in Life Insurance Marketing

- **Duration of the course - 4 months**
- **Mode of Teaching -** Self-study + 3 days Online Contact Classes
- **Total hours of Teaching -** 18 hours for Online Contact Classes (to solve queries)
- **Exam pattern -** Assignments + MCQ Final Exam

CC2 - Advanced Certificate in Health Insurance – Virtual

- **Duration of the course - 4 months** [3 hours (morning) session on **Saturday** and **Sunday**]
- **Mode of Teaching -** Virtual Training
- **Total hours of Teaching -** 90 hours
- **Exam pattern -** Project Work + MCQ Final Exam

CC3 - Certificate Course in General Insurance

- **Duration of the course - 3 months** [full day session (6 hours) on **Saturday** and half day session in morning (3 hours) **Sunday**]
- **Mode of Teaching -** Virtual Training
- **Total hours of Teaching -** 100 hours
- **Exam pattern -** Weekly Exam + MCQ pattern

CC4 - Certificate Course in Investigation and Fraud Detection in Life Insurance

- **Duration of the course - 3 days** [full day session (6 hours)]
- **Mode of Teaching -** Virtual Training
- **Total hours of Teaching -** 15 hours for Online Contact Classes
- **Exam pattern -** MCQ pattern

NOTES

CALL FOR PAPERS

We invite articles/papers for the issues of **'The Journal'** of Insurance Institute of India for the year **2025**. "The Journal" is quarterly publication of Insurance Institute of India, Mumbai. It is published in the month of **January, April, July** and **October** every year.

"The Journal" covers wide range of issues related to insurance and allied areas. The Journal welcomes original contributions from both academicians and practitioners in the form of articles. Authors whose papers are published are given honorarium and two copies of the Journal.

We request you to send your articles/papers to **journal@iii.org.in** on or before the due dates.

THEMES FOR THE YEAR 2025

July – September 2025

- Health and Retirement – The future market of the Insurance Industry
- Last Date of submission of papers/articles will be 30th April, 2025.

October – December 2025

- Open Theme - Any topic on insurance or allied areas.
- Last Date of submission of papers/articles will be 31st July, 2025.

We request you to send your articles/papers to journal@iii.org.in on or before the due dates.

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