

# Life Insurance in a Time of Rapid Technological Change

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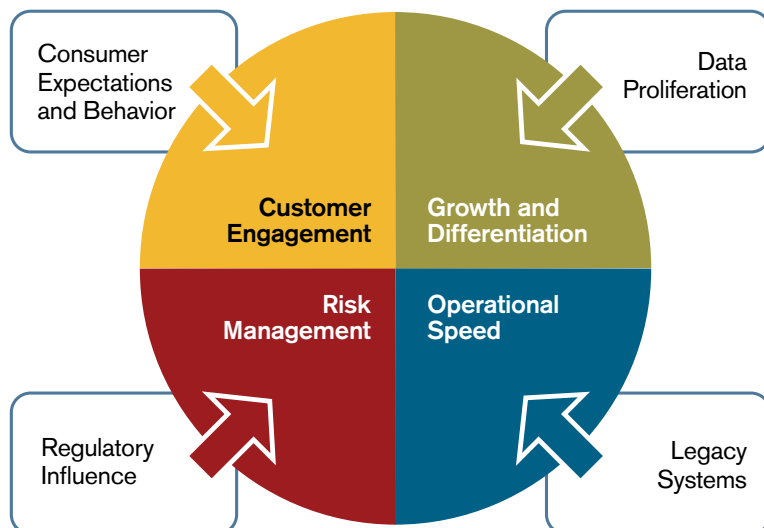
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Anyone who has placed a telephone call through a switchboard operator, from a phone booth, using a rotary dial or on a brick-sized cellular phone has witnessed the steady march of technological progress. Advances in technology and infrastructure have changed the way that we connect with one another and, more fundamentally, how we experience and interact with the world in which we live. In a cosmic blink of an eye, every facet of life has been transformed by technology: communication, entertainment, healthcare, transportation, manufacturing, finance and more. Although the insurance industry may not be perceived as the nexus of technological innovation, the influence of technology on insurers is profound and a technology and data analytics race is already well underway.

## Overview

For the insurance industry, the non-stop wave of technological change creates both challenges and opportunities, but the ultimate success of incorporating new technologies is influenced by a number of internal and external factors. These factors influence how companies are leveraging technology for consumer engagement, competitive differentiation, operational speed and risk management. The areas of focus for the insurance industry and the internal and external influences that act upon them can be represented in the following diagram, based loosely on the "Competing Values Framework" (Quinn and Rorbaugh, 1983). Each quadrant demonstrates the push-and-pull dynamics between competing goals: growth vs. risk control and efficiency vs. engagement.



## Customer engagement

### The quantified self

Technology has created new opportunities to engage customers through the quantification of health and fitness data. Insurers such as Aviva and Discovery Health have developed wellness programs and policy riders that offer discounts and other rewards to incentivize healthy behaviors. Customers are rewarded for regularly visiting their doctors, for exercising, maintaining healthy weights and even for purchasing healthy foods. These programs aim to reduce claim costs, but they also align with the customers' own goals of a higher quality of life with lower morbidity and improved longevity. As the market for activity monitors and more-advanced wearable devices expands, the opportunities for insurers to integrate these technologies into insurance products to incentivize healthy lifestyles will continue to grow.

### Gamification

Consumer engagement can be enhanced through gamification. Property and casualty insurers Progressive and Farmers have embedded insurance concepts inside the popular games SimCity and Farmville to increase brand awareness and drive primary demand for insurance. Life and health insurers have also developed games to educate consumers and motivate healthier lifestyle choices. Insurance is confusing to many people, and games have proven successful at reaching and educating an expanded audience; for example, games can be used to improve financial literacy and help consumers prepare for retirement. Such interaction with the customer improves the company brand and builds a bond with the consumer.

### Telematics

Telematics have revolutionized the pricing structure of automobile insurance. Instead of using broad rating variables, individuals are evaluated based on personal driving behavior. Usage-based insurance is still in the early stages, however, and it continues to expand as more companies develop programs and new technologies emerge. These programs have enjoyed broad support from regulators, as well as customers, who feel empowered, as improving their driving performance may help them receive lower premium rates.

## Growth and differentiation

### Social media

Insurers have unprecedented abilities to communicate directly with customers through social media. This can help insurers establish a brand, evaluate competition, educate consumers

## Consumer expectations and behavior

The insurance-buying experience is generally quite different from other consumer or financial products. Consumers have grown increasingly comfortable doing their own product research and shopping online and expect a fast, simple and secure process. In life insurance markets, where fluid testing or physical examinations are common, the timeline for purchasing insurance is often measured in weeks rather than seconds. While invasive underwriting evidence provides very strong protective and sentinel value that allow insurers to combat adverse selection, it may serve as an impediment to efficiently reaching the underinsured younger or middle-income markets. New medical technologies, smart phone apps and data-driven predictive modeling solutions offer opportunities to bridge the information gap between applicants and insureds while drastically reducing the length of the underwriting process.



## Data proliferation

Insurance companies have expanded access to internal and external electronic data, which may lead to keen new insights that improve the precision of pricing, underwriting and enterprise risk management. Integrating and mining this complex web of structured and unstructured data for maximum effect requires unique skills, analytic capabilities and business information infrastructure that insurers must develop to keep up with other industries.

and respond to customer feedback. Effective leveraging of social media can expand sales, improve communication and lead to insurance innovations. Insurers are able to refine marketing strategies to target specific audiences based on social interactions.

### Distribution channels

Traditional methods of distribution are evolving as advancements in technology provide expanded distribution options for insurers. As consumer use of the Internet grows and online transactions proliferate, insurers are able to capitalize on expanded access to sell insurance policies. This is especially true in developing insurance markets, where new products are created to meet the demands of the tech-savvy consumer.

### Microinsurance

Millions of people in the developing world have access to protection through microinsurance. Insurance companies are able to leverage mobile phone technology to expand access to remote populations. Additionally, mobile phones can be used to facilitate premium payment and claims processing.

### Data-driven analytics

Insurers are leveraging data to use in predictive models to refine policy pricing and improve risk selection. The companies that employ these models are able to offer competitively priced insurance across the risk spectrum. Additionally, data is available on competitor prices to inform demand models and understand the price sensitivity of customers as well as the relative competitiveness of the market. Data is also available on individual risk characteristics through third-party data sources such as motor vehicle records, prescription drug histories and electronic health records.

### Operational speed

#### Automation

Cost reduction through improved operational efficiency is one of the clearest and most quantifiable benefits of many new technologies. By eliminating or automating routine manual tasks, insurance companies are able to realize significant gains in a wide range of applications. Electronic applications are utilized to capture data at the beginning of the policy issue process, ensuring consistent and efficient data collection. The risk selection and underwriting process is also an area that has seen significant focus for technology-driven automation. Automated systems

### Legacy systems

One of the biggest impediments to adopting rapidly changing technology is the cost of legacy systems. As an example from the not-too-distant past, it is estimated that the worldwide spending on the Year 2000 (or Y2K) programming bug — a simple problem caused by programs that used two digits for their year fields instead of four — exceeded USD300 billion. While this may have been a wake-up call ushering in an era of systems modernization, insurance companies are still hampered by legacy issues arising from acquisition or simple inertia. An emerging area of focus on service oriented architectures (SOA) and web-based services may help integrate and simplify various processes including distribution, policy administration and claims processing.



are deployed to bring consistency to the application of underwriting rules in a faster and more cost-effective manner, which may also enable insurance companies to underwrite the underinsured younger and middle-income markets in an economically sustainable way.

### Server virtualization

Another technological advance fueling cost savings and flexibility is server virtualization. The rapid increase in data often leads to a proliferation in physical servers to store that data. In addition to the direct costs, each additional server creates more maintenance, support and energy costs. Through virtualization, independently partitioned virtual servers can coexist in a single piece of physical hardware.

### Organizational alignment

The remoteness of the insurance industry from innovation hubs and technology companies creates a challenge for identifying and incorporating emerging technologies. ►

## Regulatory influence

The basic guiding principles for data protection are well articulated by the Irish Data Commission's "Code of Practice on Data Protection for the Insurance Sector":

1. Obtain and process the information fairly.
2. Keep it only for one or more specified and lawful purposes.
3. Process it only in ways compatible with the purposes for which it was given to you initially.
4. Keep it safe and secure.
5. Keep it accurate and up to date.
6. Ensure that it is adequate, relevant and not excessive.
7. Retain it no longer than is necessary for the specified purpose or purposes.
8. Give a copy of his/her personal data to any individual, on request.

Internal IT teams must build a culture of continual learning and network with external partners to stay abreast of the rapidly changing landscape. Even after technologies are identified, internal adoption can be challenging. This requires internal collaboration within the various silos of the IT organization and between the IT organization and the operation's business units. The 2014 McKinsey research report "Views from the front lines of the data-analytics revolution" suggests that this collaboration requires unique 'translators' whose "talents bridge the disciplines of IT and data, analytics, and business decision making." Ultimately businesses must balance the long-term potential benefits of new technology with the short-term demands for market-leading speed.

## Risk management

### Fraud detection

Technology advances play an important role in controlling and mitigating risk. At the individual applicant or agent level, advanced analytics are being deployed to help combat fraud. By integrating data from social media, public records, industry databases and internal data sources, insurers can create a powerful and holistic fraud risk profile.

### Scenario testing

Advances in computing power also facilitate more-robust stochastic scenario and extreme event testing. These scenarios can be used to model the real-world environment for the determination of appropriate levels of economic capital.

### Data security

The frequency of data breaches at retail outlets and financial institutions creates liability for those institutions and erodes public confidence. For insurers, increased

access to personal data from an array of financial, consumer and social media sources may create opportunities to engage with consumers, improve risk selection and combat fraud, but also creates risks in a regulated industry. As a result, the appropriate use and protection of personal data is a growing concern for regulators around the world.

### Privacy

Privacy concerns have been raised as insurers have increased access to data through new technology. Insurers must be diligent in maintaining the trust of their customers and not misuse insured data. Some regulatory guidance is available; however, it is important for insurers to proactively work to ensure policyholder privacy is not compromised.

## Looking ahead

Technology will continue to transform the insurance industry. Private investments have encouraged innovations in mobile-phone-size diagnostic tools that will rival the Star Trek tricorder, and advances in genomics may lead to individualized medical care and treatments. A future with self-driving cars may reduce motor vehicle accident risk to such a level as to make the automobile insurance market irrelevant. Advances in quantum computing will someday increase the feasibility of dealing with even larger volumes of Big Data and transform the traditional risk selection process in the insurance industry. Despite a perception of conservative stagnation, the insurance industry has made steps toward embracing technology-driven innovation. Insurers are able to leverage technological advances to engage customers and mitigate risks, communicate more effectively, and refine pricing and underwriting. The companies that are able to use the advancements to increase efficiency and to develop new products will lead the way through the next era of technological progress. ■