Welcome to our special report on innovation!

We live in an era of innovation-driven transformation. Even the insurance industry, which is often portrayed as relatively staid, is making strides to keep pace with the technological and structural shifts that are dramatically changing society. Given the magnitude of these changes, innovation is becoming increasingly critical to the long-term success of all insurers. But innovation can be a nebulous concept and requires the implementation of ideas in concrete, practical form, to actualize benefits for the industry. How individual insurers go about the process of innovation will be vital to maintaining their relevance in a world of seemingly constant change and growing risks.

To that end, in August 2018, we surveyed our rated universe, to get a better read on the state of innovation in the insurance industry. More than 450 insurers in 48 markets, representing every segment of the industry worldwide, filled out the survey. The vast majority—well over 80%—responded that they believe innovation is moderately to extremely critical to their organizations, which is testament to the industry's expanding focus on innovation.

Generally, insurers look to innovation to address a wide variety of issues. For much of the property/casualty segment, overcoming system and process inefficiencies is the top priority. Advances in technology have made inroads into distribution and claims handling, but P/C insurers need to develop new products to address new kinds of risks, such as driverless transportation and cyber.

For the life/annuity segment, enhancing the customer experience is the priority. L/A insurers believe that innovative solutions can facilitate more efficient underwriting decisions, which will help them attract the middle market, as well as Millennials, who have priorities other than life insurance owing to student loan debt and lower disposable incomes than other population cohorts.

Health insurers are focusing on consumers as well as providers. Technological advancements are helping these insurers expedite claims and application processes, as well as controlling costs. The segment is also being transformed by groundbreaking advances in medical technology and genetic engineering.

For reinsurers, innovation is relatively less likely to have as direct or immediate an impact. However, the companies in this segment have been—and remain—actively involved in the innovation process, given the scope for longer-term returns on their investment and the direct impact it can have on their clients over the medium term.

Technology is the driving force behind many innovative developments. Advances in the Internet of Things, blockchain, machine learning, artificial intelligence, and big data are playing increasingly significant roles in insurance. Regulation also has its role to play, not just in establishing ground rules that protect both insurers and consumers, but in encouraging innovation as well.

Given the accelerating pace and diversity of technological and societal changes, it's critical that all stakeholders—insurers, consumers, and regulators—keep abreast of developments. A deeper understanding of these changes will allow all of us to reap the myriad benefits of innovation.

We welcome your thoughts.

Matthew C. Mosher

Trend Review
September 24, 2018

Insurers Agree Innovation Is Critical for Future Success

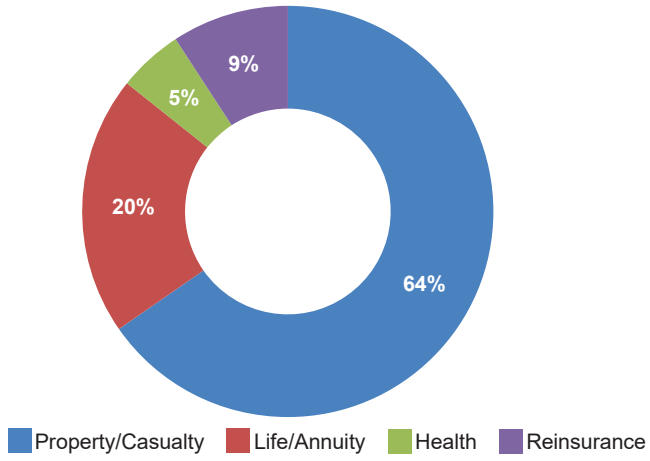
Innovation will help insurers remain relevant, via meaningful solutions to address evolving risks and improve operating efficiency

A.M. Best believes innovation is becoming increasingly critical to the success and long-term financial strength of an insurer, as it enables a company to maintain relevance by developing meaningful solutions to ever-evolving risks and to improve operational efficiencies. Historically, A.M. Best has captured innovation indirectly through the building blocks of its rating process. However, A.M. Best will be reviewing its Best's Credit Rating Methodology (BCRM) to consider including innovation explicitly in the rating process—another step in its efforts to constantly advance its rating analysis and provide a valued rating to insurance market constituents.

A.M. Best defines innovation as a multi-stage process whereby an organization transforms ideas into new or significantly improved products, processes, services, or business models that have a measurable impact over time and enable the organization to stay relevant and successful. These new or significantly improved products, processes, services, or business models can be organically grown or adopted from external sources.

In August 2018, we surveyed our rated insurers to obtain a better understanding of the state of innovation in the industry. The findings in this report are based on responses from the 459 insurers who participated in the survey. **Exhibit 1** shows the share of respondents by segment. (Note that all figures in this report have been rounded.)

Exhibit 1
Survey Respondents by Industry Segment



Source: A.M. Best data and research

According to the survey results, insurers agree with A.M. Best that innovation is critical to their future success, and that they must innovate to attract and retain customers and to gain a competitive advantage. A slightly less but significant reason for innovation was improving efficiencies.

Breakthroughs in data storage technology, exponential growth in computing power, and the advent of cloud computing have enabled advances in machine learning, the Internet of Things (IoT), and blockchain. Insurers also seem to be aware that technology is not one of their core competencies and are willing to make investments and form partnerships to get up to speed. To keep up with current innovation developments, insurers rely on diverse sources, including employees, customers, and consultants.

Contents

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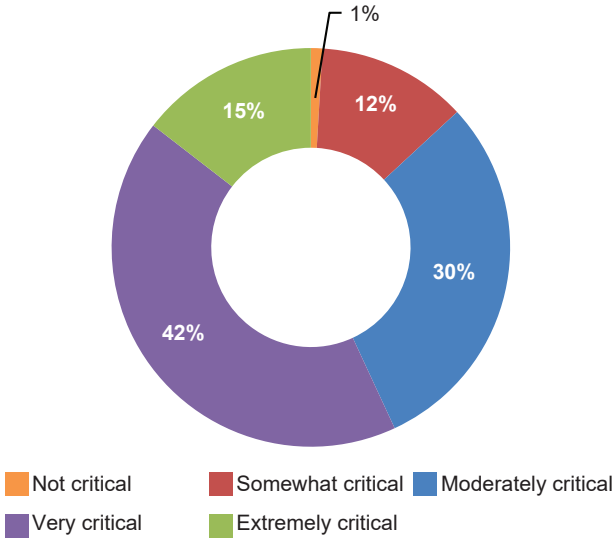
2018-128.1

More than 80% of survey respondents indicated (**Exhibit 2**) that innovation was moderately to extremely critical to the success of their organizations. However, insurers are naturally somewhat risk averse, which warrants a well-articulated innovation strategy and investments. Measuring the impact of innovation is important, as it allows insurers to gauge the success of their initiatives.

One of the key challenges to developing an innovation strategy or process is the issue of human capital, and insurers are making concerted efforts to attract employees who are in tune with both changing technologies as well as shifting demographics and economic factors.

Exhibit 2
How Critical Is Innovation to the Success of Your Organization?

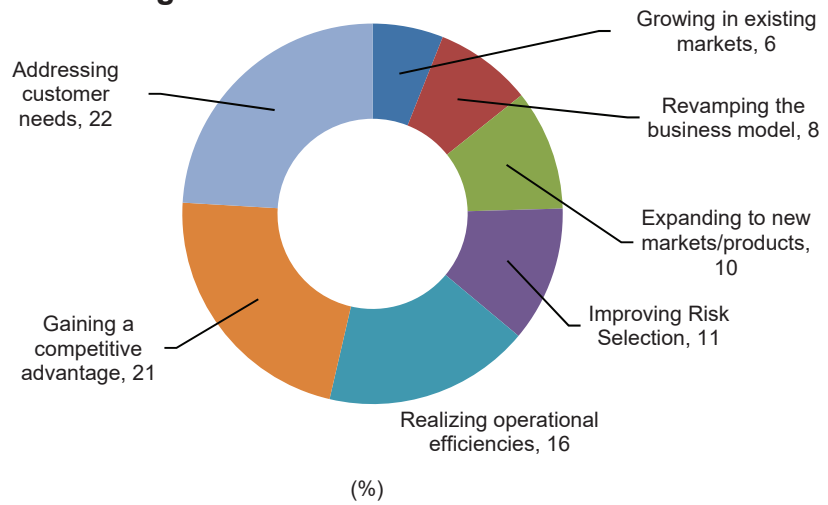


Source: A.M. Best data and research

Key Reasons to Innovate: Attracting/Retaining Customers and Gaining a Competitive Advantage

Twenty-two percent of insurance companies innovate because they want to address their customers' needs (**Exhibit 3**). As customer profiles evolve owing to both technology and demographic developments, so do their needs. Insurers have to be innovative to attract and retain these consumers, by responding appropriately to their changing insurance needs. Consumers nowadays can use mobile phones, computers, agents, or mobile apps to research and obtain insurance. Typical advertising channels such as print newspapers and television need to be complemented by effective online strategies. Insurers are becoming acutely aware through social media that they are being evaluated every time they interact with customers. Life insurers face the challenge of marketing a product that is seldom a top priority for today's consumers. In addition, evolving demographics and a gig economy make these products harder to sell. Reinsurers face intense competition from traditional channels and alternative capital, while P/C insurers must contend with competition from

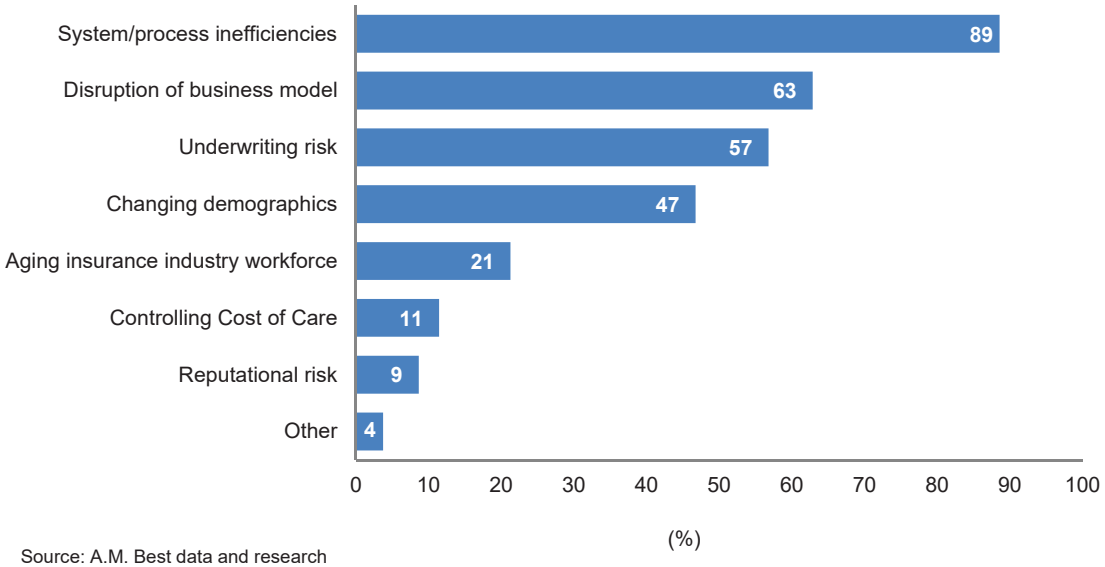
Exhibit 3
What Is the Primary Reason that Innovation Is Important to Your Organization?



Source: A. M. Best data and research

Exhibit 4

What Are the Most Important Challenges Innovation Can Help Insurers Overcome?



Source: A.M. Best data and research

new entrants. Health insurers have their challenges delivering a fulfilling customer experience through vertical integration and other means.

Gaining a competitive advantage was a close second (21%) among the reasons for innovation. As the pace of innovation picks up, insurers who do not innovate successfully may have to contend with adverse risk selection and challenges owing to significantly higher expense ratios compared to their more innovative competitors, and lower growth because more innovative peers may have access to lower-risk customers.

Improving Efficiencies a Priority

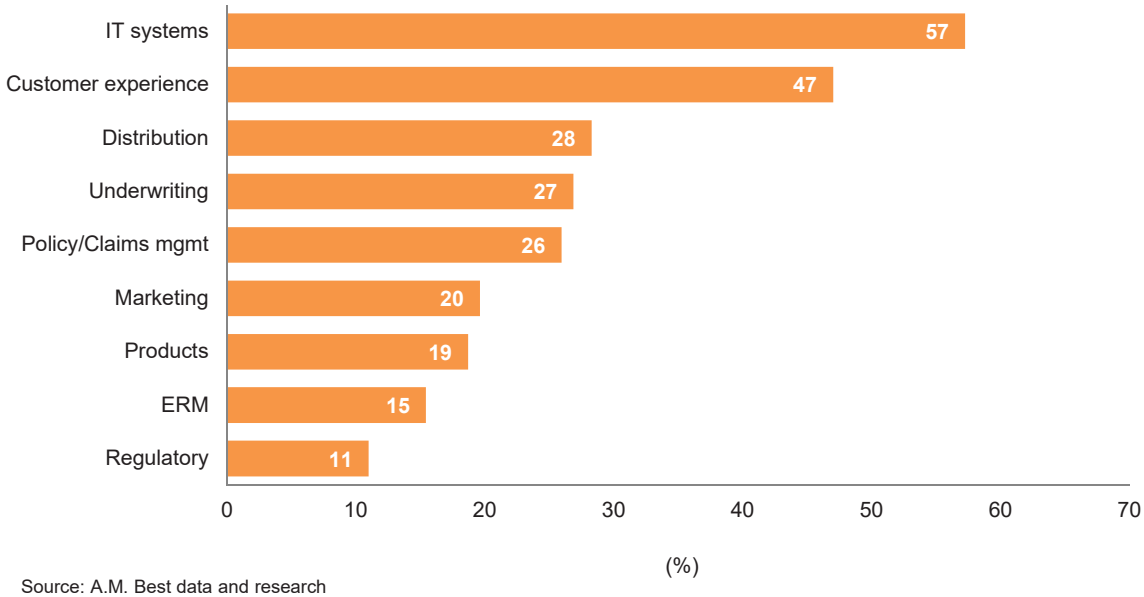
Sixteen percent of insurers stated that innovation is needed to improve their operational efficiencies. More than most industries, insurance has struggled with inefficiencies in processes and systems, and insurers are hopeful that technology can help them address these issues. Insurance companies that have grown through acquisitions have found that integrating claims, reserves, underwriting, and pricing systems remain a challenge even many years after transactions have closed. Very few companies initially realize the importance of integrating IT systems and thus underestimate the challenges inherent in reconciling different operating systems, database providers, languages, and software versions, for example.

Outdated systems; a reliance on individual employees' stand-alone spreadsheets and memories; duplicate or low-quality data—these are factors that could result in highly inappropriate decisions for insurers. Legacy systems also lack acceptable levels of cybersecurity and can be compromised relatively easily, exacerbating operational risk.

Nearly 90% of insurers (**Exhibit 4**) are hopeful that innovation can help them address system inefficiencies, while 63% believe that ongoing investment in innovation can help them navigate business disruptions and remain relevant. Fifty-seven percent believe that innovation can minimize underwriting risk, possibly owing to more precise machine learning algorithms. This

Exhibit 5

Respondents Who Indicated That Innovation Would Have a Significant Impact on the Choices Listed Below



Source: A.M. Best data and research

is consistent with a majority of insurers who stated that innovation would have a significant impact on their IT systems (**Exhibit 5**), followed closely by customer experience, 47%.

Technological Advances Play an Important Role …

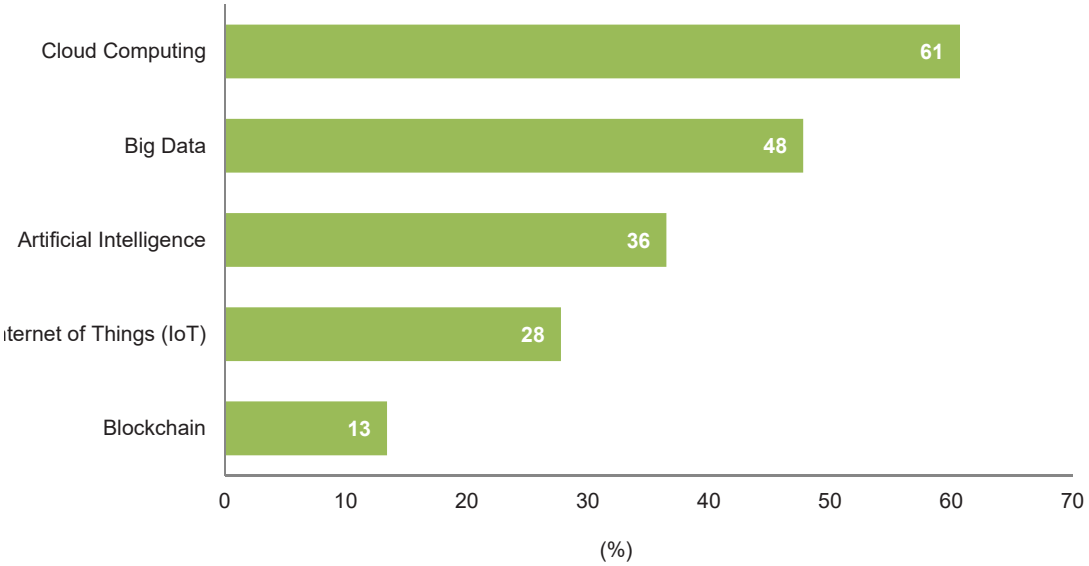
Insurers are beginning to recognize that advances in blockchain, the Internet of Things, big data, machine learning, and artificial intelligence (among others) have the potential to reshape the industry's value chain and are investing in these technologies (**Exhibit 6**). Several insurers are already making strides in predictive modeling using machine learning and AI techniques for better risk selection, pricing, and claims. These techniques are being incorporated at different rates across the P/C, life, and health segments. Overall, 84% of insurers feel that big data could have a moderate to significant impact over the next three years, while 73% of insurers opined that advances in cloud computing could be influential as well.

In our interactions with insurers, we have observed that workers' compensation was one of the first commercial lines of business to embrace predictive analytics to manage claims, detect fraud, and better select and underwrite risks. The personal lines segment, especially auto, is increasingly using data and analytics through telematics, among other. The workers' compensation and personal lines segments, and (to a certain extent) healthcare insurers, are increasingly adopting technology to help with aspects such as records management and underwriting.

The IoT has the potential to create an ecosystem that will allow insurers to take advantage of opportunities to insure new products, as smart homes, smart cars, and other smart devices become more mainstream. IoT will also create risks, however. Insurers will not have the kind of historical data they need for actuarial pricing and would need to build up the infrastructure and expertise to analyze the massive amounts of data these devices generate. Yes, insurers need to be poised to take advantage of these opportunities, but risk management is important as technological, legal, and regulatory systems continue to evolve.

Exhibit 6

Has Your Company Invested, or Is It Planning to Invest, in Any of the Following?



Source: A.M. Best data and research

When it comes to actual implementation, 61% of insurers have invested or are planning to invest in cloud computing, which continues to gain momentum, ever since Amazon introduced its Amazon Web Services in 2006. Cloud computing's on-demand resources (platforms, software, infrastructure, etc.) have scaled the power of computers immensely. Insurers have already adopted cloud computing, which was a major factor in the increased growth and importance of big data. Blockchain is a relatively new entrant with immense appeal, but is still in its infancy and its usage in the insurance industry has so far been limited. Only 13% of insurers have invested or are planning to invest in blockchain at this point.

… But Insurers Do Need Help with Tech

Insurance companies recognize that their expertise lies not in tech, but in insurance (agent/broker/distributional strengths, underwriting, claims, reserving, and balance sheet management). However, they also realize the power of tech to transform the insurance industry on a large scale, and have thus partnered with or invested in insurtech companies that are more attuned to the development and monetization of new ideas.

Nearly half of respondents indicated that they have some form of association—partnerships with research organizations, universities, or incubators—or that they have invested in an insurtech fund, which allows them to keep abreast of the latest developments without losing their focus on their core competencies. Similarly, 44% of respondents have participated in pilot programs involving new technologies, devices, and processes. For example, auto insurers are offering telematics devices in autos, which could enhance underwriting and offer risk-adjusted pricing for safe drivers. With these devices and advances in predictive modeling (and machine learning), insurers can gain insights into correlations between predictive variables, given that they collect mile-by-mile driving information on thousands of policyholders.

Most Insurers Prefer Not to Be Risk Takers When It Comes to Innovation

Insurers have little appetite for operational risk stemming from innovation. Only 25% of insurers said they were willing to significantly disrupt their current processes to implement innovation initiatives, while 59% were willing to tolerate minimal disruption (**Exhibit 7**). Another 16% were satisfied to be followers and would implement innovation initiatives if doing so proved successful for other organizations.

Innovation Will Have an Impact in the Long Term

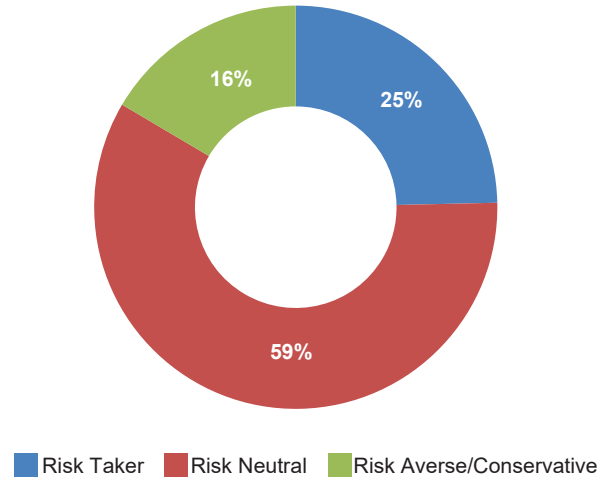
Seventeen percent of insurers have allocated more than 5% of their budgets toward innovation, while 56% have allocated between 1% and 5% (**Exhibit 8**). Despite these investments, only 30% of insurers stated that their innovation efforts have so far had a measurable impact(**Exhibit 9**). Thirty-five percent of insurers are in the early stages of development.

Given the recognition of the critical nature of innovation, it makes sense that only around 6% of the insurers surveyed stated that they did not have an innovation strategy nor did they plan to create one. Almost 80% of respondents replied that their innovation strategies are or will be aligned to their companies' strategic objectives, while another 6% are currently developing innovation strategies that will not be aligned to their overall strategic objectives.

A well-defined innovation strategy—one with a clear articulation of guidelines governing the implementation of successful processes or prototypes—

Exhibit 7

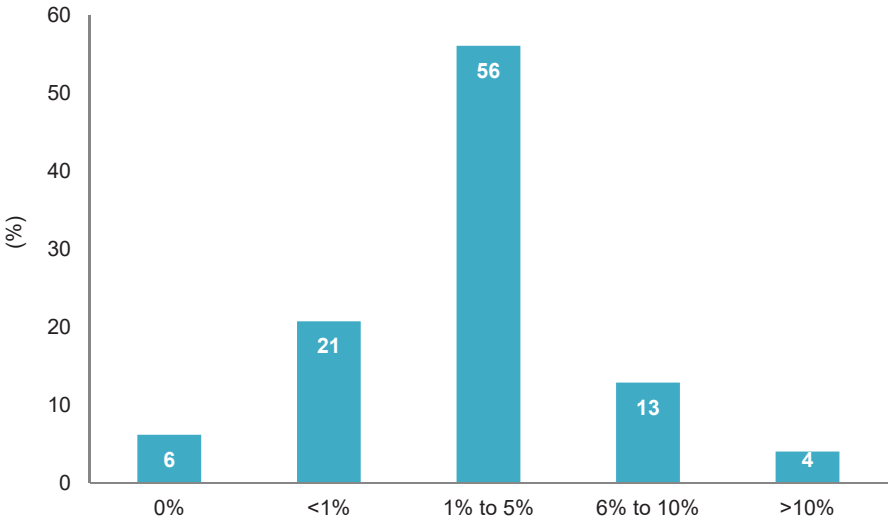
What is Your Executive Team's Risk Tolerance for Innovation?



Source: A.M. Best data and research

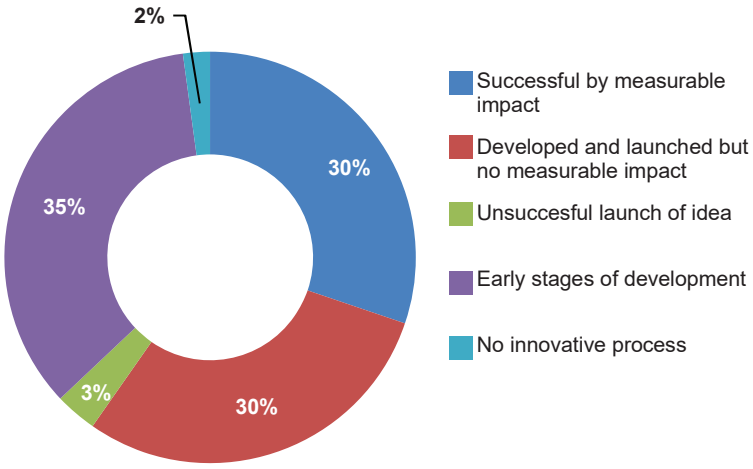
Exhibit 8

What Percentage of Your Company's Total Annual Budget Is Allocated to Innovation?



Source: A.M. Best data and research

Exhibit 9
How Would You Describe the Maturity Level of Your Organization's Innovation Process?



Source: A. M. Best data and research

that allows for experimentation and leaves room to learn from failure would be viewed favorably by A.M. Best. At a time when the pace of technological change and adoption continues to accelerate, lagging one's peers could lead to an irreparable loss of both competitive advantage and customers that could damage a company's top and bottom lines.

Formal Ways of Acting on Innovation Opportunities Are Lacking

The most frequently cited source of innovation ideas comes from the industry, as cited by nearly 80% of respondents (**Exhibit 10**), followed by management (75%), and employees (74%), with significant input from customers, sales force, and consultants.

Despite these diverse sources, a formal process to funnel these ideas into opportunities appears to be lacking. Only 10% of insurers strongly agreed that they had a process for sourcing ideas that was well defined, well understood, and clearly communicated (**Exhibit 11**).

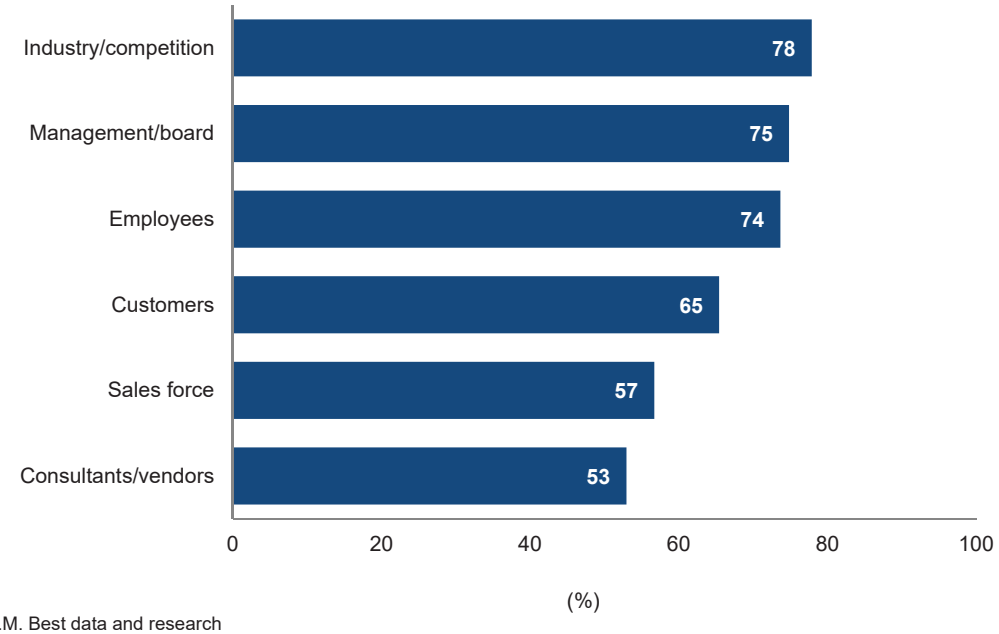
Addressing the Talent Gap Is Key to Successful Innovation

Forty-five percent of insurers said that their boards of directors discuss innovation every time they meet; 23% have at least an annual discussion regarding innovation. Although the position of chief innovation officer is a relatively new role in many organizations and will likely gain much more acceptance over time, at least a majority of insurers have cross-functional teams that focus on innovation (**Exhibit 12**). A.M. Best does not believe in a one-size-fits-all approach toward innovation, as every insurer has a different profile, and the size and the composition of the innovation team should be appropriate to the company. The success of any innovation initiatives will be apparent primarily through financial metrics and growth over the long term.

Sixty-one percent of insurers felt that the lack of human capital or specialized talent is the biggest challenge to innovation (**Exhibit 13**). As technology evolves, insurers will need to create a culture that motivates younger people to join and help them innovate and create new products to address changing demographics, such as the ongoing shift to a shared economy,

Exhibit 10

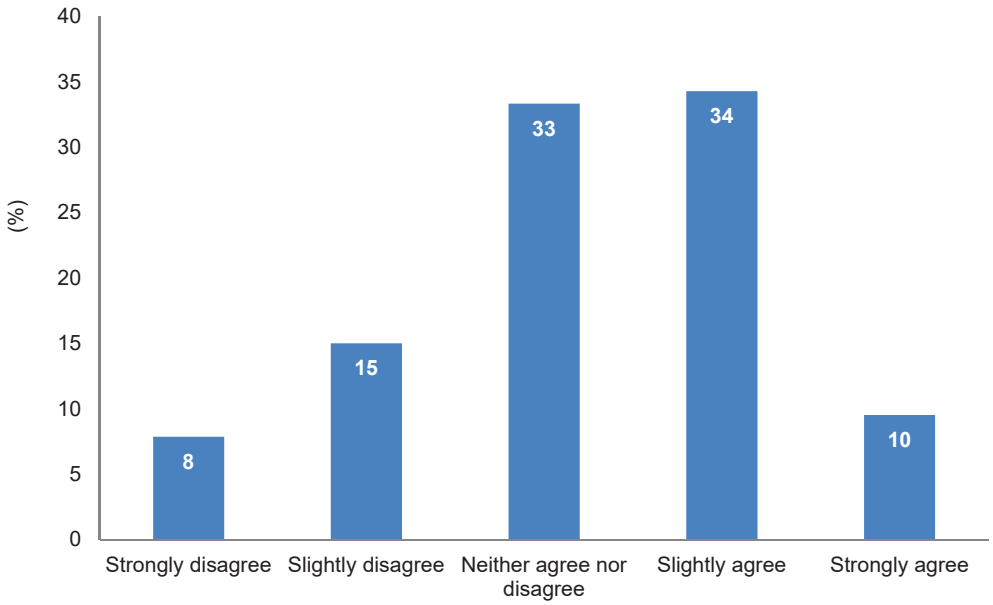
How Does Your Company Identify Opportunities for Innovation?



Source: A.M. Best data and research

Exhibit 11

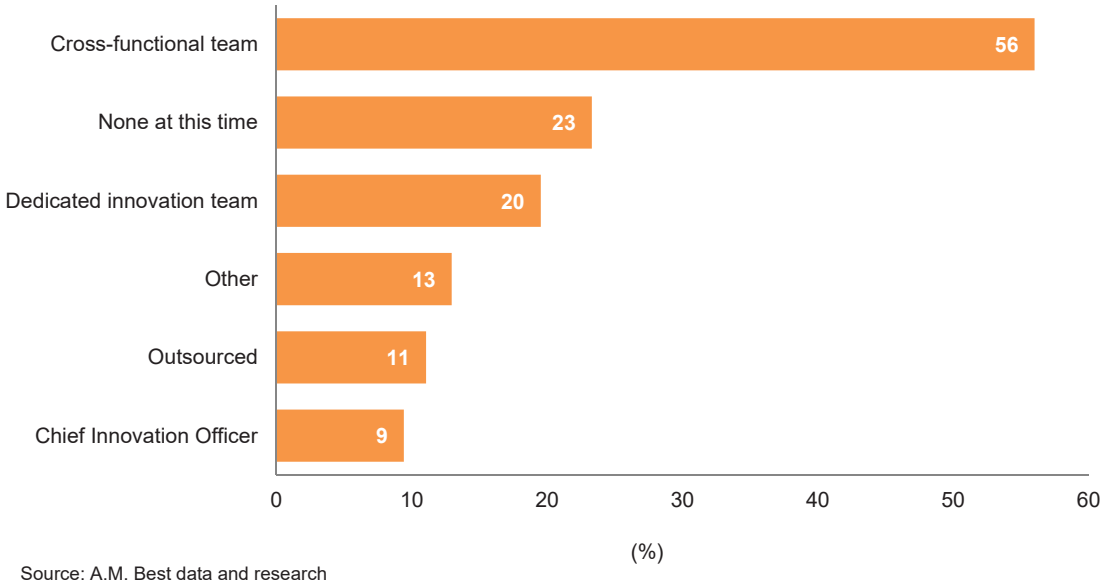
Your Company's Process for Sourcing Innovative Ideas Is Well-Defined, Clearly Communicated, and Understood Throughout the Organization



Source: A.M. Best data and research

Exhibit 12

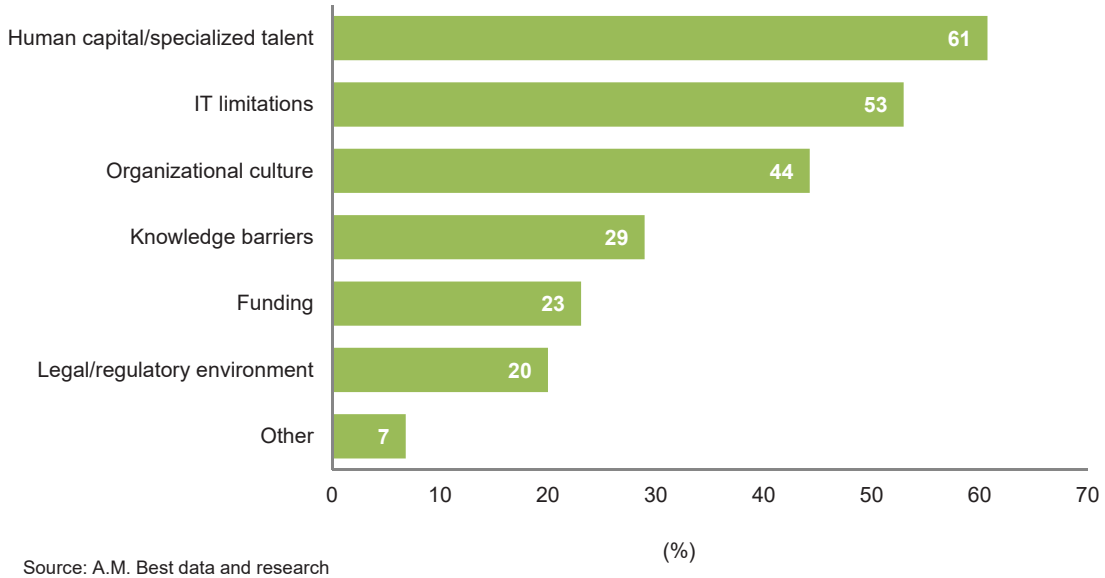
Does Your Company Have Personnel Who Focus on Innovation?



Source: A.M. Best data and research

Exhibit 13

What Does or Did Your Organization Perceive as the Biggest Challenges to Developing the Innovation Process?



Source: A.M. Best data and research

evolving employment trends, such as the gig economy, and the prevalence and accelerating adoption of technology in a connected world.

The Way Forward

Insurers and reinsurers have evolved over time and their roles have also evolved over time. They are not just fulfilling their promises to pay in times of stress but they work with their

insureds as partners to reduce risk before it manifests. In the future, cyber risk exposures may be the biggest risk exposure for an insurer.

The needs of insureds are changing, as we see from the emergence of the gig economy and employment practices with lack of defined benefits plans; the shift from individual ownership to collaborative consumption through organizations such as Airbnb, Zipcar, Uber, Lyft; and further decreases in savings and disposable income owing to student loans. All insurers will need to address these changes.

Tech advancements such as IoT will change products and behaviors immensely. Self-driving cars, smart homes, and smart devices in homes will change consumption habits and the profile of insured products. Healthcare is embracing automation and efficiency through wearables, Skype-like technology, robotics, and advances in medicine. Insurers will have to rethink their strategy toward even traditional personal and commercial lines. Other developments, such as machine learning techniques, big data, and cloud computing will help insurers underwrite and price risks better, increase efficiencies by preventing claims leakage, and enable growth through targeted awareness programs and designing better products.

Capital that supports reinsurance risk has also changed. Insurers are increasingly finding ways to partner with alternative or non-traditional capital as it provides them the capacity to find new innovative ways to deploy capital to products such as cyber and flood risk. It also gives them the opportunity to expand to new markets where the protection gap may be higher than in developed countries. Technology wise, reinsurers have been early to experiment with blockchain and may be in a position to exploit its capabilities if it becomes mainstream.

No insurance segment or market will be immune to these shifts, and all will need to innovate and adapt to maintain relevance.

Trend Review
September 24, 2018

P/C Insurers Look to Innovation to Overcome System/Process Inefficiencies

Innovation can help companies develop a defendable edge that will enable them to stand out from the crowd

An ongoing focus on innovation is paramount to remaining competitive in an ever changing marketplace. The insurance industry is often thought of as lagging in innovation. In August 2018, A.M. Best surveyed its rated universe, to get a better read of the state of innovation in the industry. The findings in this report are based on the responses we received. The overall insurance industry recognizes that it has jumped on the innovation bandwagon rather late, as virtually no respondent believes the industry has adopted and implemented innovation "extremely well." However, anecdotal evidence by A.M. Best's analysts suggest that more attention has been given to innovation in recent years, as technology and the methods for conducting business have evolved.

The P/C segment's diversity in terms of size and scale has colored its perceptions of innovation. Companies that have not yet addressed their system/process inefficiencies see innovation as a means to do so. Companies that have been ahead of the curve in addressing the issues associated with outdated legacy systems look to innovation to provide strategic answers for questions regarding emerging risks such as cyber, increasingly devastating natural catastrophes, and shifting demographics. P/C companies go through market cycles in their sub-segments, and competition can be intense and growth hard to come by. Innovation can help companies develop a defendable edge that will enable them to stand out from the crowd.

Exhibit 1

How Well Has the Insurance Industry Adopted and Implemented Innovation?

Source: A.M. Best data and research

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"What Is "Innovation"?

A.M. Best defines innovation as a multi-stage process whereby an organization transforms ideas into new or significantly improved products, processes, services, or business models that have a measurable impact over time and enable the organization to stay relevant and successful. These new or significantly improved products, processes, services, or business models can be organically grown or adopted from external sources.

The Innovation Landscape

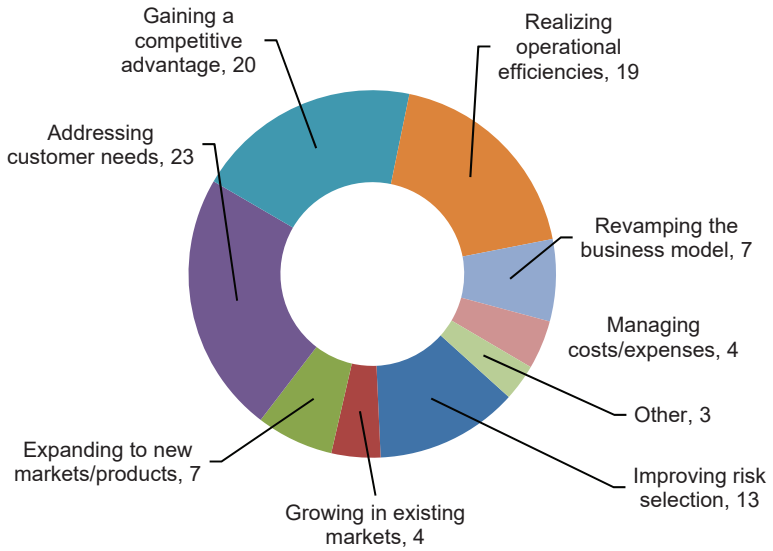
Overall, 56% of P/C insurers view innovation as either extremely (17%) or very critical (39%) to the success of their organizations. Less than 14% of respondents believe that the P/C insurance segment has adopted and implemented innovation either well or extremely well (**Exhibit 1**; note that all figures in this report have been rounded), which is consistent with the general view that the insurance industry has lagged other industries, especially banking, in adopting and implementing innovation initiatives. Although the P/C segment has had its own share of challenges in past decades, it has not faced the kind of structural disruption and existential crisis as we have seen in other segments. It emerged relatively unscathed from the financial crisis—thus, the slow pace of change. Moreover, while the insurance industry has been using analytics and data for decades, the digitization of the world is providing the industry with new sources of data, allowing companies to become more data-driven.

Close to one quarter of P/C respondents believe that addressing customer needs is the primary reason that innovation is important to their organization, slightly more than gaining a competitive advantage (20%) and realizing operational efficiencies (19%), all of which were a common theme throughout the industry (**Exhibit 2**). Examples of customer-innovation include chatbots, an outgrowth of advancements in artificial intelligence. Chatbots provide convenience and ease of use for consumers but also benefit insurers, by lowering costs with automated customer-facing interactions such as onboarding new clients and processing claims.

The protection gap—the difference between insured losses and economic losses—is increasing across the globe, especially in emerging economies and countries that have not seen much economic progress. Many large insurers are attempting to address this gap through the use of innovative products such as microinsurance and inclusive insurance, which cater to the needs of low-income people. However, the distribution and servicing costs necessary

Exhibit 2

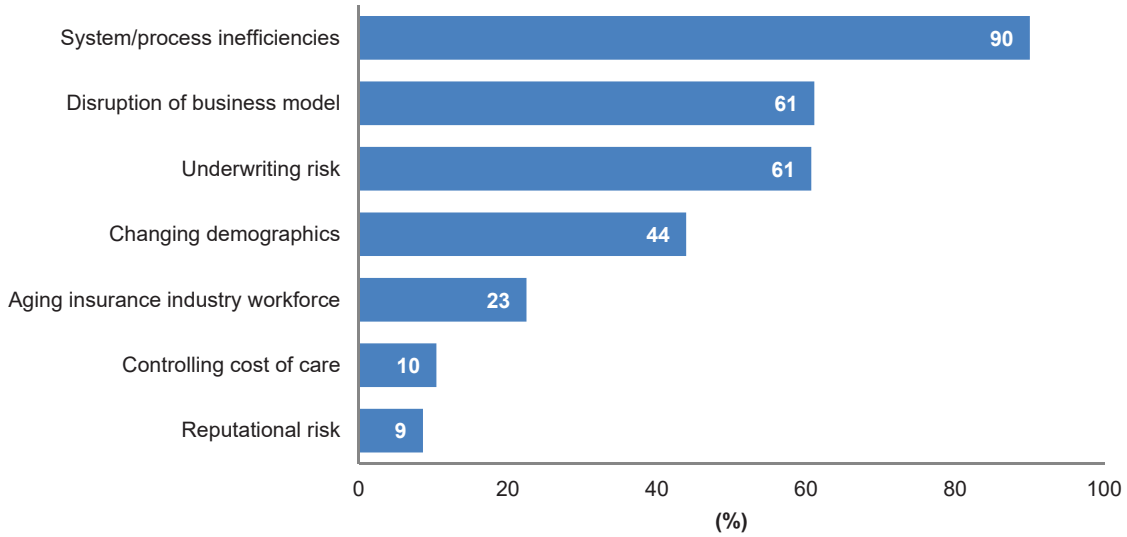
What Is the Primary Reason Innovation Is Important to Your Organization?



Source: A.M. Best data and research

Exhibit 3

What Are the Most Important Challenges Innovation Can Help Insurers Overcome?



Source: A.M. Best data and research

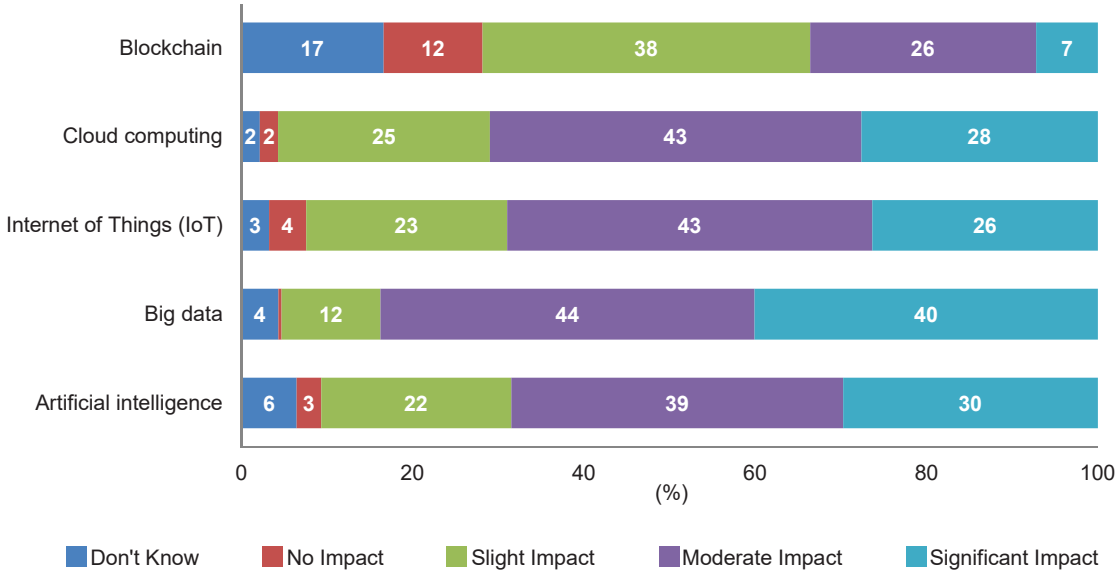
to reach such populations have been prohibitive. Nevertheless, AI and big data may help insurers expand their reach with growing technological globalization and enable commerce through mobile applications.

Innovation can help overcome a number of challenges; P/C insurers believe that the top three challenges include system/process inefficiencies (90%), disruption of business model (61%), and underwriting risk (61%) (**Exhibit 3**). Consistent with the observation that P/C companies are slow to innovate, companies themselves are starting to realize the drag an arcane IT system/inefficient processes can have on their operations. By not investing in innovation, companies will see their expense ratios gradually rise, take longer to reach customers, and eventually lose their competitive edge. In the age of big data and sophisticated predictive modeling by a few select players, those without underwriting and risk selection capabilities will likely find it increasingly hard to compete. For example, some insurers offer do-it-yourself inspection discounts if customers use a phone app to take pictures and videos of their home in lieu of a visit from a certified home inspector post-purchase. This could eliminate the cost and time of having a certified inspector and is more convenient to the insured, ultimately improving the overall customer experience. Further, AI enabled visual computing techniques can be used to automatically analyze areal images to detect pre-existing damage on properties such as roof damage or to detect liability hazards. Visual computing can also be used in wildfire risk and flood plain analysis.

As technology has evolved drastically in a relatively short period and has become more complicated, it has opened the door for new potential products as new risks are identified. The demand for cyber is growing rapidly in light of cyber attacks such as the NotPetya and WannaCry ransomware attacks, and cyber hackers are exploiting even the slightest vulnerabilities in systems to wreak havoc on unprotected insureds. Progress in this area is hampered by a lack of actuarial data and understanding of the risk. P/C insurers who have technically savvy underwriting teams or strategic partnerships with vendors, reinsurers, etc., are starting to find innovative ways to address demand.

Exhibit 4

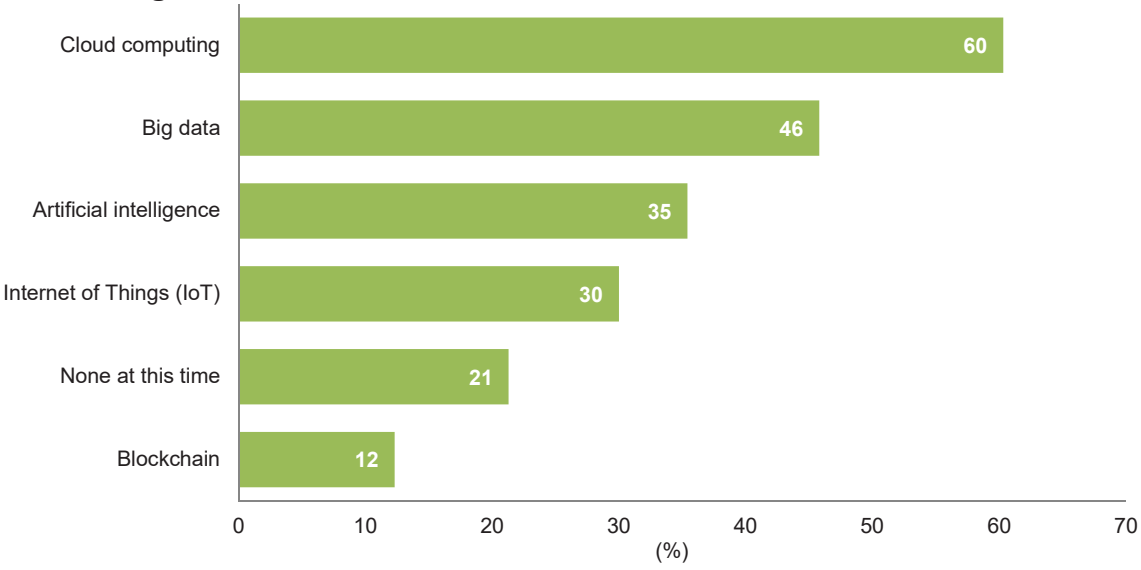
What Kind of Impact Will These Technologies Have?



Source: A.M. Best data and research

Exhibit 5

Has Your Company Invested, or Is It Planning to Invest, in Any of the Following?

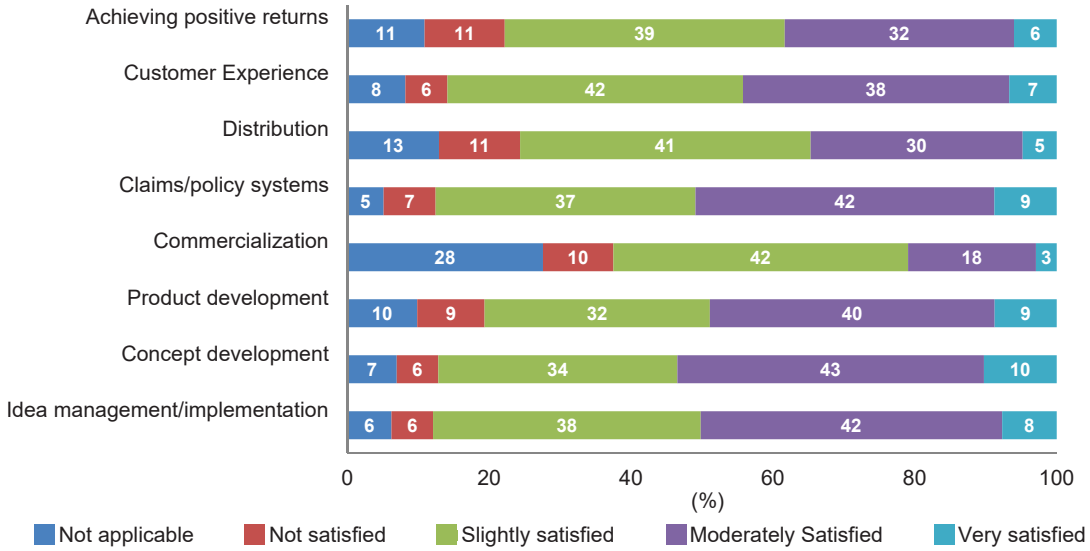


Source: A.M. Best data and research

Big data, artificial intelligence, and cloud computing are expected to be the most significant technologies P/C insurers use to facilitate innovative change and improve operations (**Exhibit 4**). Companies are investing in these technologies to varying degrees, with 46% investing in big data, 35% investing in artificial intelligence, and 60% investing in cloud computing (**Exhibit 5**). All three may be able to assist companies in overcoming the top three challenges respondents identified in **Exhibit 3**. P/C insurance has always been a data-centric industry, and carriers are always seeking an edge, trying to charge premiums commensurate with the true underlying risk characteristics,

Exhibit 6

What Are Your Company's Satisfaction Levels with Your Innovation Efforts as They Relate to the Following Areas?



Source: A.M. Best data and research

with some form of predictive modeling. With the growing amount of data gleaned from telematics devices or social media websites, the possibilities for even deeper data mining are increasing rapidly.

Insurers can use big data to build unique customer profiles, enabling the creation of personalized offers based on individual preferences and behavioral data. More detailed understanding of customers can facilitate cross-selling opportunities, increase retention, and enhance customer experience. Telematics, which can capture increasingly sophisticated information about driver behavior, can help insurance companies more accurately price policies based on the risk profiles of individual drivers and lead to a better understanding of underlying activities and processes.

Blockchain technology is relatively less mature than IoT or AI, and comes with the most security and performance concerns as well. There have been some recent developments in the title insurance industry with regard to the use of blockchain—for example, OneTitle (a new insurtech based in New York) does not use title agents at all; instead, it uses encryption technology and acknowledges that blockchain could disrupt the title industry and its processes.

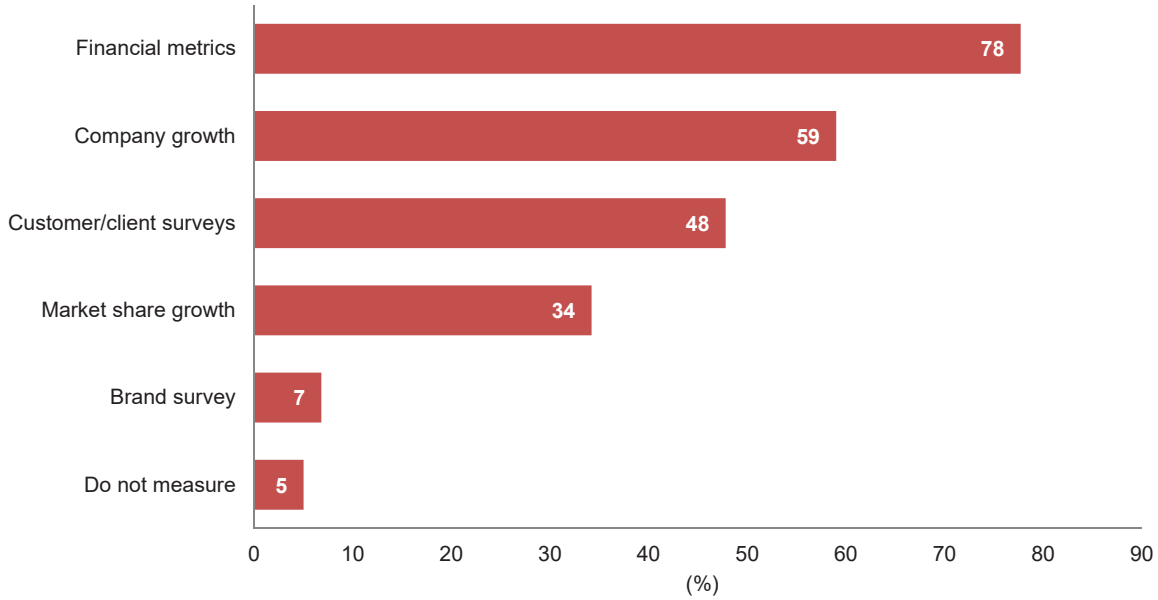
The Process of Innovation

The vast majority of P/C respondents have started launching innovation initiatives, with just over one third in the early stages of development. Nearly 60% have successfully launched an innovative idea. Thirty-one percent have had a successful launch, as evidenced by a measurable impact. Seventy-one percent of organizations indicated that they had introduced new or significantly improved products, processes, or services in the last three years, and that they expected these innovations to have a measurable impact over time.

Around half of P/C respondents are either moderately or very satisfied with their innovation efforts as they relate to concept development (53%), claims/policy systems (51%), idea management and implementation (50%) and product development (49%) (**Exhibit 6**). One related example of innovation in the segment is sensor-provided feedback, which can prevent claims on personal

Exhibit 7

How Do You Measure the Success of Your Innovation Initiatives?



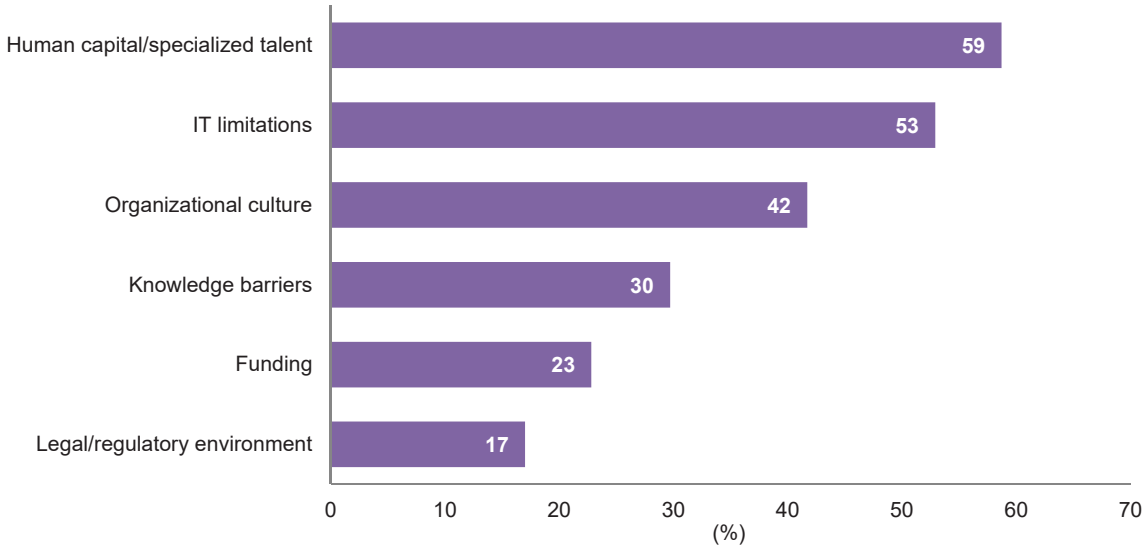
Source: A.M. Best data and research

auto policies by modifying driver behavior through alerts when dangerous driving patterns are detected. It can also lead to better claims assessment in the event of an accident. Further, incentives to encourage safer driving can also enhance customer engagement, as well as customer satisfaction, as a result of transparent pricing tailored to individual risk. Having sensors throughout a home can alert insurance companies of water leaks, mold, structural instability, and many other hazardous conditions related to homeowners policies as well. Access to this information can shift insurer focus toward claims prevention, as generated data can help insurance carriers better understand the underlying cause of loss. Finally, rapid adoption of IoT devices by the commercial sector may create opportunities for insurers to partner with clients, in an effort to leverage client data and achieve mutually beneficial outcomes.

Most P/C companies have a clear idea of the challenges they face and the kinds of efforts needed to address/improve specific areas of operations, such as claims/policy systems. To measure success in these areas, 78% of P/C insurers use financial metrics, 59% use company growth, and 48% use customer/client surveys to gauge external perceptions (**Exhibit 7**). A.M. Best analysts are seeing a noticeable trend among P/C insurers focusing on customer satisfaction backed by quantitative metrics. Also, companies are increasingly presenting customer experience metrics/surveys to A.M. Best analysts to demonstrate quantifiable improvement after new systems or processes are implemented.

There are challenges to developing an innovation process and strategy. Respondents cite a lack of human capital/specialized talent (59%), IT limitations (53%), and their own organizational culture (42%) as the three biggest obstacles to developing their innovation process (**Exhibit 8**). P/C insurers can have rigid and silo-like corporate structures that do not foster innovation as well as a culture that does not incentivize risk-taking. IT limitations are also a result of chronic under-investment. Despite the challenges of lacking in-house human capital and some skepticism regarding organizational culture, 40% of respondents state that they would prefer to build improved products/processes/services in-house, compared to 32% that would prefer to partner with another organization, and 28% that prefer to purchase from an outside source. Fifty-three

Exhibit 8
What Are the Biggest Challenges to Developing the Innovation Process?



Source: A.M. Best data and research

percent of companies do not have any innovative partnerships with insurtech companies or entities outside the traditional insurance space, but the preferred avenues for those that do establish partnerships are quite evenly varied, with around 14% each stating partnerships can include making strategic investments in startups, participating in insurance accelerators, or partnering with dedicated research organizations.

Buying may have advantages when the products/models require an overwhelming amount of resources in terms of talent and computer capacity and are simply not feasible to build from scratch. Partnering with another organization—something in between—may give a company exposure at earlier stages to a broader spectrum of projects that could have a higher risk of failing. By partnering, a company can spread its risks, especially smaller firms who understand the need and wish to innovate but do not have the financial cushion to dedicate funds to costly innovative projects. Primary insurers may also choose to work with their reinsurers, especially in new product development. Also worth noting is that 12% of respondents stated that they are currently not involved in any partnerships, but were planning to do so in the next year.

Innovation Strategy & Implementation

P/C insurers identify opportunities from a fairly diverse set of sources, with more of a focus on what competitors and the rest of the industry are doing, direction from management, the board of directors, and employees:

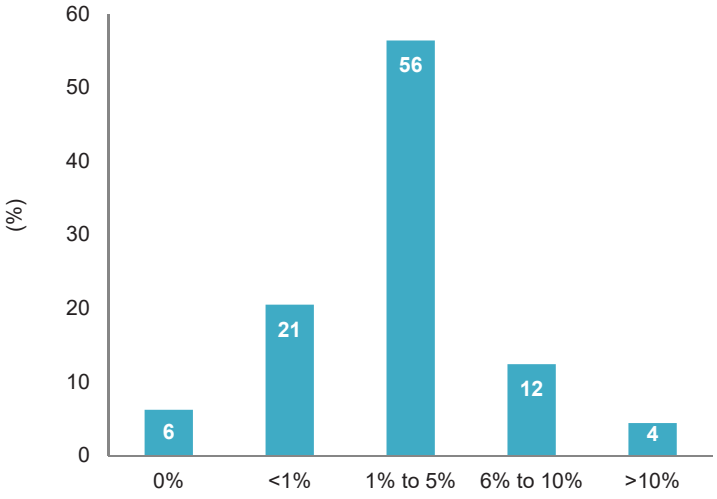
- Industry/competition (76%)
- Management/board of directors (75%)
- Employees (71%)
- Customers (66%)
- Sales force (53%)
- Consultants/outside vendors (50%).

Forty-five percent of the P/C respondents view their current innovation strategy as a key

component for their overall strategic objectives, while another 36% are developing an innovation strategy aligned with their objectives. Only 7% of companies do not have an innovation strategy, nor do they plan on creating one, while another 13% are either developing or have developed a strategy that does not explicitly align with their overall strategic objectives.

Exhibit 9

What Percentage of Your Company's Total Annual Budget Is Allocated to Innovation?



Source: A.M. Best data and research

The boards of directors at the P/C companies seem in tune with the innovation strategies and focus of their organizations, as more than 90% of companies discuss innovation at least once a year, with nearly half saying that they discuss innovation every time the board meets. Many boards discuss innovation multiple times per year, whether it be quarterly or at every regularly scheduled board meeting. Additionally, although corporate management teams and board members need to demonstrate leadership and buy-in at the top, all company employees can contribute ideas regarding day-to-day tasks, as they can directly see the obstacles in their daily functions and the potential benefits of a structured innovation strategy. Moreover, companies that discuss innovation more frequently during board meetings tend to view industry implementation of innovation more favorably, and their innovation processes tend to be more clearly defined and communicated throughout the organization. Forty-six percent of respondents across the segment agree that the process for sourcing innovative ideas is well defined, clearly communicated, and understood company-wide, versus 21% that do not agree.

As with any endeavor, developing and executing on a project of this importance requires proper planning, preparation, and execution. However, allocating a portion of the annual budget to invest in innovative improvements does not seem to be a major concern for the segment, as less than one quarter of P/C respondents stated that funding to develop the innovative process was a challenge. More than half (56%) of organizations allocate between 1% and 5% of their budget to innovation; around 17% allocate more than 6% (**Exhibit 9**).

More than half—56%—of the P/C respondents have cross-functional personnel teams focusing on innovation. Eighteen percent of respondents have dedicated innovation teams, while 25% have none. Eight percent have a chief innovation officer, while another 12% outsource the function to a team focusing in innovation (**Exhibit 10**).

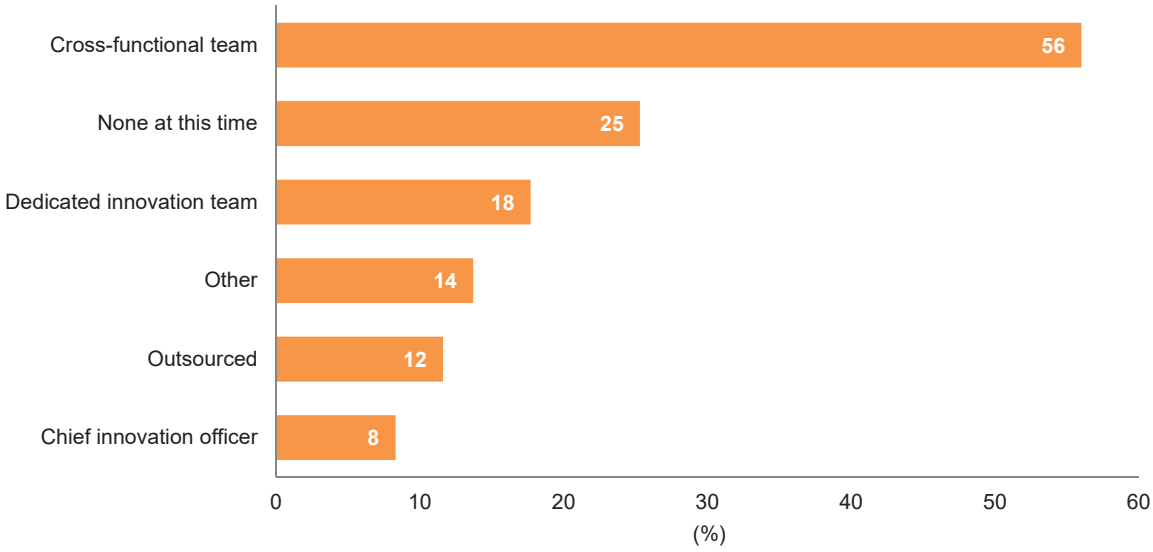
Crucial Areas for Innovation

The two most crucial areas insurers feel it is very or extremely necessary to innovate are IT systems (77%) and the overall customer experience (75%) (**Exhibit 11**). Updating/transferring legacy systems remain a top priority for many in the P/C segment, with initiatives often taking multiple years to complete. At the same time, IT systems and the overall customer experience

are also the areas in which respondents believe innovation will have a moderate or significant impact over the next three years (**Exhibit 12**).

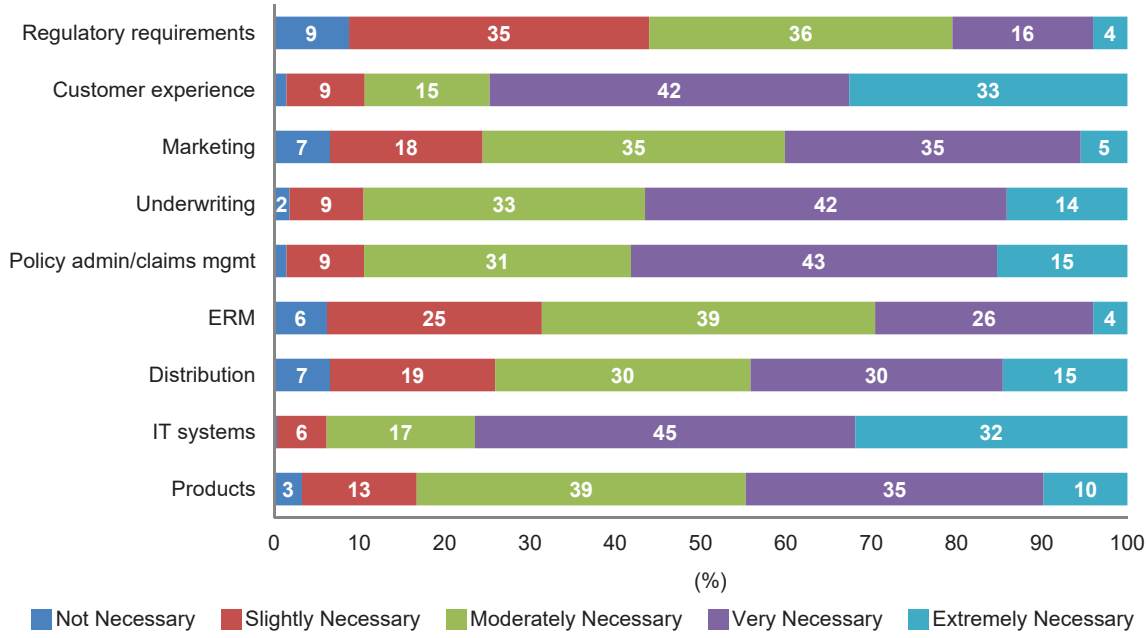
Company executive teams seem to realize that IT systems are the area in which most companies have under-invested in the past decade, but they may not be quite ready to undertake course corrections, possibly because of the difficulty of justifying the cost.

Exhibit 10
Does Your Company Have Personnel Who Focus on Innovation?



Source: A.M. Best data and research

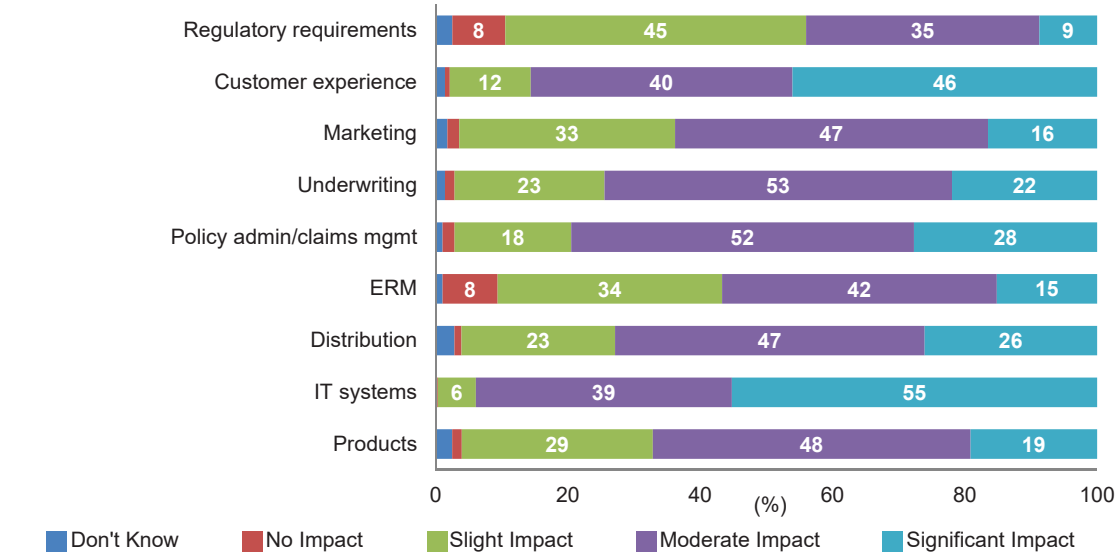
Exhibit 11
How Necessary Is It to Innovate in the Following Areas?



Source: A.M. Best data and research

Exhibit 12

To What Degree Do You Expect Innovation to Affect the Following Areas Over The Next Three Years?



Source: A.M. Best data and research

However, most of the insurtech solutions that will have a meaningful and lasting impact require a higher level of IT readiness. This is the area with the biggest gap between where respondents say they are and where they want to be.

All of the identified areas touch upon efficiency gains that can translate into a strategic edge. Older legacy IT systems need to be updated, to gain the ability to communicate and share information with other systems/areas and enable insurers to respond quickly to new risks. Customer experience and satisfaction can be enhanced, whether through more specialized algorithms and better use of big data for proper pricing or more outward-facing improvements to expedite the underwriting process and further improve customer satisfaction.

Trend Review
September 24, 2018

Most L/A Insurers Consider Customer Experience the Primary Reason for Innovation

L/A insurers are using innovation to better target their marketing efforts and streamline business processes

An ongoing focus on innovation is paramount to remaining competitive in an ever changing marketplace. The insurance industry is often thought of as lagging in innovation. In August 2018, A.M. Best surveyed its rated universe, to get a better read of the state of innovation in the industry. The findings in this report are based on the responses we received. The overall insurance industry recognizes that it has jumped on the innovation bandwagon rather late, as virtually no respondent believes the industry has adopted and implemented innovation "extremely well." However, anecdotal evidence by A.M. Best's analysts suggest that more attention has been given to innovation in recent years, as technology and the methods for conducting business have evolved.

The L/A market has been challenged of late as the segment struggles to meet changing consumer preferences, update its business model to the latest technological standards, and appeal to consumer segments that fall outside its traditional penetration efforts. Innovation can help L/A issuers address these challenges, especially those related to customer experience. The responses from the segment indicated that L/A writers are aware of these deficiencies and are working to resolve them.

The Innovation Landscape

Overall, 61% of the L/A segment views innovation as either extremely (8%) or very critical (53%) to the success of their organization. However, of the industry overall, L/A companies have the least favorable view regarding how well the industry has adopted and implemented innovation (**Exhibit 1**; note that all figures in this report have been rounded).

This less positive view may be due to some of the aspects of the L/A business model. Life insurance products and annuities remain in force for long periods. This has made the segment less driven to make abrupt shifts in its product offerings. L/A products are generally thought of as requiring active salesmanship, which also differentiates them from P/C or health products. Therefore, a significant part of companies' innovation efforts have been focused on the front-end sales aspect. More specifically, companies have focused their efforts on using big data to better target marketing efforts and leverage technology, to both streamline business processes and make it easier and more efficient for agents and customers to interact with them.

More than a quarter of L/A respondents believe that addressing customer needs (including the needs of key distribution partners) is the primary reason that innovation is important to their organization, a common theme in the responses. Many L/A writers are striving to penetrate the underserved and often elusive middle market and Millennials. Millennials in particular are a major challenge, as the younger generation often does not see the long-term value in L/A products, especially when paying off student debt and buying a home are frequently viewed as more immediate goals. Direct-to-consumer (DTC) distribution is a growing trend in achieving better penetration of these markets, but requires significant investments and could conflict with existing distribution channels.

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"What Is "Innovation"?

A.M. Best defines innovation as a multi-stage process whereby an organization transforms ideas into new or significantly improved products, processes, services, or business models that have a measurable impact over time and enable the organization to stay relevant and successful. These new or significantly improved products, processes, services, or business models can be organically grown or adopted from external sources.

Twenty eight percent of respondents believe that addressing customer needs is the primary reason innovation is important; 20% believe that gaining a competitive advantage is the most important; and 13% each believe that expanding to new markets/products or enhancing operational efficiencies is the most important (**Exhibit 2**). For L/A companies, innovation can be a means to combat an extremely low-growth product line while improving retention rates and developing potential cross-selling opportunities.

L/A insurers overwhelmingly believe that the segment's top three issues are system/process inefficiencies (83%), shifting demographics (67%), and disruption of the business model (65%) (**Exhibit 3**). Transferring legacy systems to newer, more efficient platforms is a top priority for many in the L/A industry, while concerns about changing demographics are likely driven by Millennials' lack of interest in L/A products compared to the more established Baby Boomers. Separately, companies that rely more heavily on captive agency forces see agent recruiting as a major challenge over the coming years, as long established productive agents retire. Attracting agents is becoming more difficult, as younger persons entering the workforce do not perceive life insurance sales as a viable long-term career. DTC distribution is an avenue poised for growth, which may partly address the agent recruiting issue; this will mean that many more insurers will have to step up on the digital front, so as not to be eclipsed by those who make the underwriting process seamless for potential policyholders, giving them a competitive advantage.

Exhibit 1

How Well Has the Insurance Industry Adopted and Implemented Innovation?

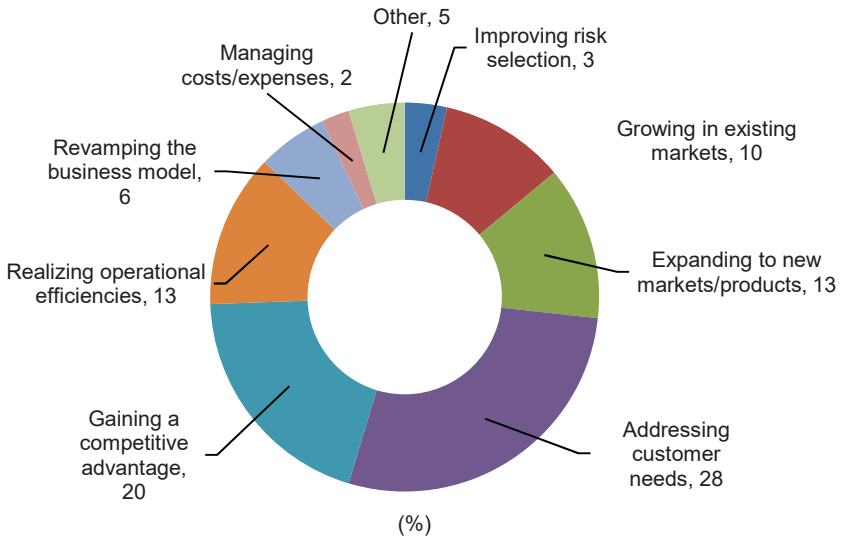
Source: A.M. Best data and research

Big data and cloud computing are likely to be the two most significant technologies L/A insurers use to facilitate innovative change and improve operations (**Exhibit 4**). Insurers could use these technologies to exploit demographic shifts as a competitive advantage, discovering the best methods to market, distribute, and underwrite to different generations, subgroups—even individuals. Some companies have also been using data analysis to segment the market and their existing customers, with the intention of using this understanding to further penetrate their existing households, enhance their customer retention activities, and more effectively target new customers.

Many companies are currently exploring the use of data-driven life insurance underwriting models that can render decisions instantly without the need for blood, urine, or attending physician statements.

Exhibit 2

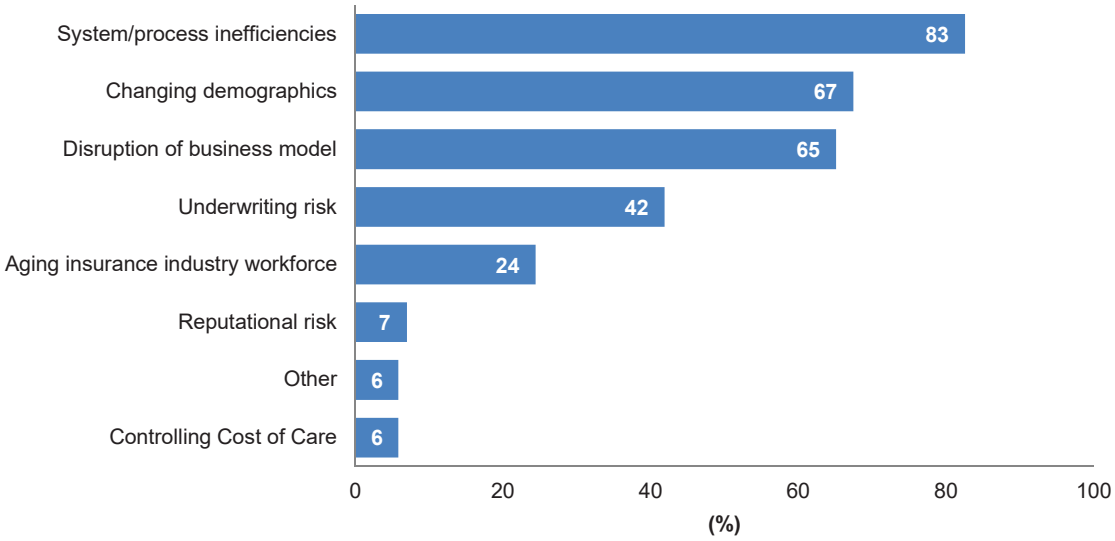
What Is the Primary Reason Innovation Is Important to Your Organization?



Source: A.M. Best data and research

Exhibit 3

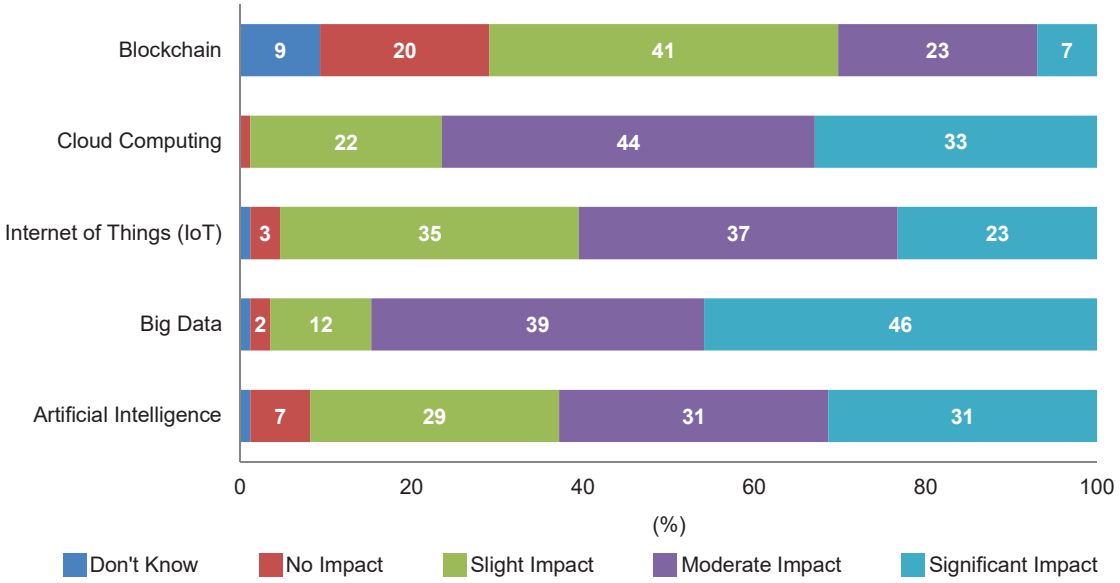
What Are the Most Important Challenges Innovation Can Help Insurers Overcome?



Source: A.M. Best data and research

Exhibit 4

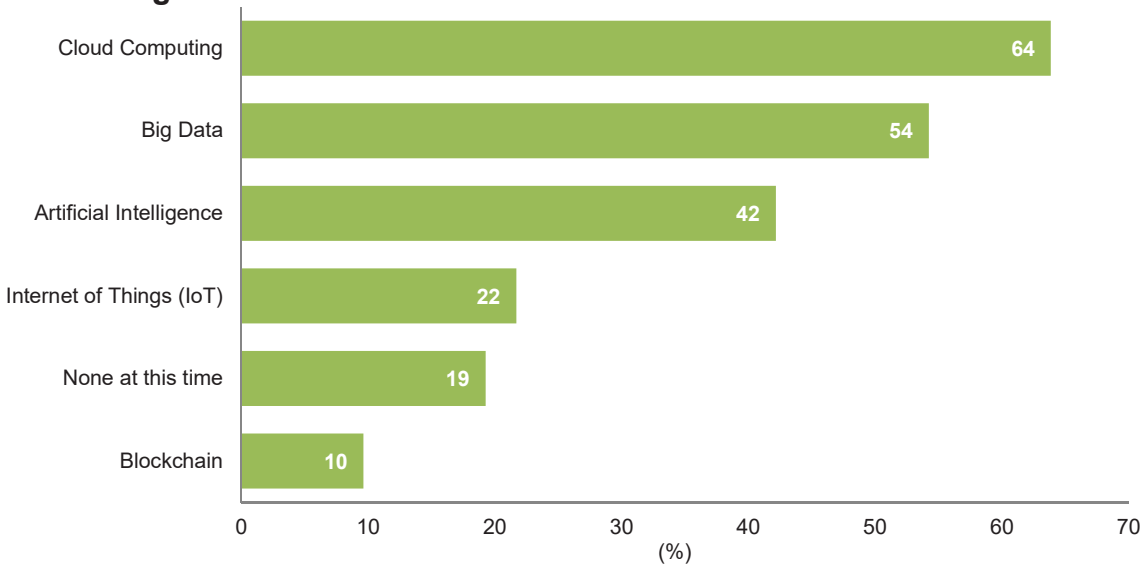
What Kind of Impact Will These Technologies Have?



Source: A.M. Best data and research

Exhibit 5

Has Your Company Invested, or Is It Planning to Invest, in Any of the Following?

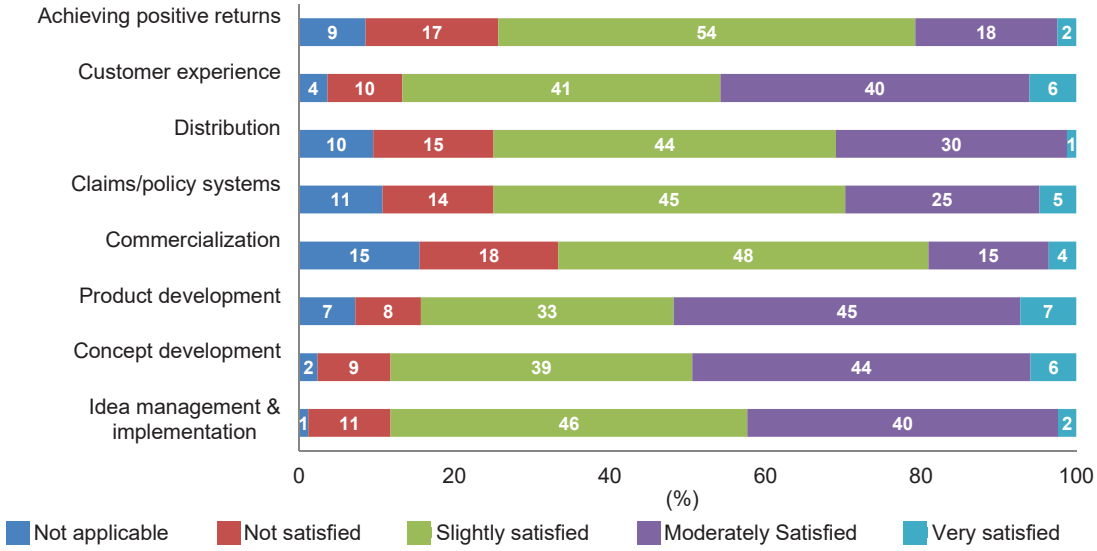


Source: A.M. Best data and research

Although most are partnering with their reinsurers in these efforts, some larger companies are developing this capability on their own. However, even with quick acceptance, many potential customers still need to wait to receive their policies as they flow through the more dated practice of policy issuance. Given that technological advancements may help overcome this issue, nearly two thirds and more than half of respondents are investing in or are planning to invest in cloud computing and big data, allocating investment dollars to those technologies companies think will have the greatest impact (**Exhibit 5**). Most respondents agreed that,

Exhibit 6

What Are Your Company's Satisfaction Levels with Your Innovation Efforts as They Relate to the Following Areas?



Source: A.M. Best data and research

in the coming years, blockchain would have the smallest impact compared to other tech advances despite the explosion in popularity of cryptocurrency.

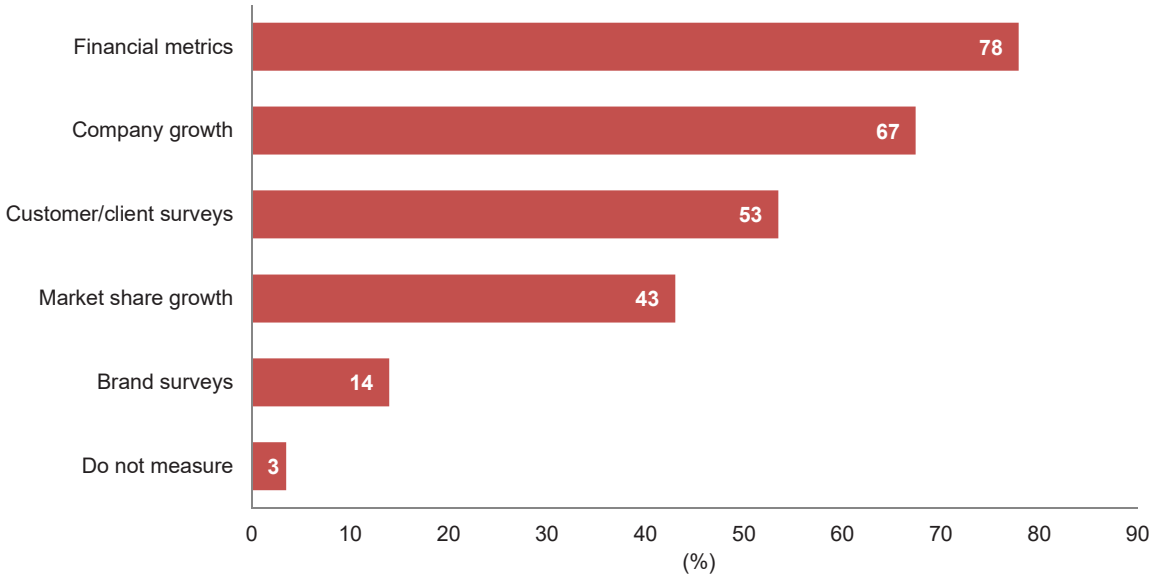
The Process of Innovation

The vast majority of L/A insurer respondents have started working on innovation initiatives, although roughly one third are still in the early stages of development. While 60% have successfully launched an initiative, only a quarter have had a successful launch that had a measurable impact. However, 81% indicated that they have introduced new or significantly improved products, processes, or services in the last three years and that they expect these innovations to have a measurable impact over time.

The view L/A insurers have of innovation is reflective of how satisfied each company is with its own innovation efforts in a number of areas. More than 10% of respondents said they were not satisfied with their innovation efforts in five areas (**Exhibit 6**): Respondents were least satisfied with commercialization (18%), positive returns (17%), distribution (15%), claims/policy systems (14%), and idea management and implementation (11%). Product development had the highest percentage of very satisfied respondents (7%), followed by customer experience and concept development. A.M. Best analysts see that L/A insurers have expanded product offerings or enhanced their current offerings, have formally created innovation roles or strategies, and are focusing on customer satisfaction backed by quantitative metrics. New riders/products, value-added services, and entities entering markets previously ignored (such as pre-need/final expense) are all recent developments throughout the segment and support the survey findings about product development.

There is no one model to pursue innovation improvements or to measure its success. Financial metrics are the most commonly used measure of success (78%), followed by company growth (67%), while customer/client surveys (53%) are used to gauge external perceptions (**Exhibit 7**). Clearly, improved top line performance is a leading indicator but results are still lacking with respect to the overall impact on improved underwriting and profitability results.

Exhibit 7
How Do You Measure the Success of Your Innovation Initiatives?



Source: A.M. Best data and research

Developing an innovation process and strategy does present challenges. Respondents cited a lack of human capital/specialized talent (58%), IT limitations (50%), and their own organizational culture (49%) as the three biggest obstacles to developing their innovation processes (**Exhibit 8**). However, L/A insurers clearly identified a favorite strategy to develop innovation initiatives to address these challenges, as over half of respondents said they would prefer to improve or create better products/processes/services in-house, more than double the responses for partnering with another organization (29%) or purchasing from an outside source (19%).

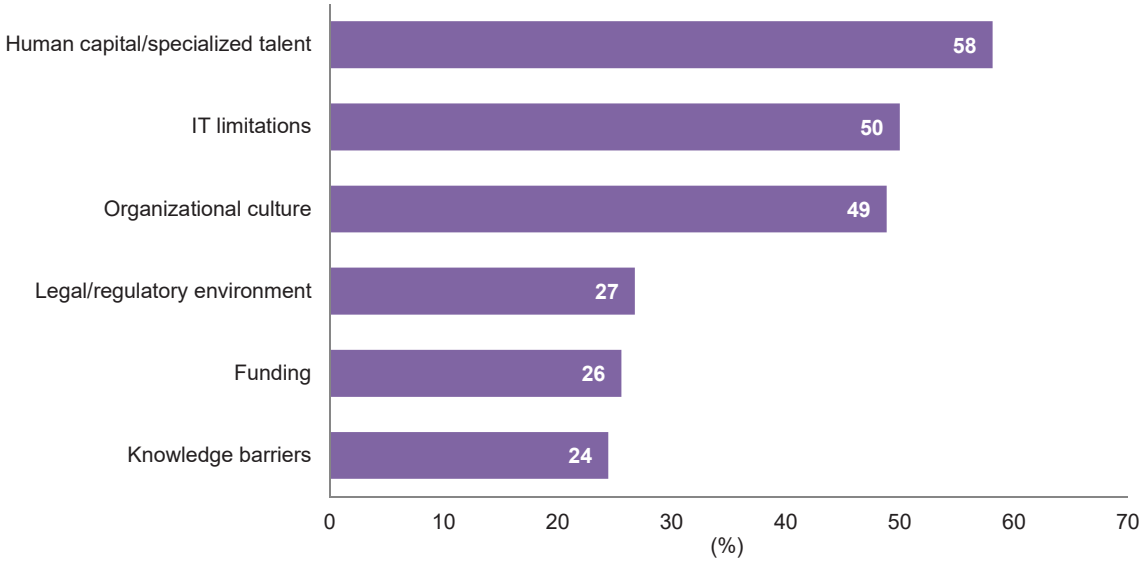
Although 43% of companies do not have any innovative partnerships with insurtech companies or entities outside the traditional insurance segment, the preferred avenues for those that do choose to establish partnerships are spread quite evenly, with around 15% each stating that those partnerships can encompass owning/investing in a venture capital fund, participating in insurance accelerators, or partnering with a dedicated research organization. Smaller firms may understand the need and have the desire to innovate, but may not have the financial cushion to dedicate funds for costly innovative projects, and may therefore be more likely to use partnerships with organizations that do have those capabilities. Primary insurers may also choose to work with their reinsurers, especially in new product development. Also worth noting is that 16% of respondents stated that they were not currently involved in any partnerships, but planned to do so in the next year.

Innovation Strategy & Implementation

L/A insurers identify opportunities for innovation from six sources relatively equally, with more of a focus on what competitors and the rest of the industry are doing:

- Industry/competitors (90%)
- Employees (78%)
- Sales force (75%)
- Management/board of directors (70%)
- Customers (65%)
- Consultants/outside vendors (57%)

Exhibit 8
What Are the Biggest Challenges to Developing the Innovation Process?



Source: A.M. Best data and research

In addition, some companies rely on the reinsurance community to help with product innovation and in some cases to share information about new business underwriting performance. Many insurers also look to their own employees for innovative ideas, which not only boosts employee morale, but also creates efficiencies and cuts costs.

Highlighting the growing importance of innovation, 44% of L/A respondents view their current innovation strategies as a key component of their overall strategic objectives; another 34% are developing innovation strategies that will align with their overall strategic objectives, showing that most companies understand the importance of such an alignment. A smaller 16% are either developing (3%) or have developed (13%) a strategy that does not explicitly align with their overall strategic objectives; only 6% of companies do not have any innovation strategy, nor do they plan to create one.

The boards of directors at L/A companies seem to be properly engaged with their organizations' innovation strategies and focus, as more than 90% of respondents discuss innovation at board meetings at least once a year, with nearly 36% saying that they discuss innovation at every board meeting. Many boards discuss innovation throughout the year, whether quarterly or at a regularly scheduled board meeting. Further, those that discuss innovation more frequently tend to view the industry's implementation of innovation more favorably and have stronger opinions about clearly defining and communicating the innovative process throughout the organization.

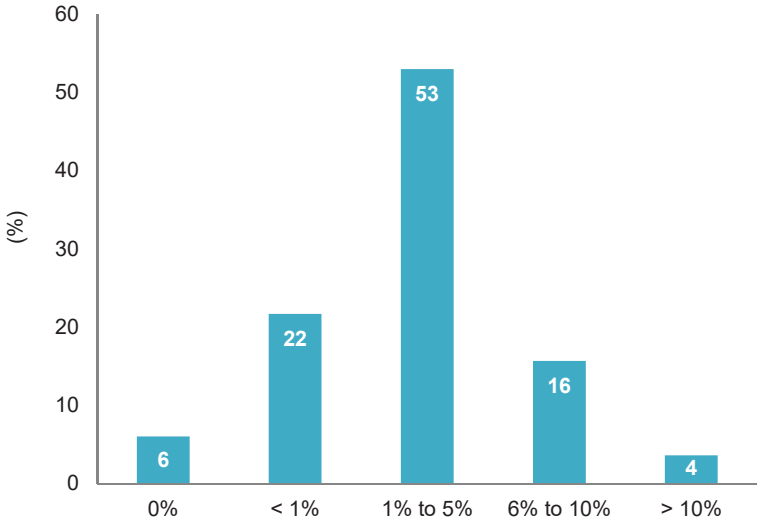
As with any endeavor, developing and executing on a project of this importance requires proper planning, preparation, and execution. However, allocating a portion of the annual budget to invest in innovative improvements does not seem to be a major concern for most of the segment, as only one quarter of L/A respondents stated that funding to develop an innovative process was a challenge. More than half of the total industry allocates between 1% and 5% of their annual budgets to innovation. The L/A segment has the highest proportion

(16%) of organizations allocating between 6% and 10% of their total annual budget to innovation initiatives (**Exhibit 9**). A.M. Best notes that the relative lack of concern over the funding of innovation initiatives is likely in part a function of the relatively strong capital ratios across the segment, as well as the relatively stable financial market environment. Should we enter a period of financial market disruption, innovation dollars may be competing with other financial priorities.

Nearly 60% of the L/A respondents have cross-functional personnel teams focusing on innovation; 20% of respondents have dedicated innovation teams, almost the same proportion as those that have none. Only 7% of respondents have a chief innovation officer; another 7% outsource the function (**Exhibit 10**). A.M. Best does note that some companies may use a multi-pronged approach towards innovation that includes both using an outside provider and a dedicated internal team. However, we would expect that companies with fewer

Exhibit 9

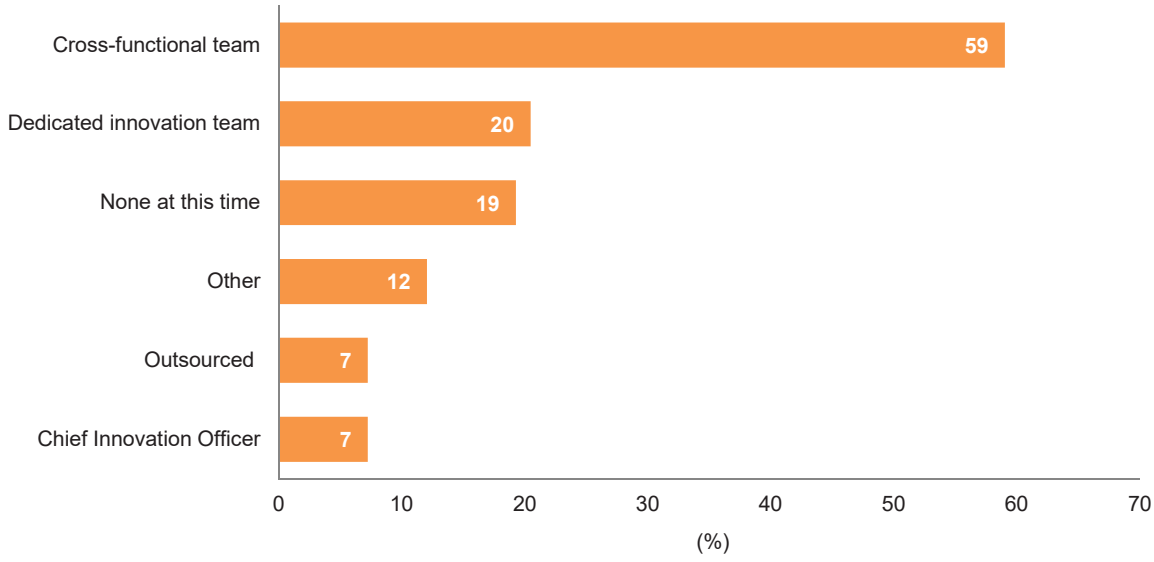
What Percentage of the Your Total Annual Budget Does Your Company Allocate to Innovation?



Source: A.M. Best data and research

Exhibit 10

Does Your Company Have Personnel Who Focus on Innovation?



Source: A.M. Best data and research

resources would rely on outside providers for innovation. Larger companies may develop technology in-house, but also use outside consultants to keep track of where the market is heading.

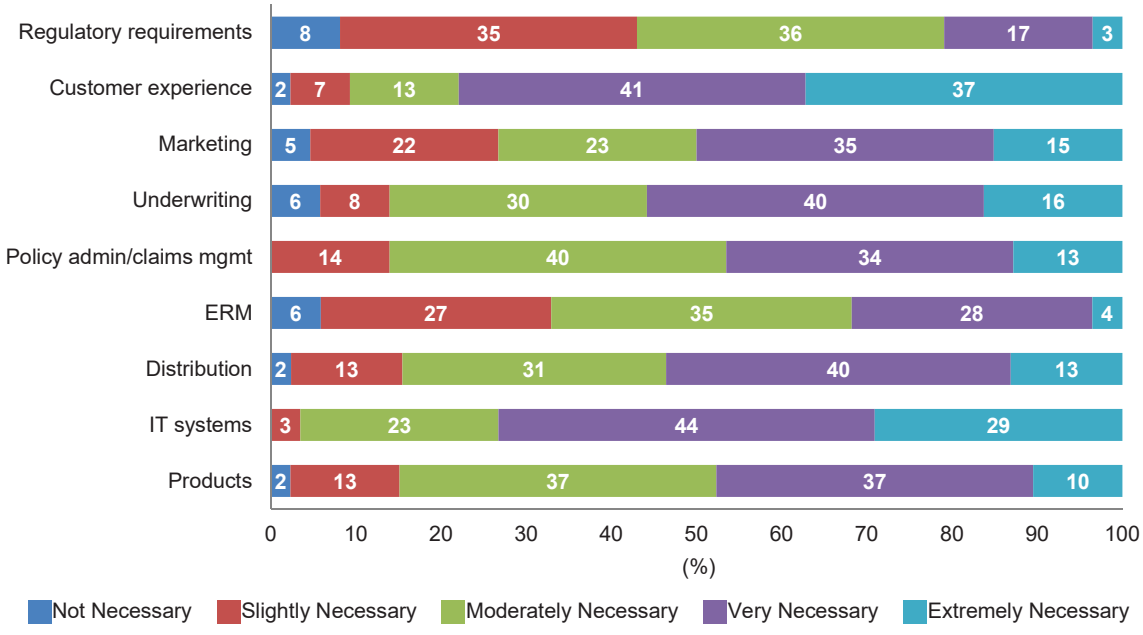
Life reinsurers—particularly the top five dominating the market—are particularly interested in partnering with direct writers to enhance product offerings and streamline the underwriting process, as they see this as their most effective means of increasing cession rates.

Crucial Areas for Innovation

The two most crucial areas where L/A insurers feel it is very or extremely necessary to innovate are the overall customer experience (78%) and IT systems (73%) (**Exhibit 11**). So long as competition remains intense, customer service and retention will also remain top concerns. Additionally, updating/transferring legacy systems remains a top priority for many in the L/A segment, with initiatives often taking years to complete. Many companies are tasked with updating older systems while simultaneously creating new platforms for new business. This provides opportunities for smaller and sometimes newer companies that do not have legacy systems entering the insurance marketplace to make an immediate impact by outsourcing models that rely on newer technologies. A.M. Best has observed that some companies with ongoing legacy system challenges have outsourced their policy administration and associated customer service functions, allowing them to focus their internal efforts on other elements of technology improvements and innovation.

Exhibit 11

How Necessary Is It to Innovate in the Following Areas?

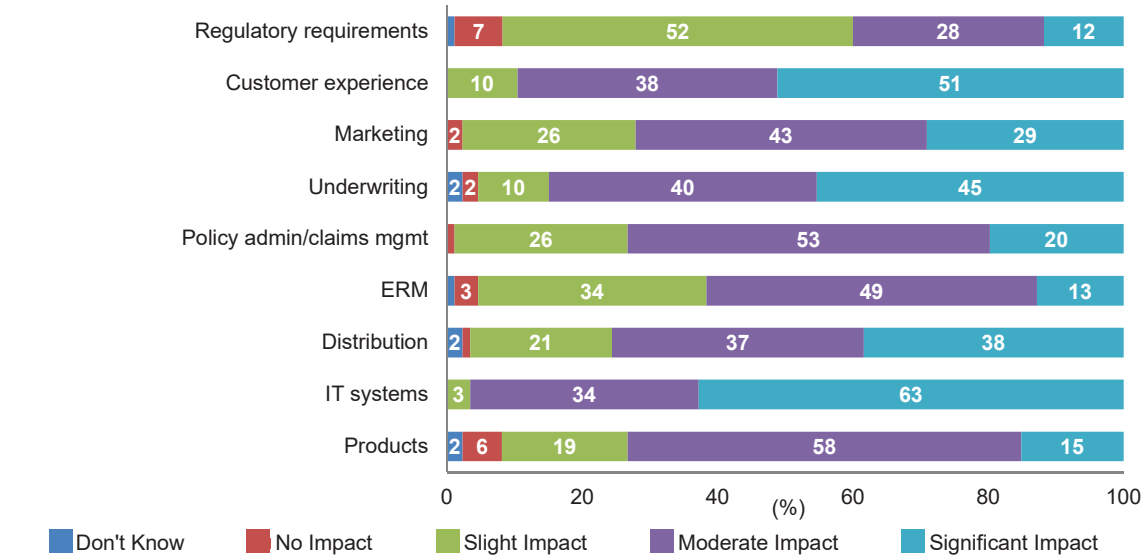


Source: A.M. Best data and research

Additionally, respondents identified these two categories as the areas in which innovation will have the most significant impact in the next three years (**Exhibit 12**). All of these areas touch upon efficiencies that will ultimately translate into a better customer experience. Older legacy IT systems need to be updated to properly mine and analyze existing data, simplify the underwriting process, and communicate and share information with other areas.

Exhibit 12

To What Degree Do You Expect Innovation to Affect the Following Areas Over the Next Three Years?



Source: A.M. Best data and research

It's clear that the pace and scale of innovation will accelerate, as companies refine their strategies to enhance their competitive positions, improve the customer experience, strengthen profitability, and remain relevant in an ever-changing market.

Trend Review
September 24, 2018

Health Insurers Embrace Innovation to Engage Consumers and Providers – and to Remain Competitive

Insurers are using innovation advancements to expedite claims and application processing, as well as helping to control costs

An ongoing focus on innovation is paramount to remaining competitive in an ever changing marketplace. The insurance industry is often thought of as lagging in innovation. In August 2018, A.M. Best surveyed its rated universe, to get a better read of the state of innovation in the industry. The findings in this report are based on the responses we received. The overall insurance industry recognizes that it has jumped on the innovation bandwagon rather late, as virtually no respondent believes the industry has adopted and implemented innovation "extremely well." However, anecdotal evidence by A.M. Best's analysts suggest that more attention has been given to innovation in recent years, as technology and the methods for conducting business have evolved.

Overall, health insurance companies are embracing innovation, to better engage both the provider and consumer sides of the value chain, while simultaneously using these advancements to remain competitive. However, innovation doesn't always mean new technological adoption—in some cases, it's about adding value and blending product development with existing technology or devices.

The Innovation Landscape

Overall, roughly two thirds of the health segment views innovation as either extremely (14%) or very critical (52%) to the success of their organizations. Although views of how well the health segment has adopted and implemented innovation vary, nearly three quarters of respondents believe the industry has done the job at least "somewhat well" (**Exhibit 1**; note that all figures in this report have been rounded). In the US, health insurers have faced numerous regulatory challenges since the implementation of the Patient Protection and Affordable Care Act (ACA) in 2014, which has required significant amounts of resources. In the health segment, the use of data is strategically important for optimizing provider contracting and pricing, as well as for assisting management in analyzing and creating better predictive modeling on the demand for care, and for identifying high risk individuals. Technology and data analytics can add a competitive advantage and allow an organization to increase the scale and scope of its business with minimal or reduced additional costs. Furthermore, technologically advanced and targeted applications can help health insurers provide information and resolve issues more quickly than traditional communications methods.

However, adopting innovation can be challenging, as the medical community and providers tend to be more conservative when it comes to embracing change, particularly with regard to reimbursement models and moving away from the traditional fee for service. Providers in more rural areas and those with smaller practices tend to be particularly reluctant to embrace new technology, driven largely by a lack of staff or the associated costs.

Additionally, regulatory regimes often have strict rules on the privacy of medical information, which can make sharing data and allowing access to records problematic. However, A.M.

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"What Is "Innovation"?

A.M. Best defines innovation as a multi-stage process whereby an organization transforms ideas into new or significantly improved products, processes, services, or business models that have a measurable impact over time and enable the organization to stay relevant and successful. These new or significantly improved products, processes, services, or business models can be organically grown or adopted from external sources.

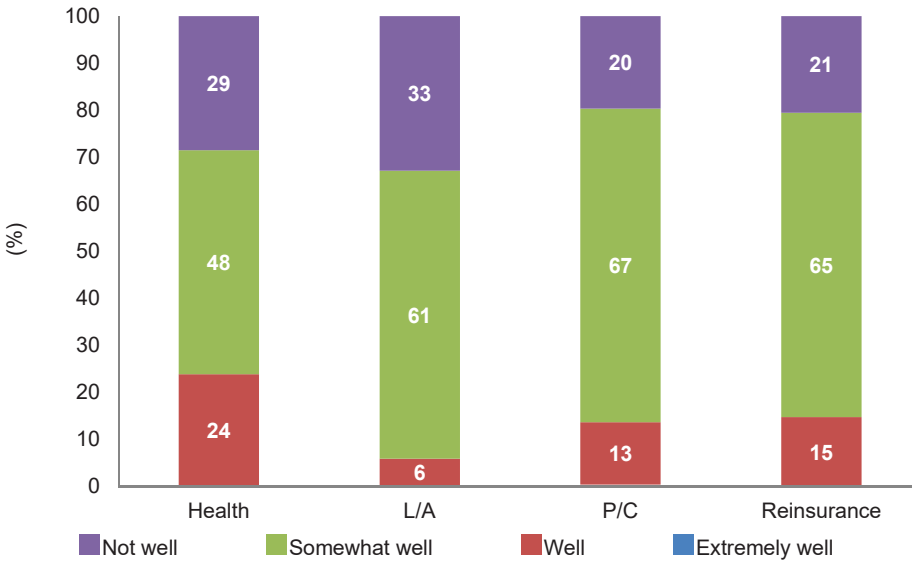
Best recognizes that carriers and providers are sharing more data via electronic medical records and forming payment relationships based on medical data and health results within the boundaries of the law.

Thirty-five percent of respondents believe that gaining a competitive advantage is the primary reason innovation is important, while 20% believe revamping the business model is the most important reason **(Exhibit 2).** These responses reflect the specific concerns of the health segment, as health insurers are being squeezed. Market-leading companies in the US, such as many of the national—as well as the larger regional—carriers have a history of being innovative, as they own and/or partner with large providers and technology operations. For example, UnitedHealth Group has its own provider and technology division via its Optum operation.

Newer entrants such as Oscar Health use an innovative model

Exhibit 1

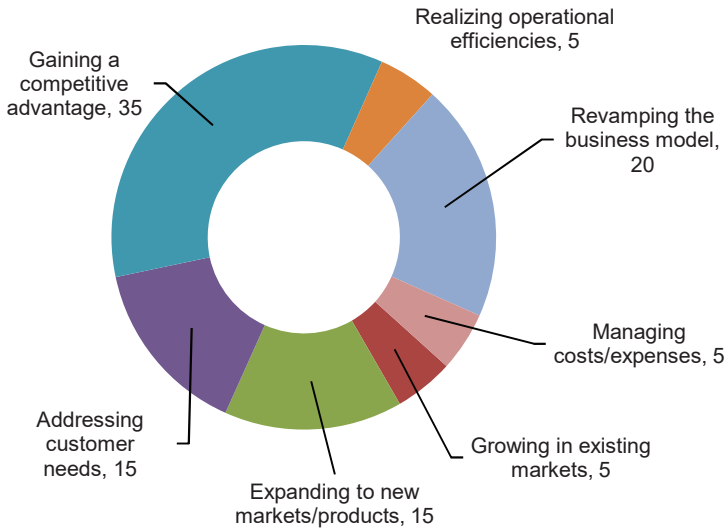
How Well Has the Insurance Industry Adopted and Implemented Innovation?



Source: A.M. Best data and research

Exhibit 2

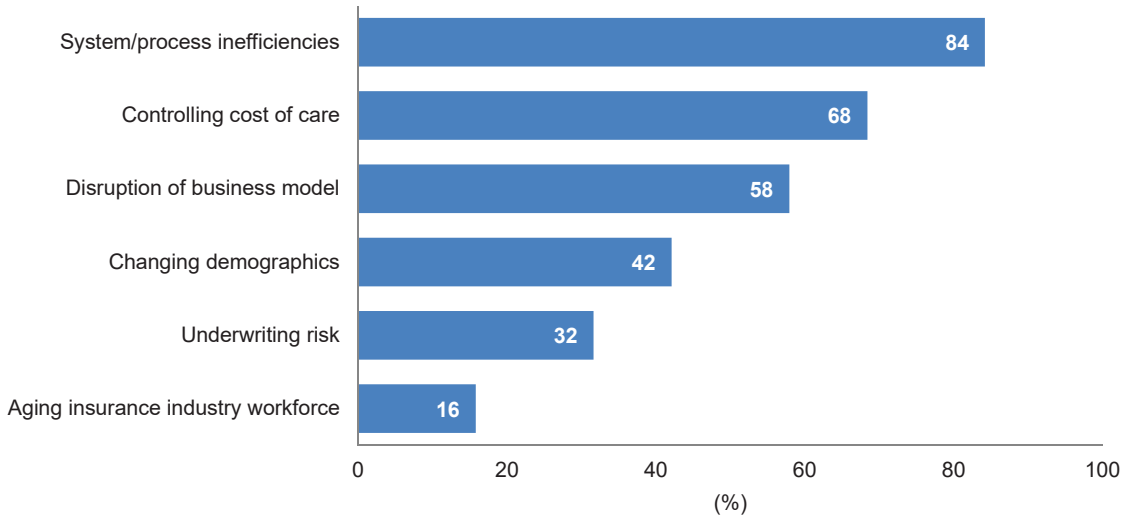
What Is the Primary Reason Innovation Is Important to Your Organization?



Source: A.M. Best data and research

Exhibit 3

What Are The Most Important Challenges Innovation Can Help Insurers Overcome?



Source: A.M. Best data and research

designed to attract younger consumers, while not having a legacy business model like most of their competitors. Oscar members can make an appointment to talk to a doctor at no cost via the Oscar app and have access to a dedicated Oscar concierge team that includes a nurse, which allows the member to talk with the same individuals. Oscar started offering coverage in New York in 2014; it now (in 2018) offers coverage in New York and New Jersey as well as select areas across four additional states; and it will be expanding into six new markets in three new states in 2019, exemplifying the reason that 15% of respondents believe that expanding to new markets/products and addressing customer needs are reasons why innovation is important in those areas.

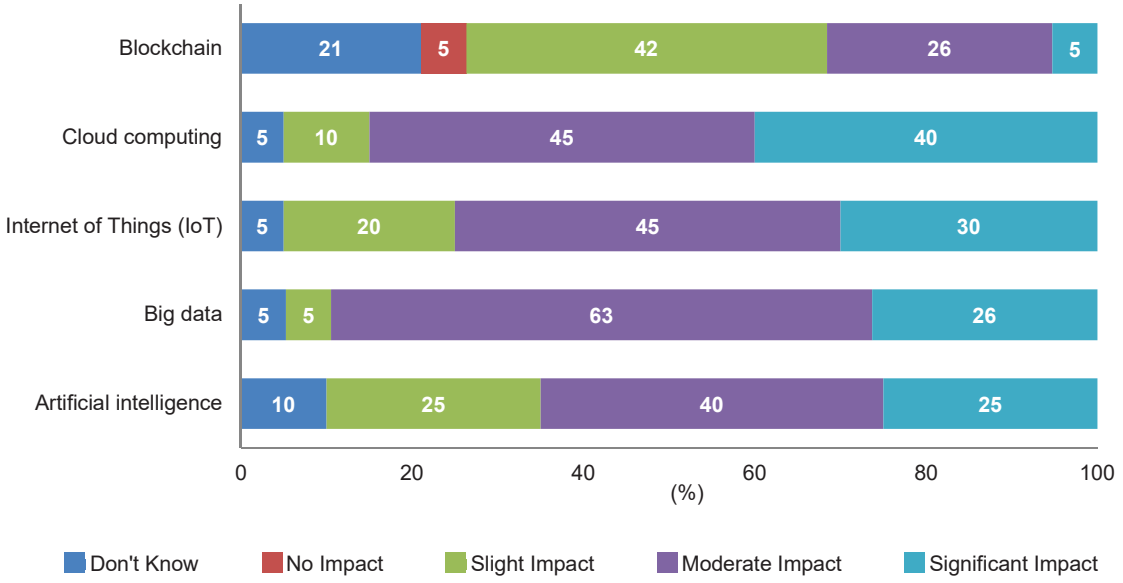
Although innovation can help overcome a number of challenges, health insurers overwhelmingly believe that the segment's top three issues are system/process inefficiencies (84%), controlling the cost of care (68%), and disruption of the business model (58%) (**Exhibit 3**). In general, there have been system process inefficiencies, and health carriers are seeking ways to process more with less. New technologies are being used, such as artificial intelligence (AI) in the claims processing and application processing areas by some insurers. Controlling the cost of care is critical to health insurers, as a large percentage of claims come from a small number of high-risk individuals, many of whom have chronic conditions. Having consumers enroll in a care management program or other wellness initiatives can help a health insurer lower costs while improving an individual's health. Controlling the rising cost of healthcare is something that many view as a missing component of the ACA.

New entrants in the health insurance marketplace are using a more innovative model, with a reliance on technology to attract younger consumers who tend to be healthier, many of whom have not been insured, as they have not felt the need to purchase coverage. Furthermore, with a growing number of people employed in the gig economy having very limited or no access to group benefits, health insurers are finding it a challenge to create value propositions attractive to this population.

Cloud computing (40%) and IoT (30%) are likely to be the two most significant technologies health insurers use to facilitate innovative change and improve operations, with big data (26%)

Exhibit 4

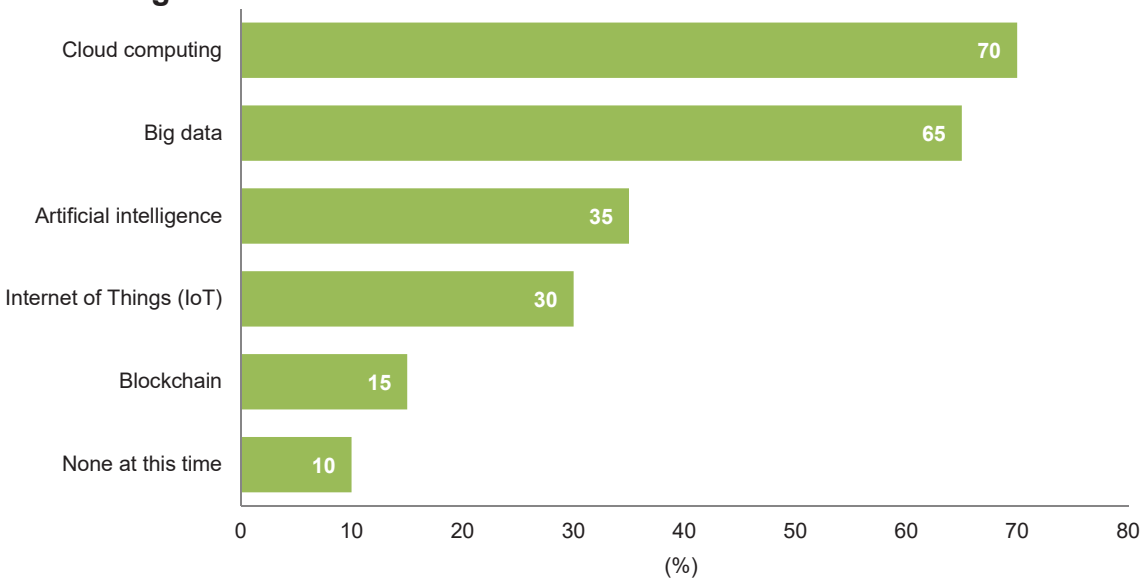
What Kind of Impact Will These Technologies Have?



Source: A.M. Best data and research

Exhibit 5

Has Your Company Invested, or Is It Planning to Invest, in Any of the Following?



Source: A.M. Best data and research

coming in as a close third (**Exhibit 4**). More than half of respondents are investing in or are planning to invest in these technologies, with IoT coming in fourth, at 30% (**Exhibit 5**).

Cloud computing allows companies to process and store data without the physical space needed for hardware. It also allows for easier sharing of data among insurers, individuals, and healthcare providers. Big data helps health companies better identify high-risk individuals and

implement the necessary tools to help them control chronic medical conditions and the cost of care. It also allows insurers to analyze the outcome, enabling the healthcare industry as a whole to provide and deliver the appropriate care in an appropriate setting at a potentially lower cost. IoT helps engage consumers more actively, to monitor their medical conditions and show them ways to improve their health (by using Fitbits for walking, smart watches for heart monitors, or smart tooth brushes for oral health, for example). These items allow health insurers and providers to be proactive in the delivery and management of care, while raising members' awareness of their health status.

The Process of Innovation

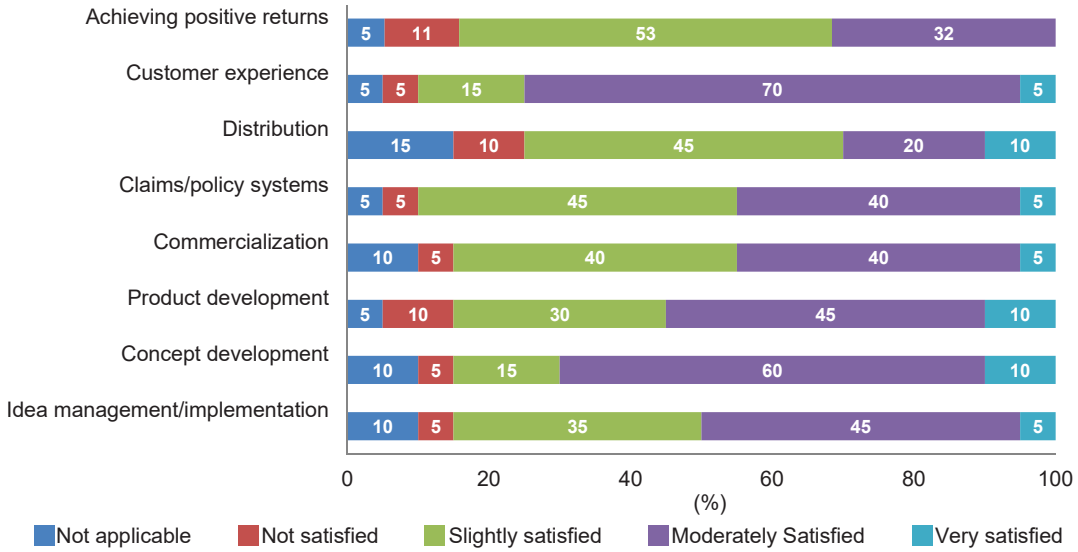
The vast majority of health insurer respondents have started working on innovation initiatives, although roughly one quarter remain in the early stages of development. Seventy-five percent have successfully launched initiatives, while 35% have had a successful launch that had a measurable impact. Additionally, more than half indicated that they have introduced new or significantly improved products, processes, or services in the last three years, and that they expect these innovations to have a measurable impact over time.

Examples of innovation in the health segment include a product developed by a dental insurer through which individuals can find a dentist and book and prepay for an appointment via a web application. This can provide convenience for the consumer and the dentist, as well as a service to those individuals who do not have employer paid dental coverage. Another example is Blue Cross Blue Shield of Michigan, which has worked with Amazon to provide Michigan residents with wellness information, healthy recipes, and general information on health insurance, as well as meditation sessions using an Alexa-enabled device.

The view health insurers have of innovation in the overall insurance industry is reflective of how satisfied each company is with its own innovation efforts in a number of areas. The areas of innovation that the largest percentage of respondents were "very satisfied" were distribution, production development, and concept development, each at 10% (**Exhibit 6**).

Exhibit 6

What Are Your Company's Satisfaction Levels with Your Innovation Efforts as They Relate to the Following Areas?



Source: A.M. Best data and research

Achieving positive returns on innovation investments fall the shortest of expectations, as 11% are not satisfied, similarly to distribution and product development, at 10% each. Achieving positive returns on innovation investments is important, especially as innovation often comes with a hefty price tag. Moreover, over half of commercial employer group accounts are self-funded, making it difficult to spread the cost of new technologies to this segment. However, insurance companies can offer innovation as an add-on service to their self-funded clients and thus somewhat alleviate innovation-related expenses.

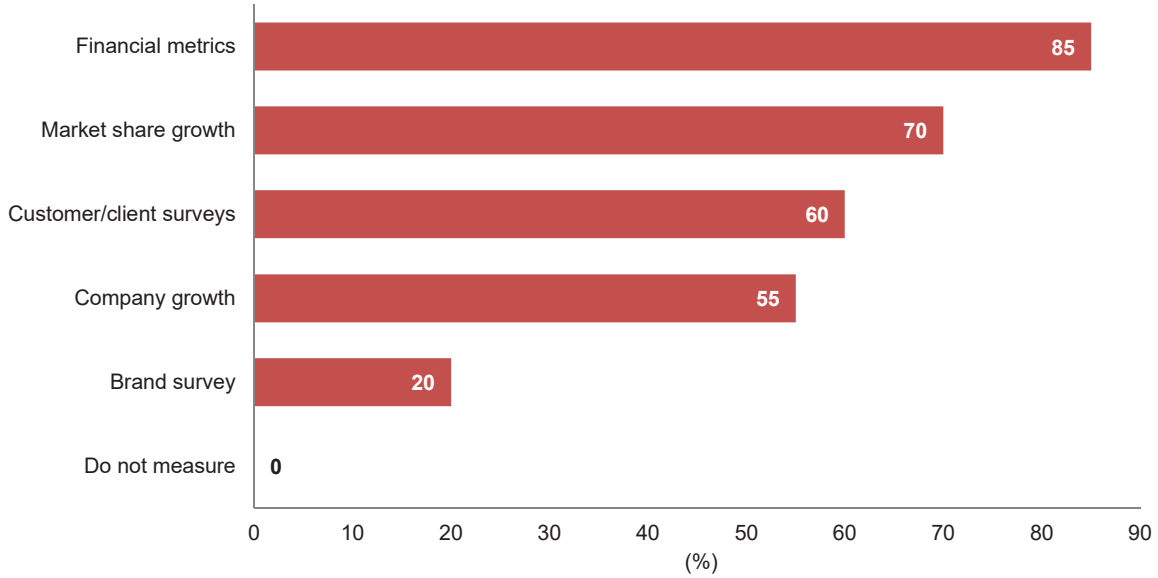
It is also often difficult for health insurers to measure a return on investment (ROI) for technologies used to lower healthcare costs. In spite of these difficulties, financial metrics are still the most commonly used measures of success (85%), followed by market share growth (70%), while customer/client surveys (60%) are used to gauge external perception (**Exhibit 7**). Some insurers include ROI guarantees when contracting new technologies and services, with financial penalties if ROI targets are not achieved.

The significant percentage of insurers using customer/client surveys to measure success is reflective of the transition in the US market over the past few years, from a focus on the employer to one on the individual consumer (as more individuals buy coverage from the ACA marketplace), as well as a major shift from business-to-business to business-to-consumer. Additionally, as the population ages, insurers are trying to retain customers as members move through their life cycles, as they retire and possibly lose group coverage and shift to Medicare. Member engagement and wellness tools are areas in which health insurers have been successful.

Health plans' attempts to increase the percentage of online sales of health insurance products has not been as successful as many US carriers had hoped, particularly relative to the private exchanges, due to product complexity and the difficulties of communicating them without, or with limited, human interaction. Even the individual ACA exchange products have used navigators to help individuals purchase products.

Exhibit 7

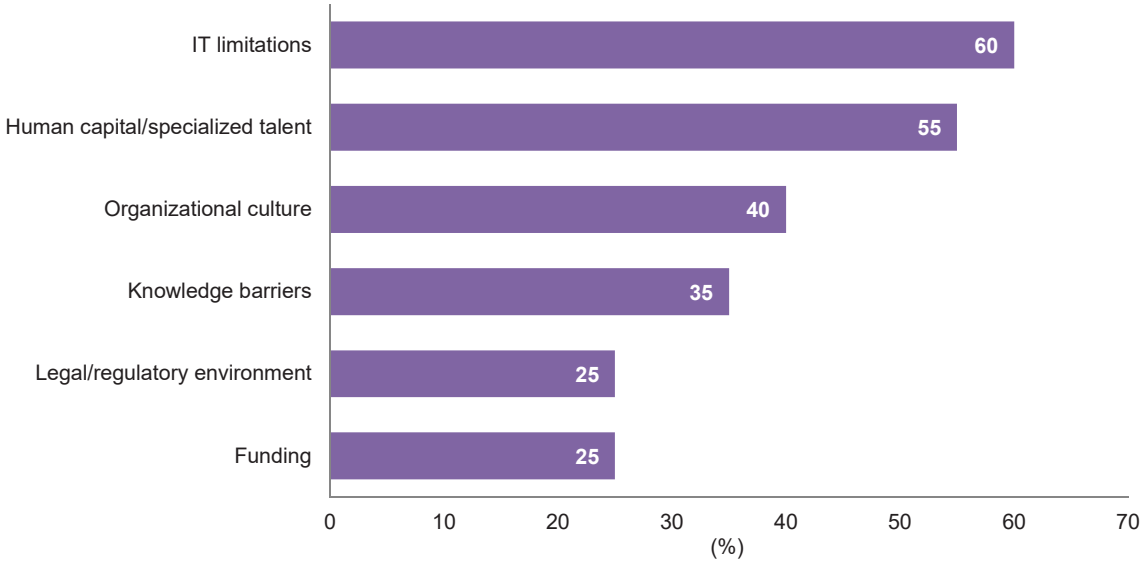
How Do You Measure the Success of Your Innovation Initiatives?



Source: A.M. Best data and research

Exhibit 8

What Are the Biggest Challenges to Developing the Innovation Process?



Source: A.M. Best data and research

There are challenges to developing an innovation process and strategy. Significant proportions of respondents cite IT limitations (60%), a lack of human capital/specialized talent (55%), and their own organizational culture (40%), as the three biggest obstacles to developing their innovation process (**Exhibit 8**). However, insurers are split on what strategies to use to develop innovation initiatives to address these challenges. Forty percent said that they would prefer to develop initiatives in-house, while another 40% said they would prefer to partner with an organization, double the response for purchasing from an outside source (20%). Although 35% of companies do not have any innovative partnerships with insurtech companies or entities outside the traditional insurance segment, 45% own or have invested in a venture capital fund, 35% have made strategic investment in startups, and 20% are partnering with dedicated research organizations. Many health insurance companies have formed partnerships or invested (not as majority owner) in startup healthcare-related technology or health improvement companies, with the insurer as a customer. Also worth noting is that 15% of respondents stated that they currently are not involved in any partnerships, but plan to do so in the next year.

Several companies are making strategic investments through venture funds. Thirty-three Blue Cross Blue Shield companies are part of the BlueCross BlueShield Venture Partners, which is sponsored by the Blue Cross Blue Shield Association. The Blue Cross Blue Shield investors have committed over $575 million and are investing in emerging companies that are of strategic relevance to the plans and provide access to the association's portfolio to deploy innovation at scale. Furthermore, in November 2017, UnitedHealth Group's Optum business announced the creation of Optum Ventures, a $250 million fund focused on investing in startup and early-stage companies whose innovations will help advance the healthcare system, and in September 2018, Cigna Corp. announced the launch of Cigna Ventures, a $250 million fund investing in startup and growth companies focused on transformative and innovative healthcare.

Insurers are also establishing offices in up and coming tech cities, to attract young talent for in-house development of new technologies. Other forms of partnerships/investments include

provider operations such as outpatient facilities, which can include ambulatory surgical centers, wellness facilities, laboratories, imaging, and pharmacy benefit managers (PBM). These partnerships are becoming much more complex, with risk sharing and quality metrics. Some health plans have partnered with research organizations to aid in managing complex medical conditions.

Innovation Strategy & Implementation

Health insurers identify opportunities for innovation from six sources relatively equally, with more of a focus on what competitors and the rest of the industry are doing and employee input:

- Employees (90%)
- Industry/competitors (90%)
- Customers (85%)
- Sales force (75%)
- Management/board of directors (75%)
- Consultants/outside vendors (75%)

Perhaps highlighting the growing importance of innovation, 55% percent of health respondents view their current innovation strategies as a key component to their overall strategic objectives; another 30% are developing innovation strategies that will align with their overall strategic objectives, showing that most companies understand the importance of such an alignment. In contrast, 5% of companies do not have an innovation strategy, nor do they plan on creating one, while 10% have developed a strategy that does not explicitly align with their overall strategic objectives.

The board of directors at 45% of respondents' companies discusses innovation every time it meets, while 30% say that it discusses innovation once a year. A commitment to the innovation process throughout the entire organization is essential. Although corporate management teams and board members need to demonstrate leadership and their buy-in at the top of the organization, successful innovators have a well-defined and clearly communicated and understood process for sourcing innovative ideas that permeates the entire organization. More respondents agree (40%) than disagree (35%) that their company's process for sourcing innovation ideas is well defined and clearly communicated and understood throughout the organization.

As with any endeavor, developing and executing on a project of this importance requires proper planning, preparation, and execution. However, allocating a portion of the annual budget to invest in innovative improvements does not seem to be a major concern for the segment, as only one quarter of health respondents stated that funding to develop an innovative process was a challenge. Nearly two thirds of the health segment allocates between 1% and 5% of their annual budgets to innovation, while another 5% allocation between 6% and 10% (**Exhibit 9**).

Over half of the health respondents have cross-functional personnel teams focusing on innovation, while 15% have dedicated innovation teams and 20% have none. Only 10% of respondents have a chief innovation officer; 20% outsource the function to a team focusing on innovation (**Exhibit 10**). Some insurers have established an innovation fund that allocates funds to employees with innovative ideas for development. Many insurers have dedicated funds for innovation, new technologies, and insurtech investments, and have cross-functional senior management teams who evaluate new ideas as they are introduced.

Some companies use a multi-pronged approach towards innovation that includes using both outside expertise and a dedicated internal team. We would expect that companies with fewer resources

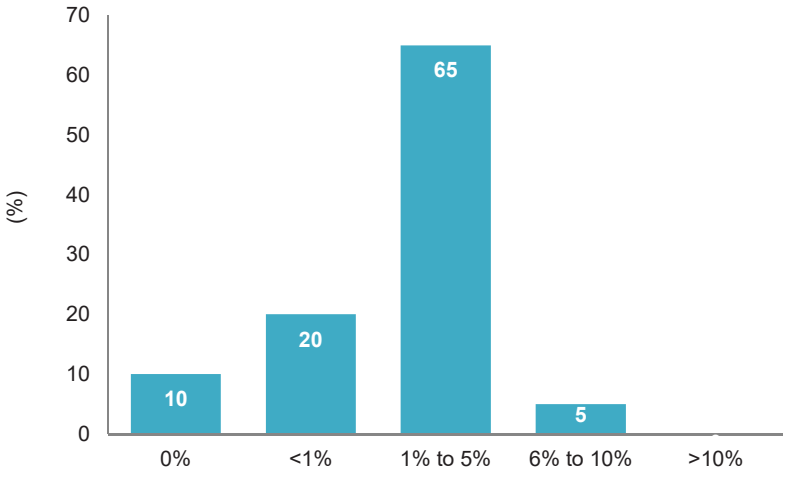
would rely on outside expertise for innovation. Larger companies may develop technology in-house, but also use outside consultants to keep track of where the market is heading.

Crucial Areas for Innovation

The two most crucial areas that insurers feel it is very or extremely necessary to innovate are IT systems (80%) and the overall customer experience (70%) (**Exhibit 11**). These two areas are the ones that respondents believe innovaton will have at least a moderate, if not significant, impact on (**Exhibit 12**). In the US market, health insurance companies have four different customers: providers, individuals, employer groups, and government (both state and federal). Although the interests of all parties may align, expectations can differ, making the innovation process more difficult. Convincing customers to adapt to new technologies/environment can be challenging. Further, privacy laws relating to the sharing of data can be a hindrance in developing new technologies. Companies have been successful in this endeavor, but privacy laws do create limitations with regard to how and with whom to share data and the need to ensure the secure connectivity of data, which can add a layer of complication.

Exhibit 9

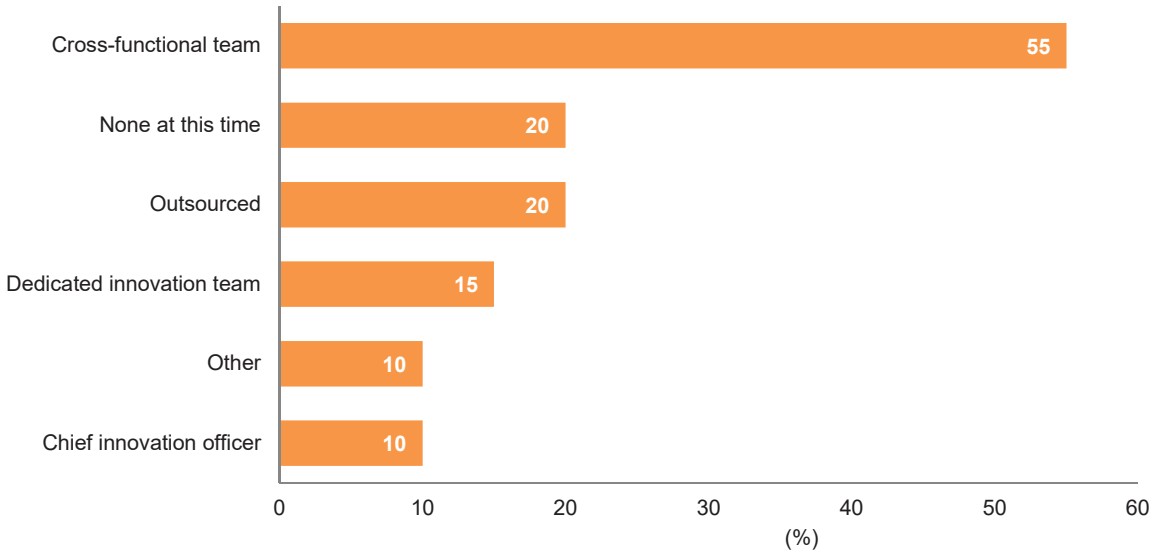
What Percentage of Your Company's Total Annual Budget Is Allocated to Innovation?



Source: A.M. Best data and research

Exhibit 10

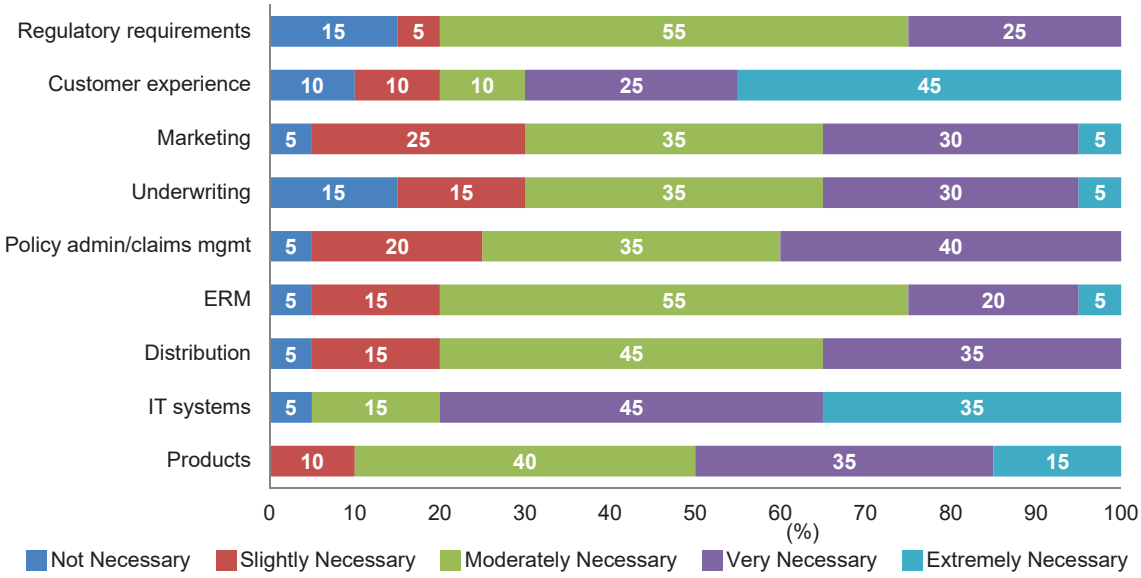
Does Your Company Have Personnel Who Focus on Innovation?



Source: A.M. Best data and research

Exhibit 11

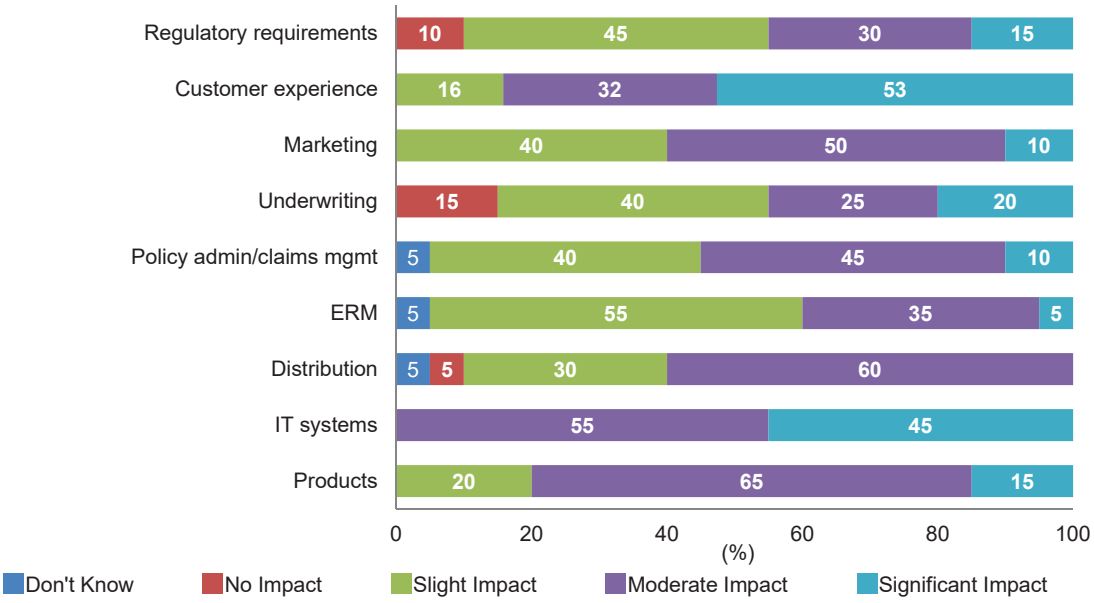
How Necessary Is It to Innovate in the Following Areas?



Source: A.M. Best data and research

Exhibit 12

To What Degree Do You Expect Innovation to Affect the Following Areas Over The Next Three Years?



Source: A.M. Best data and research

Health insurance companies will continue to use big data and artificial intelligence in analytics to help improve predictive modeling for higher-risk individuals as well as for policy administration functions. The push from healthier/younger consumers for more value and convenience is likely to continue. More insurers have begun covering and using telemedicine. In the future, medical advancements may allow remote monitoring of more complicated conditions/procedures. As younger people age and become more involved in their own care,

they are likely to demand more convenience with health plans and providers—a trend that we have already seen, in the increase in urgent care and walk-in clinics, where an appointment is not necessary and care can often be comprehensive, often more so than in a primary care physician's office.

Vertical integration, which will facilitate one-stop shopping, is also becoming a larger component in health insurance. UnitedHealth Group's Optum operations focuses on care and care delivery, which includes pharmacy benefit management (PBM), urgent care clinics, surgical centers, and providers. Some non-publicly traded insurers own components of the delivery system, such as provider, urgent care/walk in clinics, and hospitals. Anthem Inc., for example, is in the process of developing its own PBM. Furthermore, two large-scale transactions are pending, both of which involve vertical integration. Aetna Inc. is in the middle of a merger with CVS Health, which owns convenience drug stores, PBM, and "MinuteClinics" that provide walk-in care. Cigna Corp. is in the process of acquiring Express Scripts Holding Company, a PBM. All of these developments should help health insurers remain competitive while engaging consumers and providers.

Trend Review
September 24, 2018

Reinsurers Prefer Collaboration When It Comes to Innovation

Insurtech may not have as immediate an impact on reinsurers but may help strengthen long-term relationships with their clients

An ongoing focus on innovation is paramount to remaining competitive in an ever changing marketplace. The insurance industry is often thought of as lagging in innovation. In August 2018, A.M. Best surveyed its rated universe, to get a better read of the state of innovation in the industry. The findings in this report are based on the responses we received. The overall insurance industry recognizes that it has jumped on the innovation bandwagon rather late, as virtually no respondent believes the industry has adopted and implemented innovation "extremely well." However, anecdotal evidence by A.M. Best's analysts suggest that more attention has been given to innovation in recent years, as technology and the methods for conducting business have evolved.

Reinsurers have been focused on developing new products and services in a number of areas (such as flood, cyber, mortgage) and on keeping up with innovation in the primary insurance market. By forming partnerships with academia, government entities, startups, manufacturers, and non-profits, reinsurers are sourcing new growth opportunities. Reinsurers and ILS (insurance-linked securities) providers are also developing more comprehensive, consultative value propositions, such as capital advisory and enterprise risk management services, creating opportunities to leverage advanced platforms and innovative customized solutions. By focusing on innovation, newly developed products and services are at the forefront of change, potentially shaping the future of the reinsurance industry.

Innovation might not have a direct or immediate impact on reinsurance, but reinsurers have been—and remain—actively involved as it affects their clients directly. Partnering with insurtechs may have positive effects such as lowering costs, but a more ingrained approach could lead to an attack on the traditional insurance model, especially for homogeneous risks.

The Innovation Landscape

Almost half of reinsurance companies view innovation as either extremely (8%), or very critical (41%) to the success of their organizations. Of the industry overall, reinsurance companies have a somewhat more favorable view regarding how well the industry has adopted and implemented innovation (**Exhibit 1**; note that all figures in this report have been rounded).

Twenty-four percent of respondents believe that gaining a competitive advantage is the primary reason innovation is important, while 21% indicated that expanding to new markets/products and improving risk selection are the primary reasons innovation is important (**Exhibit 2**). These results are not surprising and reflect current market conditions. As of mid-2018, the reinsurance market was still experiencing pricing pressure, following the unrealized expectation of rate hardening after incurring natural catastrophe losses totaling over $100 billion, in the third quarter of 2017. Some loss-affected lines of business saw more meaningful rate increases at the January 1 and June 1 renewals in 2018, but the majority of reinsurance prices saw little to no increase and the prevailing sentiment is that rates will not fare much better in 2019. Because competing on price alone seems to be a thing of the distant past, reinsurers are being forced to think outside the box, to gain market share and stay competitive while also remaining profitable.

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Reinsurers overwhelmingly believe that the segment's top three challenges are system/process inefficiencies (94%), disruption of business model (76%), and underwriting risk (70%) (**Exhibit 3**). Transferring legacy systems to newer, more efficient platforms is a top priority for many in the industry, with more and more migrating from centralized servers to cloud computing. With the evolution of technology and the resulting impact on distribution channels, reinsurers may find themselves vying with companies from outside the traditional reinsurance segment, ultimately facing a disruption of the typical business model. Improvements in mobile technology, applications, and telecommunications infrastructure will allow a wider audience to access insurance cover and gradually bring down the current barriers to purchasing insurance.

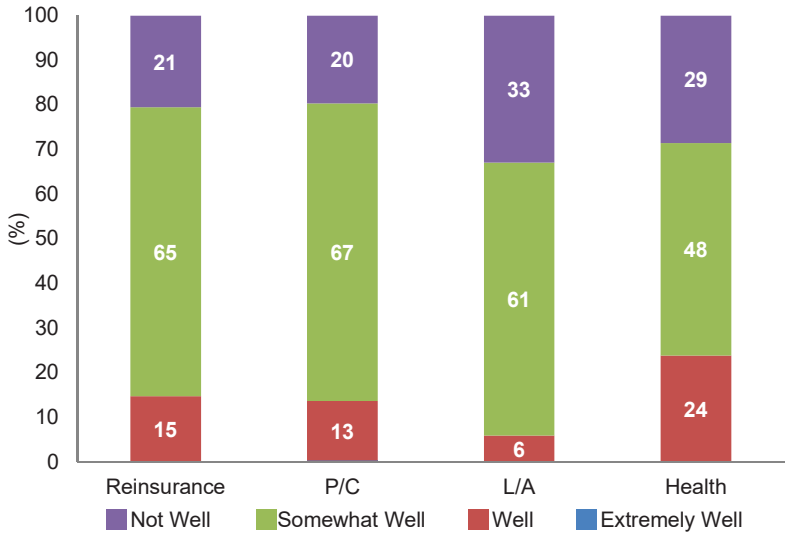
Although the survey results indicate that all technological innovation will have an impact on reinsurers, big data, cloud computing, and Internet of Things (IoT) were identified as having the biggest impact (**Exhibit 4**). The impact of big data analytics in the underwriting process cannot be overemphasized. Companies are accumulating much more data than could ever be analyzed by humans alone, which may require that they hire data scientists and engineers to analyze the data and find new relationships and patterns that will help them develop innovative business solutions. Companies can also leverage big data for data-driven decision making, leading to automated underwriting of increasingly complex lines of business. In addition, the introduction of these technologies will translate into claims management efficiencies—in particular, by diminishing potential fraud in the marketplace as automated, real-time databases replace manual paperwork.

With the adoption of cloud computing and big data, disruption of the business model may be viewed as less of a threat, and for some, even another competitive advantage. Companies are focusing on cloud computing and big data analysis, with 61% of respondents investing in cloud computing and one third investing in big data (**Exhibit 5**).

Facultative reinsurance can be a cumbersome process, given the complexities

Exhibit 1

How Well Has the Insurance Industry Adopted and Implemented Innovation?



Source: A.M. Best data and research

surrounding contract interpretation, data authenticity and the issue of fragmented data sources, and significant administrative overhead. Blockchain has the potential to enhance the efficiency of claims processes while providing greater transparency and can be used to re-imagine the current facultative reinsurance workflow by allowing transparent sharing of common data and automating contract management. By connecting reinsurers, primary insurers, and service providers, a shared ledger can facilitate a more efficient transfer of data among all parties. By leveraging blockchain capabilities, insurers and third parties can easily access and update relevant information. Giving reinsurers limited access to claims histories can improve transparency for the industry in an automated and auditable way. Sharing information from different data sources on a blockchain would enable various parties to collaborate, detect, identify, and mitigate fraudulent activity.

Blockchain is lower on the radar when it comes to its potential impact and investment focus, because the technology requires

Exhibit 2

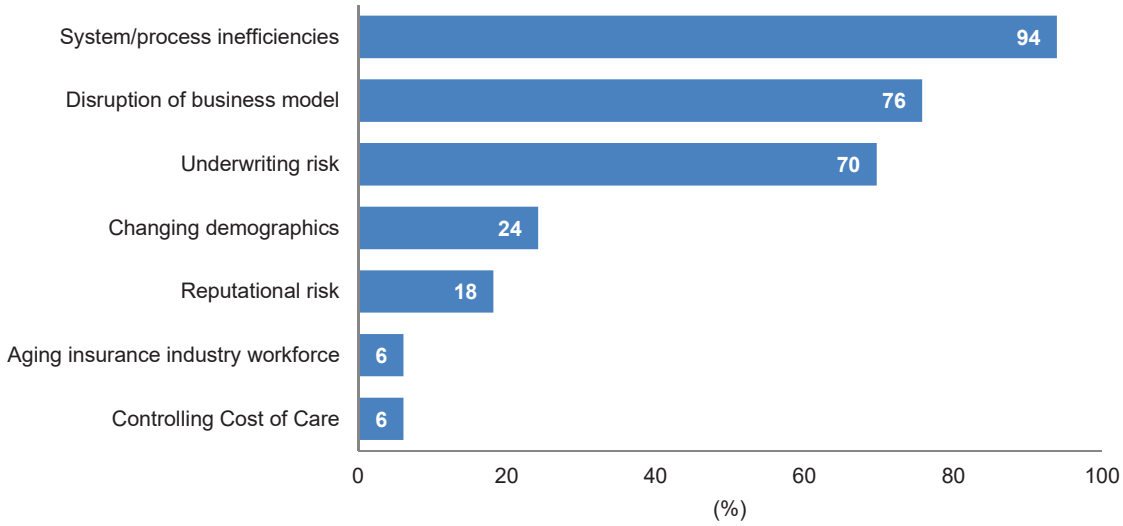
What Is the Primary Reason Innovation Is Important to Your Organization?

(%)

Source: A.M. Best data and research

Exhibit 3

What Are the Most Important Challenges Innovation Can Help Insurers Overcome?



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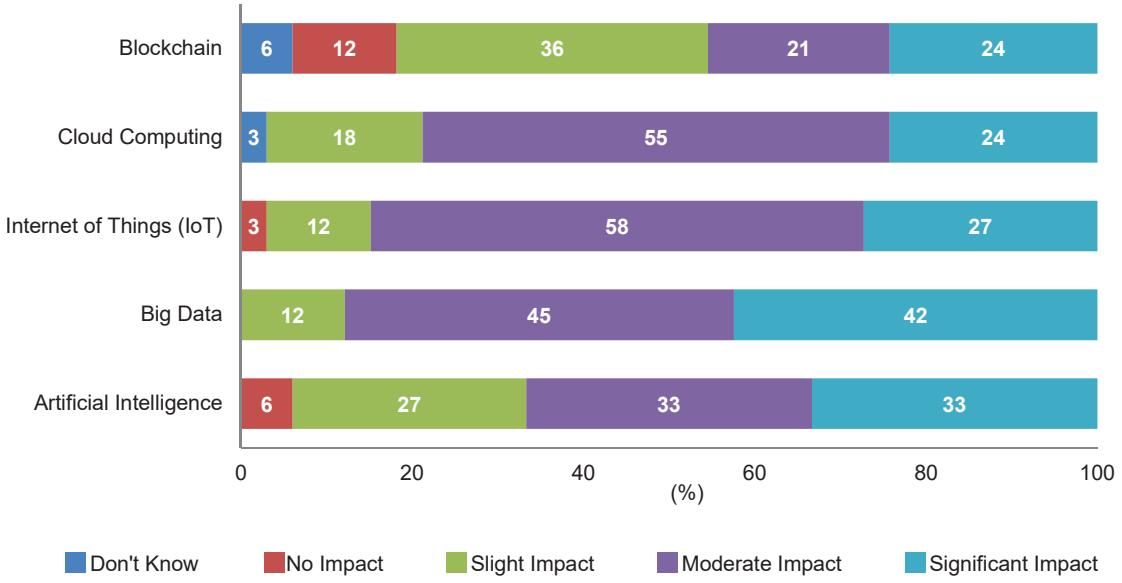

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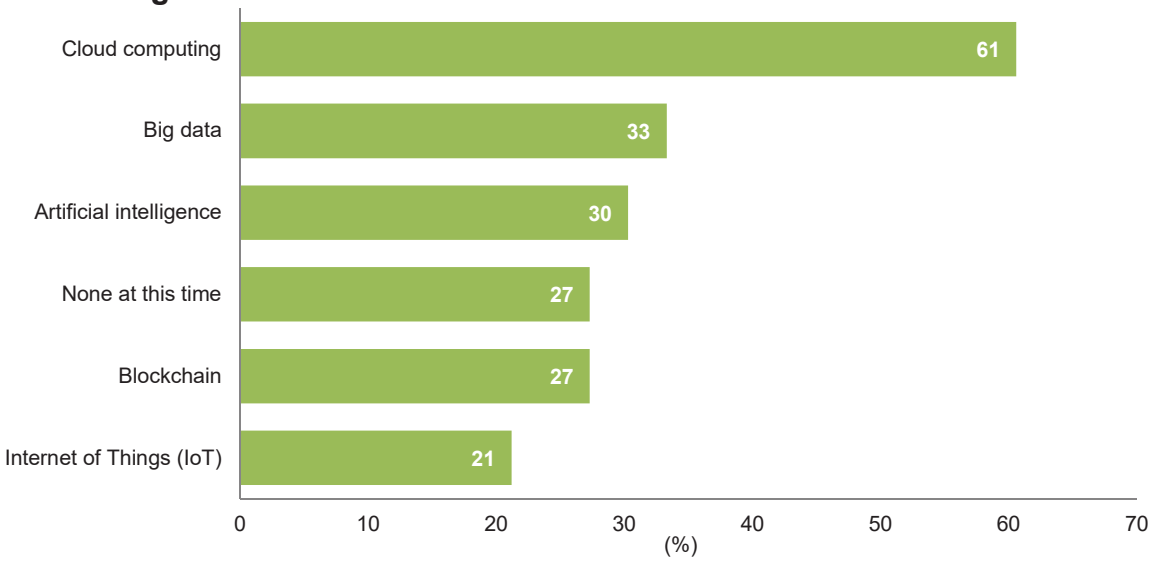
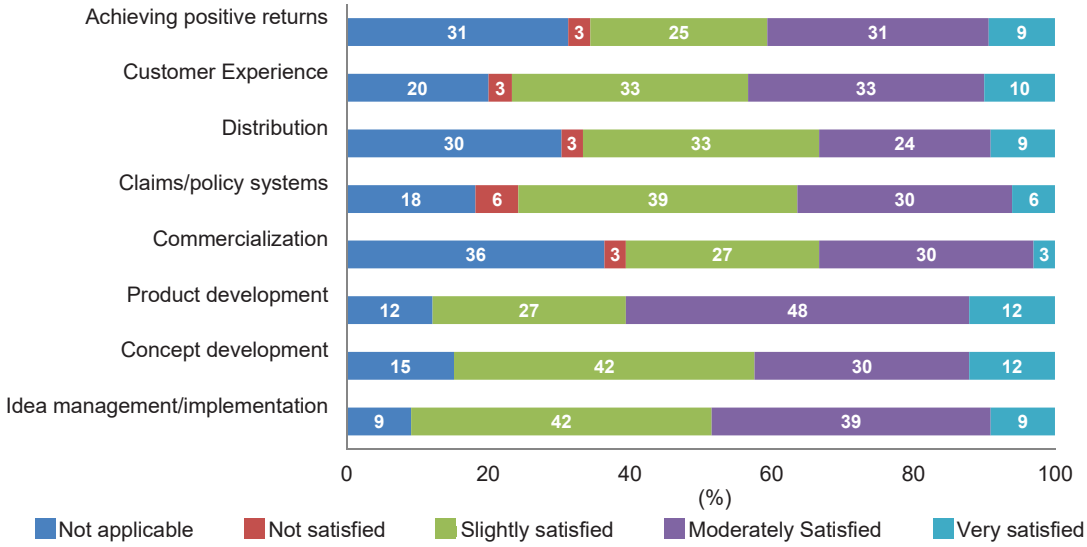


Source: A.M. Best data and research

universal adoption to be effective. Issues such as scalability, computing power, and security need to be addressed convincingly before widespread adoption. Blockchain can improve efficiency, and there are exciting industry initiatives related to its use. For example, some top European reinsurers and insurers including Swiss Re, Allianz, Zurich, Munich Re, and Hannover have formed a blockchain initiative called B3i. B3i is a startup formed to explore the potential of using distributed ledger technologies in the (re)insurance industry for the

Exhibit 6

What Are Your Company's Satisfaction Levels with Your Innovation Efforts as They Relate to the Following Areas?



Source: A.M. Best data and research

benefit of all stakeholders in the value chain. China Re, Hannover Re, General Reinsurance Corporation, and Zhong An have announced plans to create a joint reinsurance blockchain platform for the purpose of improving data quality and transaction accuracy and efficiency. In a project supported by the Chinese regulator, China Re Group and Zhong An Technology have completed proof of concept for this platform, covering negotiation, contracting, reinsurance, as well as document exchange and claims processing in a trading ecosystem.

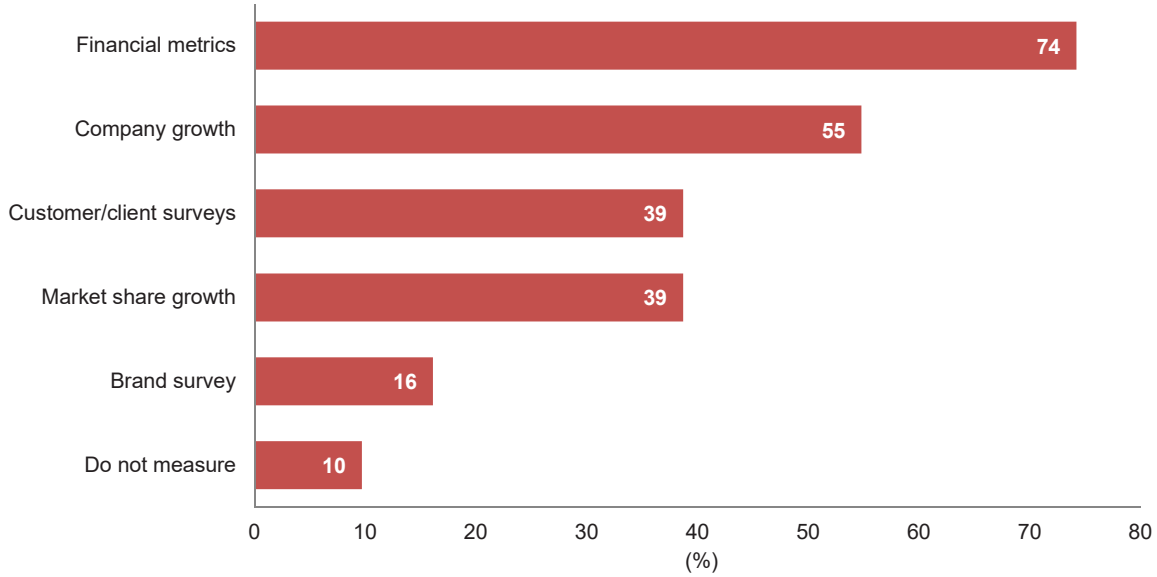
The Process of Innovation

Reinsurers' view of innovation is at least partly reflective of how satisfied each company is with its own innovation efforts in a number of areas, indicating the need for meaningful improvement. No more than 12% of respondents said they were very satisfied in any one area. Product and concept development were the highest, at 12% each (**Exhibit 6**). Regarding product innovation, a few things could help close the insurance gap, one of which is the relative price of risk. As new capital makes its way into the system, the overall cost of capital declines and other uninsured risks may now be considered insurable. Pushing for regulatory and institutional change, such as laws mandating that certain risks (e.g., earthquakes in California) be insured in the first place, could raise demand for reinsurance.

Reinsurers most commonly use financial metrics to measure success (74%), followed by company growth (55%), while customer/client surveys and market share growth are used equally by 39% to gauge the reception of innovation initiatives (**Exhibit 7**). The results of this question highlight the necessity for different types of metrics to monitor the progress of innovation.

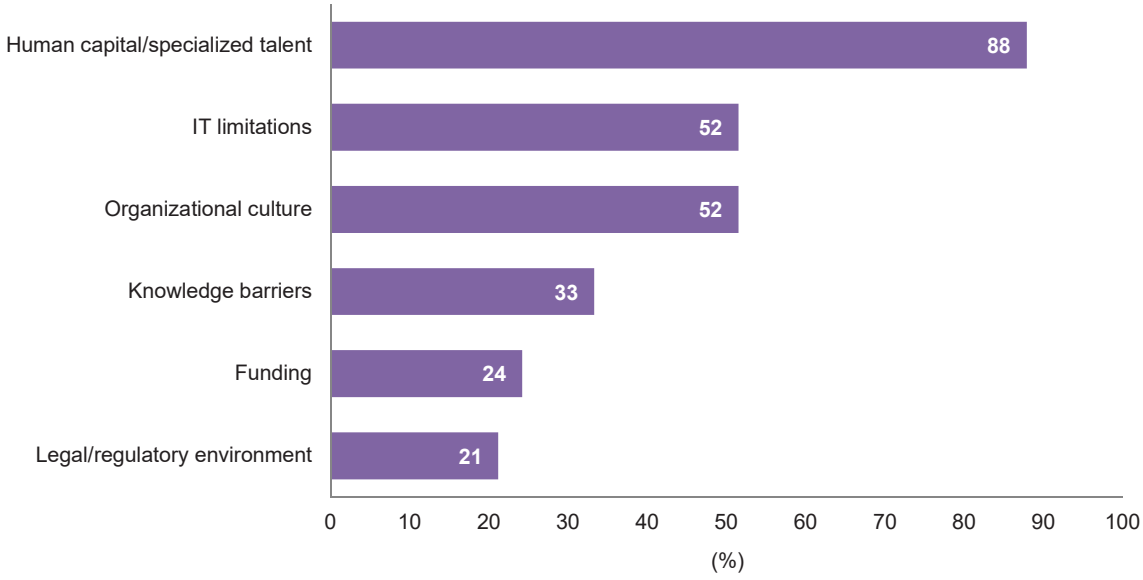
There are challenges to developing an innovation process and strategy. Significant proportions of reinsurers cite a lack of human capital/specialized talent (88%), IT limitations (52%), and their own organizational culture (52%), as the three biggest obstacles to developing their innovation process (**Exhibit 8**). When innovating to address these challenges, reinsurers take a more collaborative approach than other segments. Sixty-one

Exhibit 7
How Do You Measure the Success of Your Innovation Initiatives?



Source: A.M. Best data and research

Exhibit 8
What Are the Biggest Challenges to Developing the Innovation Process?



Source: A.M. Best data and research

percent of respondents said that they would prefer to improve or create better products/processes/services by partnering with another organization, more than double the responses for building in-house (27%), while just 12% would purchase from an outside source. Although 39% of companies do not have any innovative partnerships with insurtech companies or entities outside the traditional insurance segment, the preferred avenues for those that do choose to establish partnerships are spread quite evenly, with around 21% each stating that those partnerships can encompass making strategic investments in startups,

participating in insurance accelerators, or partnering with a dedicated research organization. Also worth noting is that 15% of respondents stated that they were not currently involved in any partnerships, but planned to do so in the next year.

Forward-thinking companies in Asia and the rest of the world are joining forces with the innovators. In Asia, Aviva plc announced in February 2018 that it had received regulatory approval for a digital joint venture with Tencent Holdings Ltd. and Hillhouse Capital Group. In 2017, leading Singaporean personal lines insurer NTUC announced that it had become the first insurer in Singapore to embed cognitive technologies by adopting IBM Watson Explorer to automate and improve claims processes. Last but not least, insurance brokers, which have been consolidating and strengthening their capabilities in recent years, are also active. Having brokers offer solutions to primary insurers (solvency relief, loss portfolio transfers, etc.) could reduce reinsurers to capacity providers, where pricing (assuming same financial strength) is one key factor for a broker's decision of which reinsurer to recommend to the cedent. Competition from all these different types of payers for advisory services may further commoditize reinsurance. Insurtech companies could provide cutting-edge solutions to the primary market and further enhance efficiency and improve data quality. This will require top-down support, as well as regulatory support, for pushing down to the cedent and broker level, as resistance to new ideas and new ways of operating reinsurance need to be overcome.

Innovation Strategy & Implementation

The majority of reinsurers identify opportunities for innovation from three sources—two internal sources in addition to the industry:

- Management/board of directors (85%)
- Employees (79%)
- Industry/competitors (64%)
- Consultants/outside vendors (48%)
- Customers (45%)
- Sales force (36%)

Thirty-six percent of reinsurer respondents view their current innovation strategies as a key component of their overall strategic objectives, while another 39% are developing innovation strategies that align with their overall strategic objectives, showing that most companies understand the importance of such an alignment. In contrast to other segments in the industry, a larger proportion of reinsurers, 21%, are either developing or have developed a strategy that does not explicitly align with their overall strategic objectives; only 3% of companies either do not have an innovation strategy or do not plan on creating one.

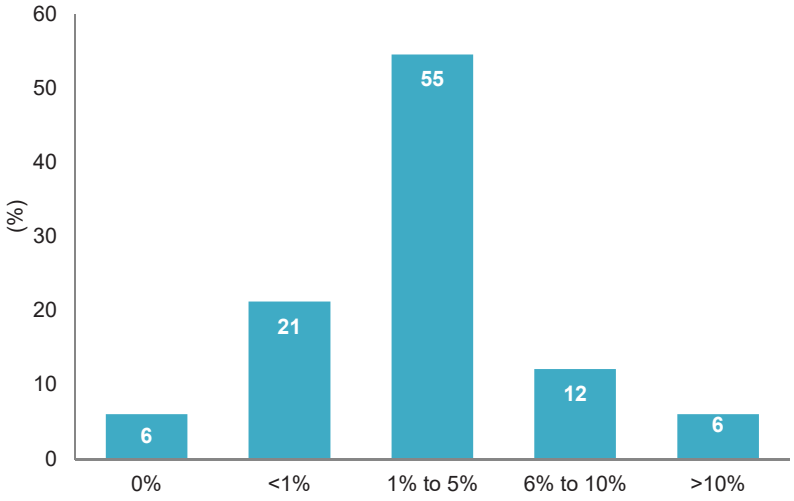
Reinsurers' boards of directors seem in tune with their organizations' innovation strategies and focus, as more than 90% of respondents discuss innovation at board meetings at least once a year, with one-third saying that they discuss innovation at every board meeting. Many boards discuss innovation throughout the year, whether quarterly or at a regularly scheduled board meeting. Further, those that discuss innovation more frequently tend to view industry implementation of innovation more favorably and have stronger opinions about clearly defining and communicating the innovative process throughout the organization. A commitment to the innovation process throughout the organization is essential. Although corporate management teams and board members need to demonstrate leadership and buy-in up top, all of a company's employees can contribute ideas regarding day-to-day tasks, as they can directly see the obstacles in their daily functions and the potential benefits that a structured innovation strategy could bring.

As with any endeavor, implementing a project of this importance requires proper planning, preparation, and execution. However, allocating a portion of the annual budget to invest in innovative improvements does not seem to be a major concern for the segment, as only a quarter of reinsurer respondents stated that funding was a challenge. More than half of reinsurers allocate between 1% and 5% of their annual budgets to innovation; the segment has the highest proportion (6%) of organizations allocating more than 10% of their total annual budget to innovation initiatives (**Exhibit 9**).

Just over half of reinsurer respondents have cross-functional personnel teams focusing on innovation. Twenty-one percent have dedicated innovation teams, the same proportion as those that have none. Only 9% of respondents have a chief innovation officer; another 15% outsource that function to a team that focuses on innovation (**Exhibit 10**). A.M. Best notes that some companies may use a multi-pronged approach towards innovation, which includes

Exhibit 9

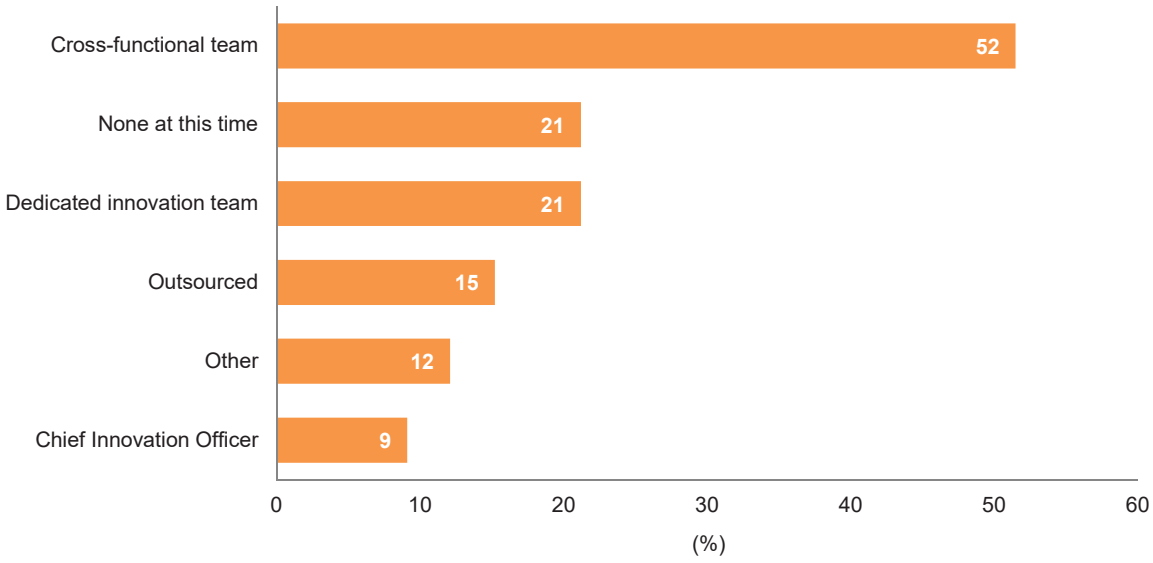
What Percentage of Your Company's Total Annual Budget Is Allocated to Innovation?



Source: A.M. Best data and research

Exhibit 10

Does Your Company Have Personnel Who Focus on Innovation?



Source: A.M. Best data and research

using both an outside provider and a dedicated internal team. However, we would expect that companies with fewer resources might rely on outside providers for innovation. Larger companies may develop technology in-house, but also use outside consultants to keep track of where the market is heading.

Crucial Areas for Innovation

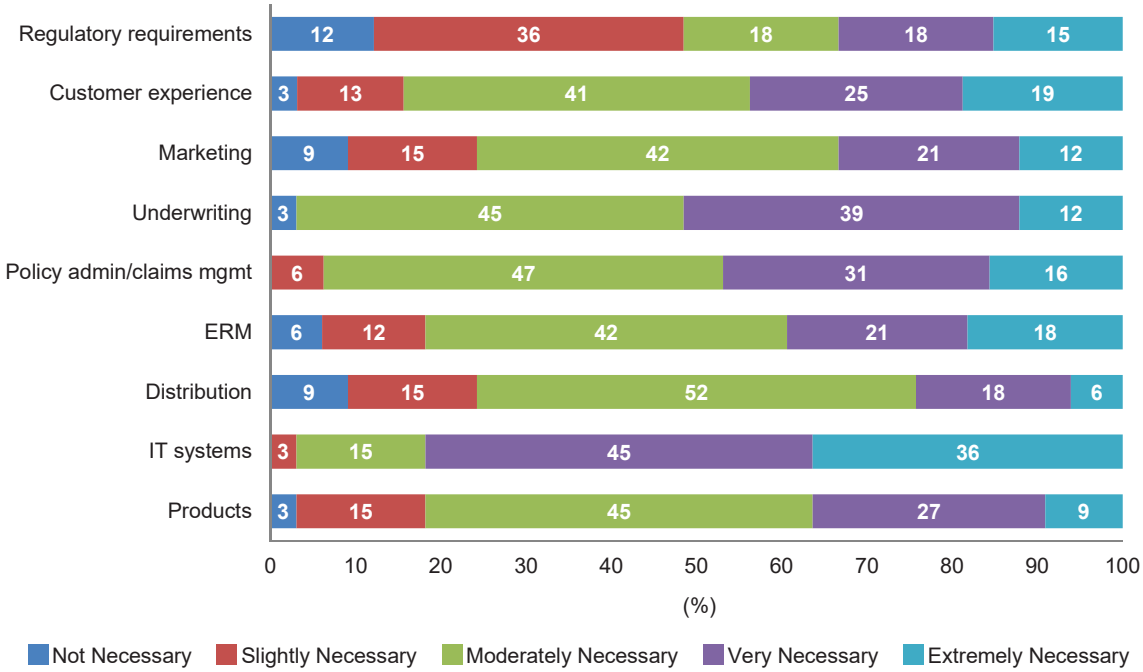
More than half of reinsurer respondents believe it is very or extremely necessary to innovate their IT systems (82%) and underwriting (52%) (**Exhibit 11**). Updating/transferring legacy systems remain a top priority for many in the segment, with initiatives often taking years to complete.

Reinsurers believe that innovation will have at least a moderate, if not significant, impact on IT systems (91%), distribution (85%) and the customer experience (84%) (**Exhibit 12**). Technology has created a wave of advancement when it comes to enterprise risk management (ERM), as reinsurers have adopted sophisticated computing methods over the last few decades. The sophistication of cat modeling and portfolio economic analysis, which ultimately drives cat pricing, has been slowly and gradually improving data analytics, placing the segment's earlier adopters in better competitive positions.

A growing number of catastrophe modeling paradigms have emerged, providing solutions that allow for a more sophisticated approach to modeling exposures, even for perils and geographies that had not been appropriately modeled previously. Catastrophe modeling has historically been limited by the lack of both available data and investment in catastrophe risk quantification. Building robust catastrophe models is expensive, and premium volumes must reach a critical mass to make the investment commercially viable. The evolution in technologies such as IoT, cloud computing, and AI has facilitated advances in analytical capabilities for reinsurers, allowing for stronger partnerships with cedents by enhancing their risk management.

Exhibit 11

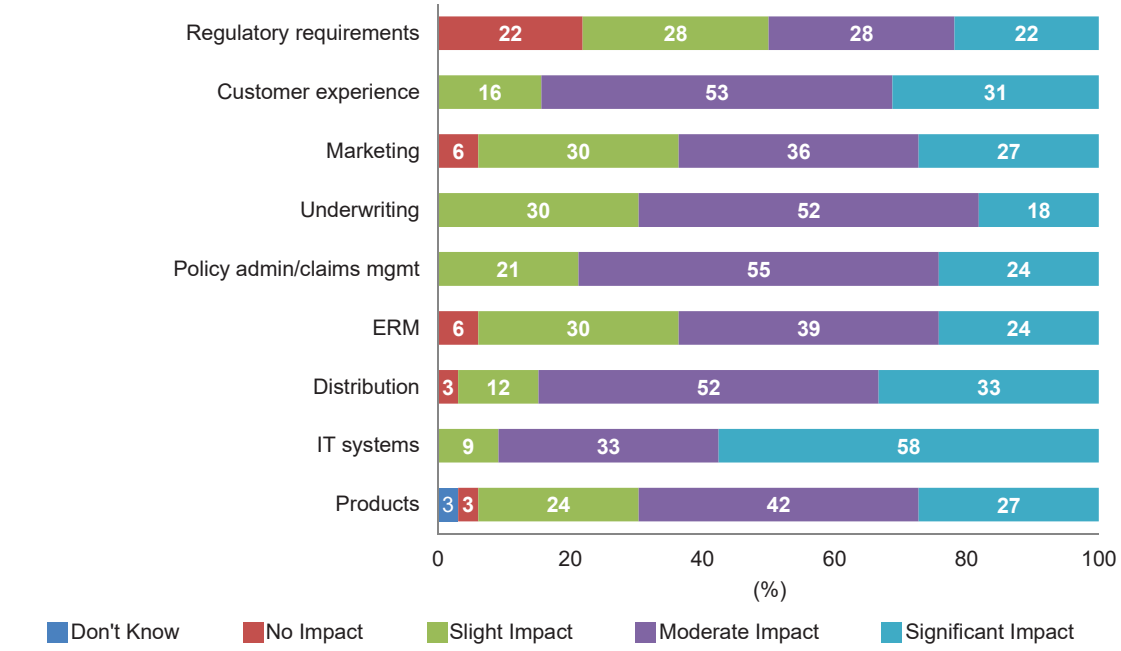
How Necessary Is It to Innovate in the Following Areas?



Source: A.M. Best data and research

Exhibit 12

To What Degree Do You Expect Innovation to Affect the Following Areas over The Next Three Years?



Source: A.M. Best data and research

Modeling is one particular area where these partnerships can lead to improvements as data quality improves, helping reinsurers better understand the risks they underwrite and optimize their risk portfolios.

Reinsurers have been dealing with poor data quality from their cedents for a long time. Primary insurers have different standards when it comes to data quality, while different geographies have unique data idiosyncracies. Advances in cloud computing, big data, and predictive modeling can help insurers get a better grasp of data. Advances in computing can change the way reinsurers can simulate and examine the risks in their portfolio, providing them valuable insights on their clients' portfolios. Reinsurers embracing innovation can find growth opportunities through their ability to underwrite new risks and manage existing risks. As competition in the industry and from outside intensifies, reinsurers will have to find innovative ways to collaborate and compete. As reinsurers are often looked to for advice and risk management from their clients, those proactive reinsurers who keep up with changes in the technological, demographic, and economic landscape will have the edge over the competition.

Trend Review
September 24, 2018

Technology Focus: Blockchain

The adoption of blockchain in insurance faces significant hurdles

There is considerable excitement surrounding blockchain. Blockchain evangelists envision a world where algorithms will allow individuals, organizations, and machines to freely transact and interact with one another without the need for traditional intermediaries such as bankers, lawyers, or brokers. However, the journey from today's system to a new technological paradigm faces significant obstacles—so much so that it's far from clear what will ultimately emerge.

Blockchain's core advantages of decentralization and immutability come with significant technical trade-offs, bringing into question its usefulness for many applications. What's more, blockchain faces potentially even greater hurdles, in the form of an uncertain and diverse regulatory landscape and limited acceptance by established industry players. Today, these obstacles are hindering widespread blockchain adoption and are limiting its use to niche cases.

What Is Blockchain and How Can It Be Used?

At the most fundamental level, blockchain is a digital and decentralized version of a traditional ledger that can be programmed to track assets and record various transactions. The technology behind blockchain allows digital information to be distributed but not copied, which means that each individual piece of data can have only one owner. What makes blockchain different from other types of digital ledgers or databases is that the underlying technology allows a network of computers to agree at regular intervals on the true state of a distributed ledger, without the need for a central administrator.

Mechanically, the blockchain ledger is replicated in a large number of identical databases, each hosted and maintained by an interested party. When changes are entered in one copy, all of the computers in the network update their copies of the database simultaneously. Blockchain transactions are recorded chronologically, with every piece of information mathematically encrypted and added as a new "block" to the shared chain of historical records. A block can represent transactions and data of many types, including currency, digital rights, intellectual property, identity, or property titles. To prevent fraud or double-counting, consensus protocols are used to validate a new block with other participants before it can be added to the chain. In other words, blockchain uses algorithms and cryptography to guarantee the integrity of the ledger, and in the process eliminates the need for third-party intermediaries.

Although in the long run blockchain may prove to be a disruptive economic force, the most immediate use of the technology today is in the area of operational efficiencies. Specifically, blockchain can be used to lower costs associated with current processes by removing intermediaries or the administrative effort of record-keeping and transaction reconciliation. Given the general nature of the technology, it can be applied vertically across numerous industries, from financial services to government. In finance, for example, blockchain can be used for low-cost, secure, and verifiable international payments. Blockchain can also lead to more efficient settlement of trade transactions. By creating an indisputable record of real-time ownership, blockchain can improve anti-counterfeit measures for pharmaceuticals, luxury items, diamonds, and other highly valued or sensitive goods. Blockchain can enhance the way government operates by streamlining the way we manage our identity. Potential uses for blockchain in supply chain management are numerous, including applications in food safety, where it can track details such as farm origination, expiration dates, and storage temperature.

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The blockchain ledger can also be programmed with smart contracts (a set of conditions recorded in the blockchain), so that transactions automatically trigger when the conditions are met. Although smart contracts are not unique to blockchain, by implementing them in the blockchain, users can benefit from blockchain's immutability and lack of need for a central administrator, for instance. An early example of such a blockchain-powered smart contract can be found in flight insurance, in which the insured is automatically reimbursed for a late flight without having to fill out a claim. Mechanically, the insurance purchase is automatically recorded on a ledger, and the smart contract created on the blockchain is linked to global air traffic databases, which means that as soon as a delay is registered on the ledger, compensation is automatically triggered.

Blockchain in Insurance

Owing to the current limitations of blockchain technology, most of the insurance industry's current usage is narrow and experimental in nature. Once technical, compatibility, and regulatory issues have been resolved, however, blockchain may become a transformative force for industries like insurance, which require the coordination and cooperation of many different intermediaries with different incentives. Besides travel insurance, examples of blockchain usage in insurance include the following:

Claim management: Blockchain has the potential to enhance the efficiency of the claims process, while providing increased transparency. A distributed ledger could lower administrative costs through automated verification of policyholder identity and contract validity. By leveraging blockchain capabilities, insurers and third parties can easily access and update relevant information such as evidence and police reports. Giving reinsurers limited access to claim histories can improve transparency for the reinsurance industry in an automated and auditable way. The largest impact may come from combining blockchain technology with IoT (the Internet of Things) and smart contracts, whereby IoT-enabled objects can have their own insurance policies, which could be registered and administered by smart contracts in the blockchain ledger. If any issues are detected, the smart contract could automatically trigger a repair or claims process.

Claims subrogation offers an example of a more immediate use case of the blockchain technology. Because claims subrogation requires significant involvement from insurers and third-party companies, manual reviews between various parties can be costly and time-consuming. The transparency of the shared ledger can help expedite this process while improving the overall customer experience.

Fraud prevention: By connecting insurers, their customers, and service providers, a shared ledger can facilitate a more efficient transfer of data among all parties. Sharing information from different data sources on a blockchain would enable the various parties to collaborate, detect, identify, and mitigate fraud activity.

Other uses include the following:

- Facultative reinsurance can be a cumbersome process given complexities surrounding contract interpretation, data authenticity, fragmented data sources as well as significant administrative overhead. Blockchain could be used to re-imagine current facultative reinsurance workflows by allowing transparent sharing of common data and automating contract management.
- In health insurance, patient record fragmentation can impact the quality and cost of patient care in a number of ways, from repeating unnecessary diagnostic tests to prescribing

medications with negative interactions. With the help of the distributed ledger technology, medical records can be cryptographically secured and shared among health providers, which can improve the quality of care a patient receives.

- The title insurance industry could reap benefits in the form of greater efficiency and accuracy by leveraging the core advantages of blockchain's distributed ledger technology. Digitizing records and placing them in a blockchain could speed up the process of title retrieval and analysis considerably.
- Health insurers may see some benefits from blockchain for data management, as multiple parties may be able to share health records without the privacy and integrity of these records being compromised.

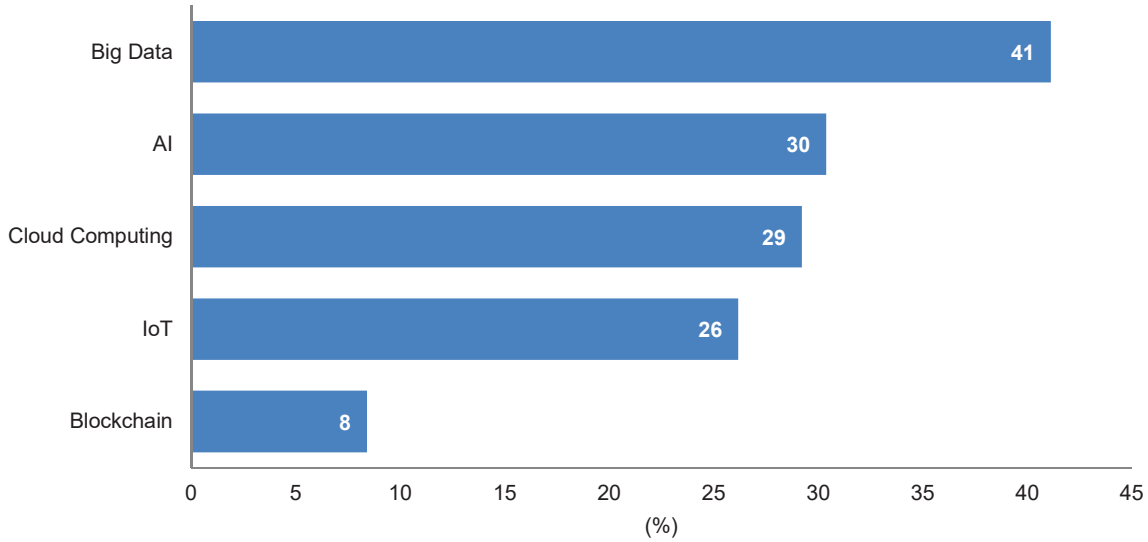
So far, there have been a number of industry initiatives, such as the B3i (whose shareholders include Swiss Re, Munich Re, Zurich, Hannover Re, Scor, Generali, Allianz, Tokio Marine, Achmea, and Liberty Mutual). Use cases are being developed by Lloyd's Syndicates for marine insurance and crisis insurance. Blockchain may lend itself to applications for a number of newcomers in title insurance (States Title, OneTitle National Guaranty Co., and Spruce Holdings). In 2017, according to Artemis, Solidum Partners completed an innovative private catastrophe bond transaction, the first ILS (insurance-linked securities) securitization to be settled using blockchain. (The transaction was renewed this year and listed on the International Stock Exchange.) The RiskBlock Alliance, the distributed ledger technology consortium formed by The Institutes, a risk and insurance knowledge group based in Malvern, Pennsylvania, includes major primary insurers such as The Hanover Insurance Group, Liberty Mutual, Munich Re America, and Chubb, and aims to increase adoption of blockchain through real-world applications.

Limited Use of Blockchain in Insurance Reflects More Skepticism than Other Technologies

Blockchain ranks last in technologies that insurers thought would have a significant impact over the next three years (**Exhibit 1**; note that all figures in this report have been rounded), which reflects the challenges that go with blockchain. Technologies such as IoT

Exhibit 1

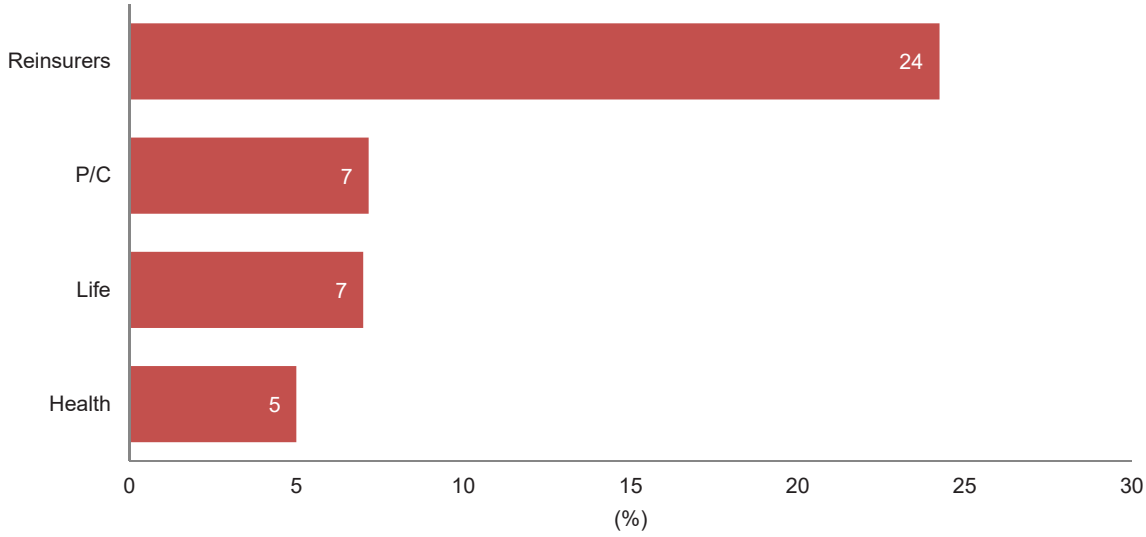
Percentage of Respondents that Believe that These Technologies Will Have a Signficant Impact



Source: A. M. Best data and research

Exhibit 2

Percentage of Respondents by Sector That Believe Blockchain Will Have a Signficant Impact



Source: A. M. Best data and research

and big data have become more mainstream, unlike blockchain. The recent volatility in cryptocurrencies has added to the companies' wariness.

Reinsurers are more optimistic about blockchain than other segments (**Exhibit 2**), as evidenced by the B3i initiative, which includes the top global reinsurers. B3i is a startup formed to explore the potential of using distributed ledger technologies in the (re)insurance industry for the benefit of all stakeholders in the value chain. Other segments remain much more skeptical about blockchain in general and its applicability to their business, which is also reflected in the low numbers for insurers who have invested in these technologies as well (**Exhibit 3**).

Reinsurers appear to be investing significantly more than other segments, as illustrated by their participation in industry initiatives to use the technology, in an effort to get ahead of the curve.

Blockchain Challenges

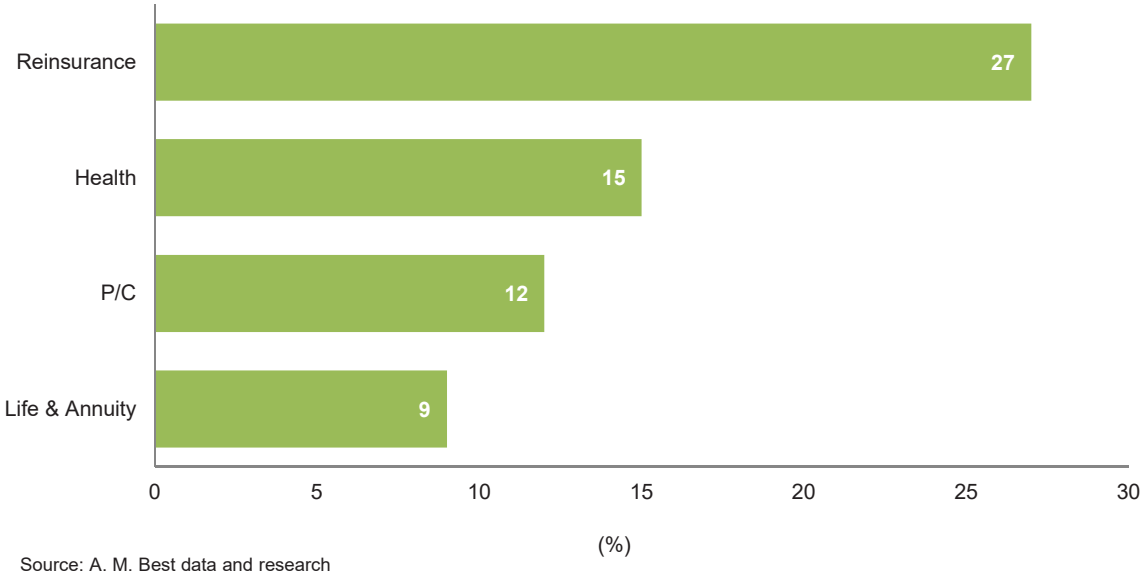
The obstacles to realizing blockchain future are significant and range from inherent technical limitations relating to scalability and privacy, to the need for significant cross-industry collaboration and a better defined regulatory framework.

Scalability: Blockchain is slower and more expensive to deploy than a centralized database because of the inherent nature of the blockchain structure. The more the blockchain grows, the greater the requirements become for storage, bandwidth, and computational power.

Compatibility and cooperation: Many implementations of the blockchain technology are tailored to specific user needs and do not communicate with each other. Blockchain solutions will require an immense amount of cooperation between different entities and industries.

Exhibit 3

Has Your Company Invested, or Is It Planning to Invest, in Blockchain?



Source: A. M. Best data and research

Privacy: The distributed ledger technology used by most blockchains allows for full transparency in transactions. In many blockchain applications, certain information needs to remain private.

Regulation: Regulatory issues relating to the use of the blockchain technology are still evolving.

Security: Blockchain technology relies on the fact that mathematically it is nearly impossible for a single party to compromise the system, owing to the lack of the required computing power. One would need to take control of more than 51% of the computers in the same distributed ledger and alter all of the transactional records in a very short period. Therefore, distributed verification and permission are key to blockchain security.

Given all these challenges, insurers are currently less enthusiastic about using blockchain, but given the growing number of applications in other industries, that may change.

Trend Review
September 24, 2018

Technology Focus: The Internet of Things

IoT has the potential to transform how we—and, therefore, the industry—interact with the world

The Internet of Things (IoT) is a network of devices in homes, workplaces, industries and cities connected to each other and to the Internet that facilitates the exchange and analysis of data. By embedding everyday objects with sensors and WiFi capabilities, we are digitizing the physical world, which allows us to automate these objects to an unprecedented degree. IoT has the potential to fundamentally change the way we perceive and interact with our surroundings. IoT is already transforming shopping, travel, healthcare, sports, fitness, manufacturing, household goods. As a result, industries will become increasingly data-driven, in an effort to create new business models, improve efficiency, and enhance employee and customer engagement. More and more objects such as cars, washing machines, coffee-makers will be smarter and will all be able to communicate with each other through IoT.

What Is the Internet of Things?

At its most fundamental level, IoT is about connecting with a previously unconnected object, whether directly or indirectly, and deriving a value from that connection. The network of connected objects makes physical objects "smart," by allowing objects to communicate with each other, inform us of their state, and, in certain instances, make decisions without human interaction. Mechanically, IoT is enabled by sensors in objects. These sensors connect to each other and to systems that can understand or present information from the sensor's data feeds.

The usefulness of IoT data feeds is augmented by a wide variety of sensors, such as those that can measure force, load, torque, and pressure; those that can detect gas and chemicals; those that can feel vibrations and distinguish between different acoustics; those that can take temperature and detect motion, velocity, and displacement; as well as those that identify position, presence, and proximity. The large variety of available sensors provides us with the ability to gather vast amounts of intelligence about our physical world in real time.

Factors Driving the Rise of IoT

A number of significant trends are expediting the adoption of IoT. Exponential advances in technology are leading to significant declines in IoT hardware costs, putting sensors, processing power, network bandwidth, and cloud storage in reach of more users and making a wider range of IoT applications practical. At the same time, advances in the underlying technology (such as more sophisticated sensors), ubiquitous low-cost wireless coverage at ever increasing speeds, and improved analytical capabilities are enhancing IoT capabilities.

The ability to convert IoT data into actionable information to enhance operational excellence is helping a number of industries become more data-driven. By improving asset utilization, enhancing process efficiency, and boosting productivity, IoT can drive considerable savings for numerous industries. In manufacturing, leveraging intelligent networks throughout the value chain to monitor products and anticipate machinery breakdowns results in significant operational efficiencies. The ability to monitor health in real time may change providers' approach to healthcare. Utility and oil and gas companies are becoming safer and more efficient through real time monitoring of pipes and equipment. IoT in agriculture can result in less waste and enhanced productivity. The ability to monitor

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and control traffic lights, bridges or roads, and detect changes in structural conditions can lead to more efficient and safer infrastructure.

IoT benefits touch every industry, which is prompting a growing number of companies to look at the ways it can be leveraged across operations, which is borne out in International Data Corporation's IoT market forecast growth of a double-digit compound rate, to reach $1.2 trillion in 2022.

IoT in Insurance

As the world becomes more connected, the risk being insured changes fundamentally as well. The risk exposure of a smart home is different from that of a regular home—the preventive, safety, and communications features in insured smart products change the risk profile.

Data generated by this interconnected world will help insurers understand risk on a deeper level, allowing for better claims prevention and product customization. IoT opportunities are significant but are accompanied by risks to society and its infrastructure, however. In an increasingly connected world, privacy and security issues will take on even greater importance, prompting policy makers to re-define regulatory frameworks amid new economic realities.

IoT-generated data allows insurers to act more quickly and to make powerful data-driven decisions impacting the way companies assess and price risks, manage claims and interact with customers. We list examples of IoT usage in the insurance segment below.

Property/Casualty

Underwriting and risk management: One of the more advanced IoT applications is telematics, which helps insurance companies price policies based on the risk profiles of individual drivers. Telematics can capture increasingly sophisticated information about driver behavior. As homes become smarter, the interaction between various devices will give insurers a clearer picture of existing risks as well as policyholder behavior, allowing for a more precise assessment of risks. These interactions also intensify the complexity of risk and insurers will need to possess in-depth understanding of these complexities during the insurance process.

Claims: Sensor-provided feedback can prevent claims by modifying the behavior of drivers, who can be alerted when dangerous driving patterns are detected. In addition, IoT-generated data prior to an accident can lead to more accurate claims assessment. Sensors in the home can alert insurance companies of water leaks, mold, structural instability, and other hazardous conditions. Access to this type of information can shift insurer focus toward claims prevention. And, during the claims process, IoT-generated data can help insurance carriers better understand the underlying cause of loss.

Customer interaction: IoT creates opportunities for better customer engagement through feedback and incentives to encourage safer driving. It also allows for a transparent and efficient claims process through automated feedback of images and driving statistics between the vehicle, policyholder, and insurer. There are similar opportunities for enhancing customer interaction with homeowners insurance as insurers partner in risk mitigation efforts and claims process.

Life/Health

Pricing and risk management: Data from wearable devices can be used to determine both individual and aggregate health of populations leading to more precise pricing and better risk assessment. In addition, data from wearable technology may enable continuous risk profiling

of policyholders as well as expand insurability to individuals who are appropriately managing chronic diseases.

Claims: Having access to wearable device data provides numerous opportunities for preventive measures, by monitoring changes in a policyholder's condition before it becomes more serious.

Customer interaction: Offering reward programs to policyholders who make healthy lifestyle choices can modify consumer behavior, thereby extending and improving the quality of life.

Beyond Pricing, Claims, and Customer Interaction

IoT may also help companies differentiate themselves through new service offerings and new products, such as usage-based insurance. In addition, as the physical and digital worlds merge, the need for products that address new exposures such as cyber will grow. The industry's traditional premium sources may come under pressure as risk levels decline owing to automation and risk monitoring.

IoT Challenges

Even though IoT can benefit society enormously, the shift to a hyper-connected world raises critical questions and uncertainty about the future. To fully realize the benefits of IoT the industry will need to tackle issues as they relate to a number of factors:

Privacy: Insurers, industry, regulators, and other institutional consumer protection agencies will need to address privacy concerns that come from data gathered by billions of devices.

Security: Having billions of devices connected creates enormous security issues, given that everyday objects are vulnerable to hacking. For example, hacking into a connected home hub could provide access to any of the owner's connected devices, including door locks, motion detectors, and alarm systems.

Regulation: Global regulations on data privacy and security continue to evolve and may restrict the way IoT data is collected and used.

Compatibility: Overcoming the compatibility challenges of IoT is crucial for wide-scale adoption and commercialization. At this point, IoT uses different platforms and frameworks, which prevents many different devices from connecting with one another.

Technology: For IoT to reach its full potential and truly blur the boundary between the digital and physical worlds, prices for sensors, processing power, network bandwidth, and cloud storage will have to continue to decline.

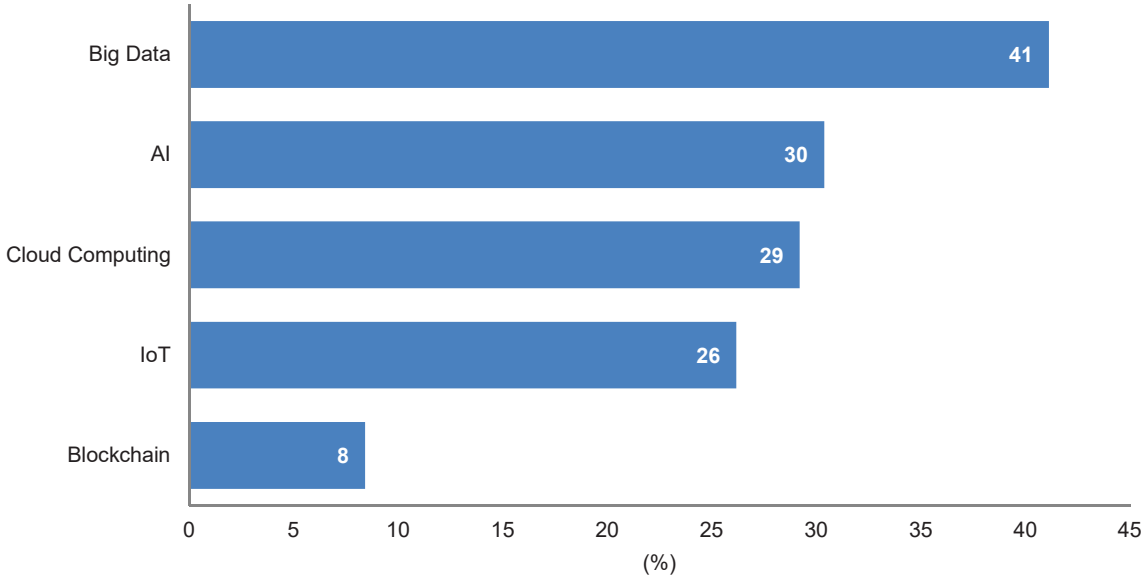
Insurers' Attitudes Toward IoT Reflect Cautious Optimism

Twenty-six percent of insurers in the survey (**Exhibit 1**; note that all figures in this report have been rounded) believe that IoT will have a significant impact over the next three years, behind big data (41%), artificial intelligence (30%), and cloud computing (29%) By a slight margin, more health insurers felt that IoT would have a significant impact (**Exhibit 2**), than almost all other insurers in other segments; however, more than a quarter of all respondents thought it would have a significant impact over the next three years.

The most extensive important and prolific adoption of technology appears to be in the health insurance industry, as IoT has brought forth some significant advances in the segment. Remote

Exhibit 1

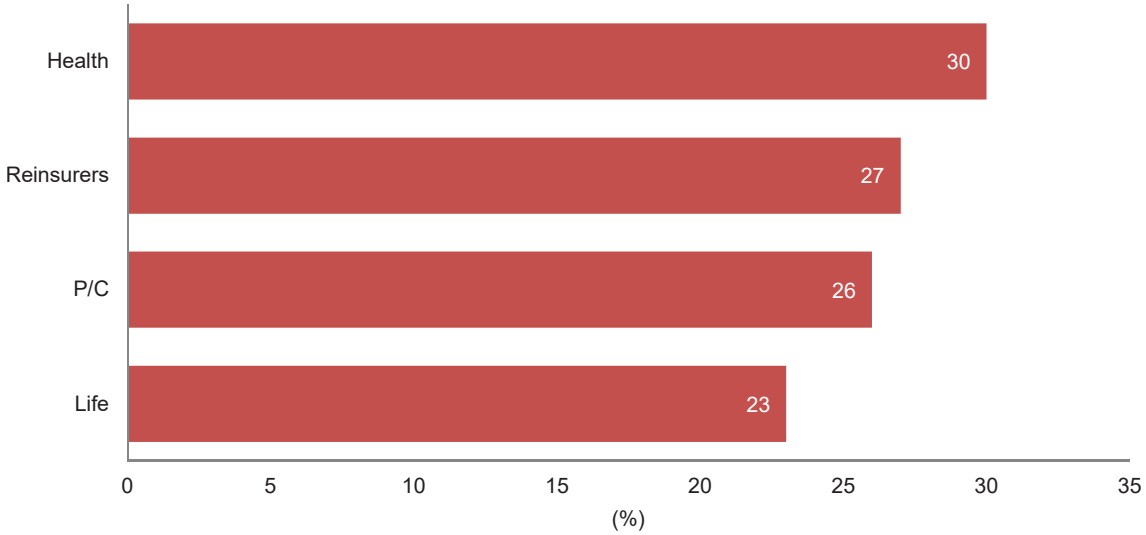
Percentage of Respondents that Believe that These Technologies Will Have a Signficant Impact



Source: A. M. Best data and research

Exhibit 2

Percentage of Respondents by Sector that Believe that IoT Will Have a Signficant Impact



Source: A. M. Best data and research

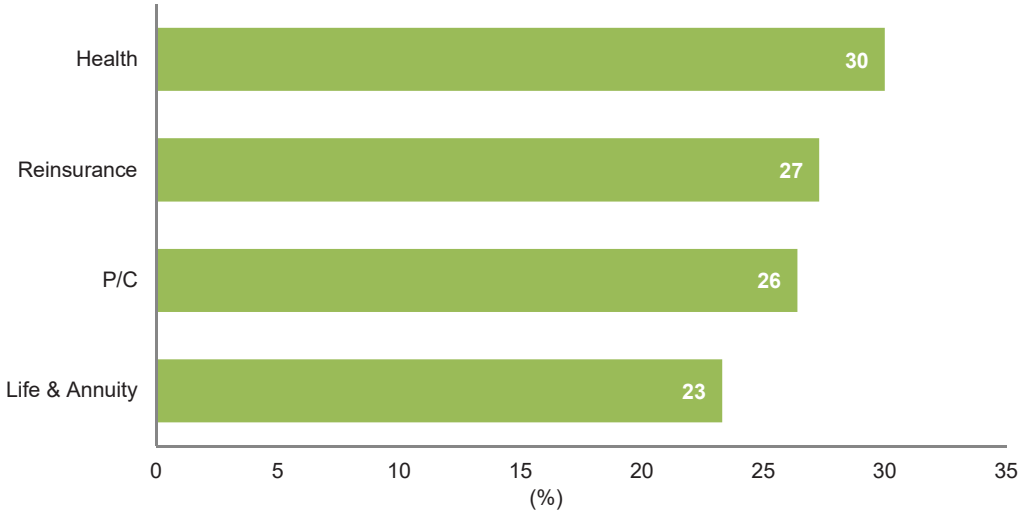
monitoring devices and telehealth devices can monitor and transmit basic biometrics such as weight, blood sugar levels, heart rates, and blood pressure, which, in conjunction with other patient information history, can help doctors and nurses make better diagnostic decisions. Relatedly, Skype offers solutions that use Voice over Internet Protocols (VoIP) for diagnosis. All of these innovative products and processes can increase efficiency and help control costs without compromising quality, but they're not completely mature and need to come with appropriate safety protocols for both processes and patient privacy.

Health insurers are ahead of their peers in other sectors (30%), as they recognize the utility of preventive care and monitoring, by expanding ways for patients and other stakeholders to track biometric information and habits (**Exhibit 3**).

IoT offers similar benefits for life insurers who are interested in increasing the lifespans of their insureds and who understand policyholder risk in a more nuanced manner than before. Insurers all need to use prudence and extra levels of validation as they capitalize on the results of enhanced analytics being generated so rapidly as these come up with process risk, model risk, and regulatory risks.

Exhibit 3

Has Your Company Invested, or Is It Planning to Invest, in IoT?



Source: A. M. Best data and research

Trend Review
September 24, 2018

Technology Focus: Artificial Intelligence, Machine Learning, and Big Data

Advances in AI capabilities, coupled with big data, are yielding new ways for insurers to measure, control, and price risk, engage with customers, and improve efficiency

Artificial intelligence, machine learning, and big data have a number of overlapping and related applications in insurance. In its simplest form, artificial intelligence (AI) allows a computer to mimic human behavior. Machine learning refers to a computer or machine's ability to learn from the outcomes of programmed tasks. For example, the voice recognition system Siri uses machine learning in addition to other techniques to learn the nuances of interaction and voice recognition. Machine learning engineers are finding innovative ways to apply both AI and machine learning in a number of fields including the health, manufacturing, energy, media, financial services, and non-profit segments.

Various approaches to machine learning, such as artificial neural networks, deep learning, and reinforcement learning, are some of the most popular techniques used to solve a number of different business problems. The usefulness of these approaches has been compounded by the ever growing availability of large sets of data, often referred to as big data—a term that has evolved to describe the quantity of information analyzed—to create better outcomes, business improvements, and opportunities that leverage all available data.

Use of AI and Big Data in Insurance

Insurers have been using analytics and data for decades, but the digitization of the world is providing the industry with new sources of data, enabling companies to become even more data-driven. Advances in AI capabilities, coupled with big data, are yielding new ways for insurers to measure, control, and price risk, engage with customers, and improve efficiency. Although AI has already started having a tangible impact in insurance, its current use is very limited compared to its future potential. Below are a few examples of big data and AI use in insurance.

Underwriting

The explosion in available customer data gives insurance underwriters access to even more information about potential clients, resulting in a more effective and efficient risk assessment. For example, P/C insurers can use AI-enabled visual computing techniques to automatically analyze aerial images to detect pre-existing damage on properties (such as roof damage) or other liability hazards. Visual computing can also be used in wildfire risk and flood plain analysis. On the L/A side, Lapetus Solutions has developed a product called Chronos that uses AI to glean biometric information such as age, weight, and smoking habits from a selfie. Developments in AI and big data at the intersection of cloud computing, advances in facial recognition, and statistical research on longevity are all techniques that can predict in seconds mortality rates that used to take a month for life insurance companies to bind a policy.

Claims/Fraud Detection

Machine learning, combined with big data, can be used to detect correlations and patterns, to uncover fraudulent claims. In addition, AI's ability to analyze large data sets of aerial imagery immediately after a catastrophe allows insurers to service damaged areas more quickly and efficiently, while mitigating the risk of fraud.

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AI's ability to contextually understand objects in images can be used to analyze photos of damage sent by a policyholder, minimizing the need for human intervention. For example, after a car accident, user-provided photos can be analyzed to determine if the car can be repaired or salvaged. Other efficiencies can be realized by using AI solutions that automate claims administrative functions or detect unnecessary repairs.

Customer Interaction

Advancements in artificial intelligence have been the driving force in the evolution of the computer-customer interaction, which at the moment comes in the form of chatbots. Chatbots not only provide convenience and ease of use for consumers, but they also benefit insurers by lowering costs, with automated customer-facing interactions such as onboarding new clients and processing claims.

Insurers can use big data to build unique customer profiles, enabling the creation of personalized offers based on individual preferences and behavioral data. More detailed understanding of customers can facilitate cross-selling opportunities, increase retention, and enhance customer experience.

Other Benefits

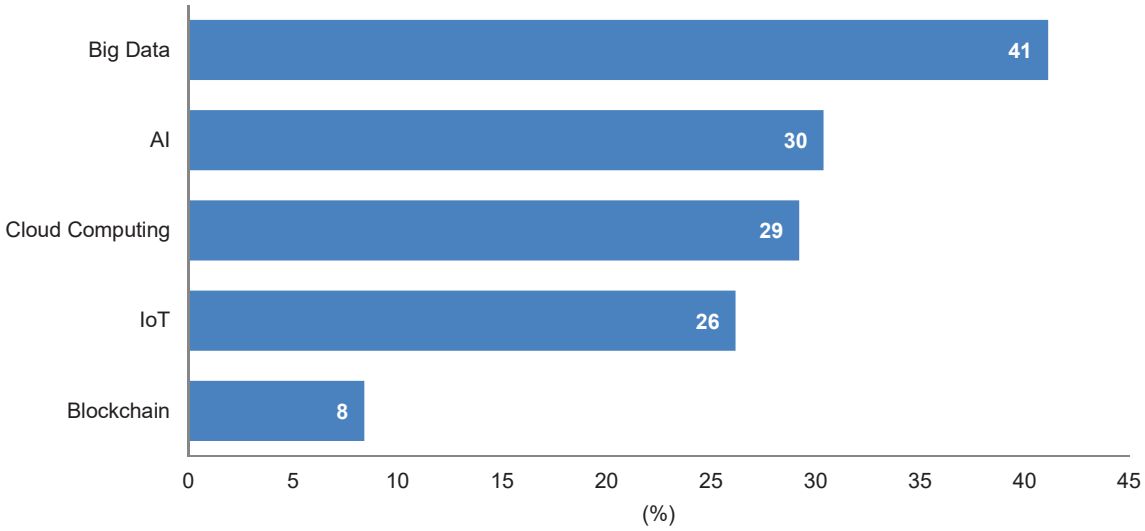
A host of AI-enabled efficiencies can be captured in operational areas such as policy administration and regulatory compliance. AI's ability to automate increasingly complex tasks has the potential to augment human labor, reduce errors, and increase efficiencies.

Insurers Believe in the Promise of AI and Big Data

Insurers appear to be more bullish about the prospects of big data and machine learning/AI than other technologies, and our survey reflects that sentiment (**Exhibits 1** and **2**; note that all figures in this report have been rounded).

Exhibit 1

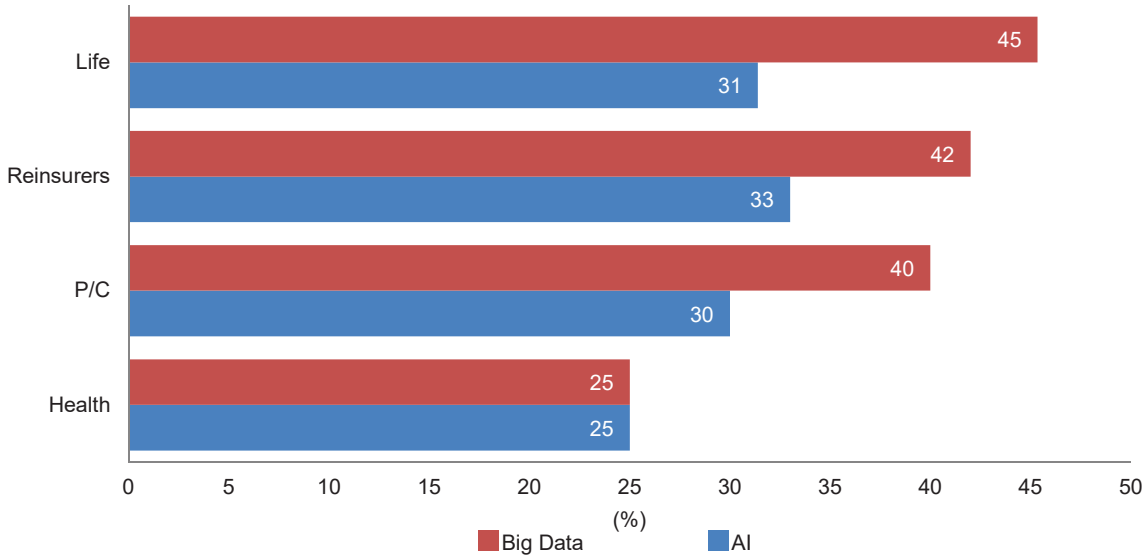
Percentage of Respondents that Believe that These Technologies Will Have a Signficant Impact



Source: A. M. Best data and research

Exhibit 2

Percentage of Respondents by Sector that Believe that AI/Big Data Will Have a Signficant Impact



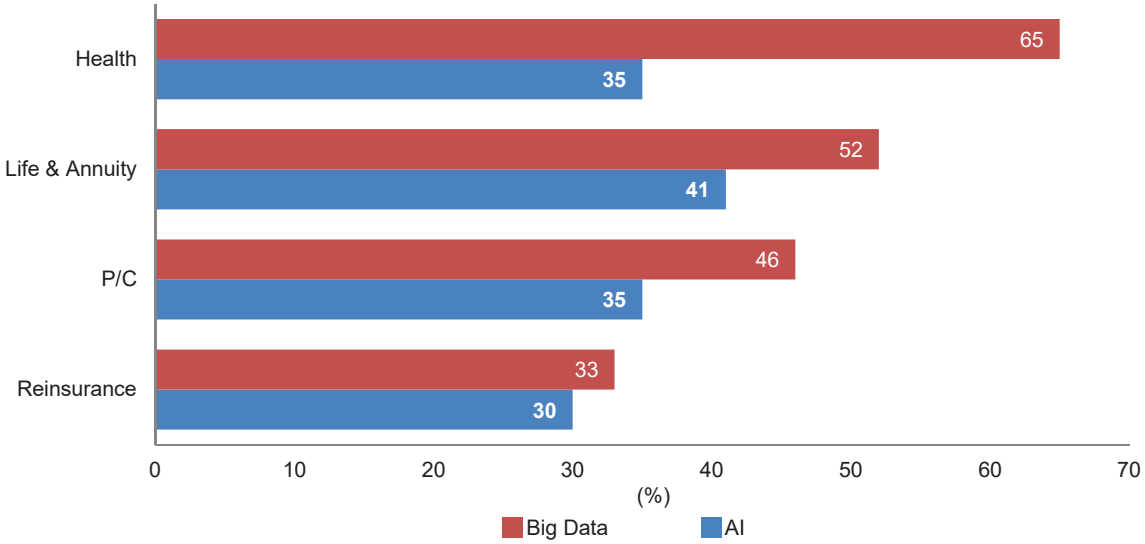
Source: A. M. Best data and research

Machine learning and big data are already being used in predictive modeling. In lines such as workers' compensation and personal auto, the use of predictive modeling is already prevalent, and big data and machine learning can be used to enhance these predictive models to help insurers make better decisions about underwriting, risk segmentation, pricing, and fraud prevention. These techniques also find a natural use in life and health insurance underwriting. Given a choice among AI, big data, cloud computing, and blockchain, a majority of life insurers said big data would have the most significant impact, for example, to generate quotes for life insurance based on self-reported biometric information.

All insurance segments can use machine learning/AI and big data to improve their top line (for focused marketing to reach the right customers, partnering with agents and distribution channels), pricing, and bottom line, including expense efficiencies (preventing fraud, using predictive analytics for underwriting, risk management). This is reflected in the significant numbers of insurers across all segments with investments in big data and AI (**Exhibit 3**).

Exhibit 3

Has Your Company Invested, or Is It Planning to Invest, in AI or Big Data?



Source: A. M. Best data and research

Trend Review
September 24, 2018

Emerging Markets Insurers Place High Value on Innovation

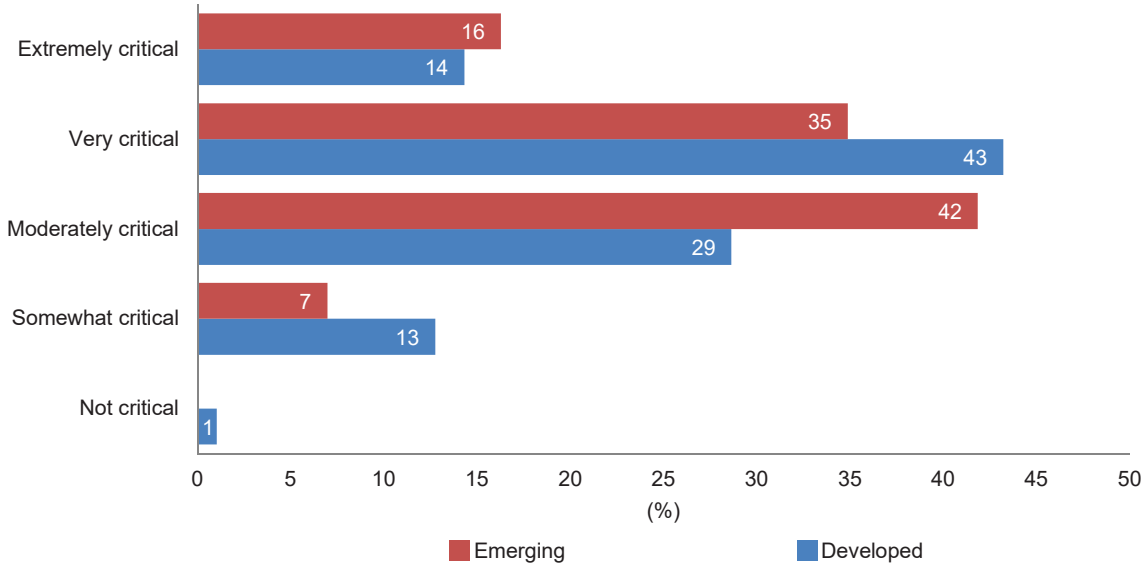
Innovation can provide much needed momentum to insurance coverage in emerging markets

An ongoing focus on innovation is paramount to remaining competitive in an ever changing marketplace. The insurance industry is often thought of as lagging in innovation. In August 2018, A.M. Best surveyed its rated universe, to get a better read of the state of innovation in the industry. This report outlines some notable differences based on the responses from insurers in 26 emerging markets and 22 developed markets. For reference, A.M. Best evaluates and incorporates country risk into all of its credit ratings, capturing the factors specific to a country that could adversely affect the ability of an insurer operating in that country to meet its financial obligations. Each country is assigned a Country Risk Tier (CRT), which ranges from CRT-1 to CRT-5. For the purpose of this report, A.M. Best considers CRT1-2 countries as "developed" and CRT 3-5 as "emerging."

The Innovation Landscape

Insurers in emerging economies are forced to innovate more, as they cannot mimic successful models in developed economies because of differences in distribution, customer needs, and the underlying economics. They have to develop products and create distribution channels and pricing strategies that are unique to their economies, and innovation is therefore critical to insurers in emerging markets. For insurers in developed economies, innovation is a means of staying relevant; for insurers in emerging economies, it's a means of staying alive. Thus, 93% of insurers in emerging economies felt innovation was moderately to extremely critical, compared to 86% of insurers in developed economies (**Exhibit 1**).

Exhibit 1
How Critical is Innovation to the Success of Your Organization?



Source: A.M. Best data and research

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"What Is "Innovation"?

A.M. Best defines innovation as a multi-stage process whereby an organization transforms ideas into new or significantly improved products, processes, services, or business models that have a measurable impact over time and enable the organization to stay relevant and successful. These new or significantly improved products, processes, services, or business models can be organically grown or adopted from external sources.

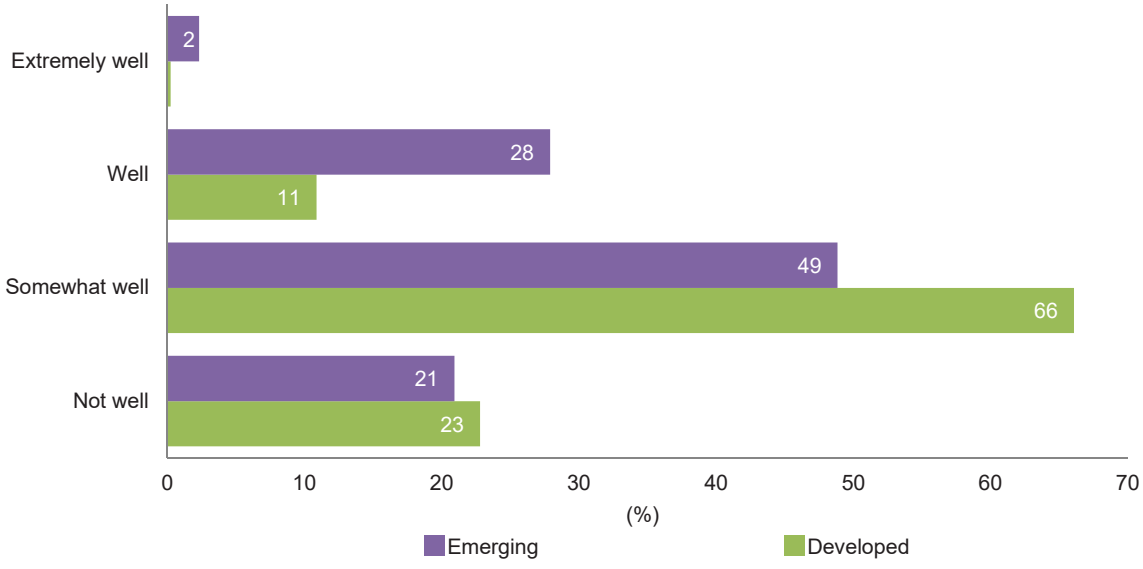
Insurers based in emerging markets are a bit more optimistic about the industry's adoption and implementation of innovation (**Exhibit 2**). The insurance markets in emerging economies are less mature than, if not vastly different from, markets in developed economies. Thus, insurers in emerging economies must come up with innovative products, distribution channels, and pricing unique to their regions, given that models that worked well in developed economies may not be directly applicable.

In addition, while insurers in developed markets view innovation with one eye on the large tech companies and the wider global financial market, those in emerging markets will compare themselves against regional players rather than on a global scale. So what may be a relatively normal course of action for an insurer in a developed market may be a market first for an insurer in an emerging market.

These differences extend to the maturity level of organizations' innovative processes, as nearly half of insurers operating in emerging markets are still in the early stages of development, while the percentage of companies in developed markets that have already had a successful launch (determined by measurable impact) is nearly double that of those operating in emerging markets (**Exhibit 3**). Furthermore, nearly three quarters of insurers operating in developed markets have, within the last three years, introduced new or significantly improved products, processes, services, or a new business model that they expect will have a measurable impact over time; the same can be said for just over half of the insurers in emerging markets.

Exhibit 2

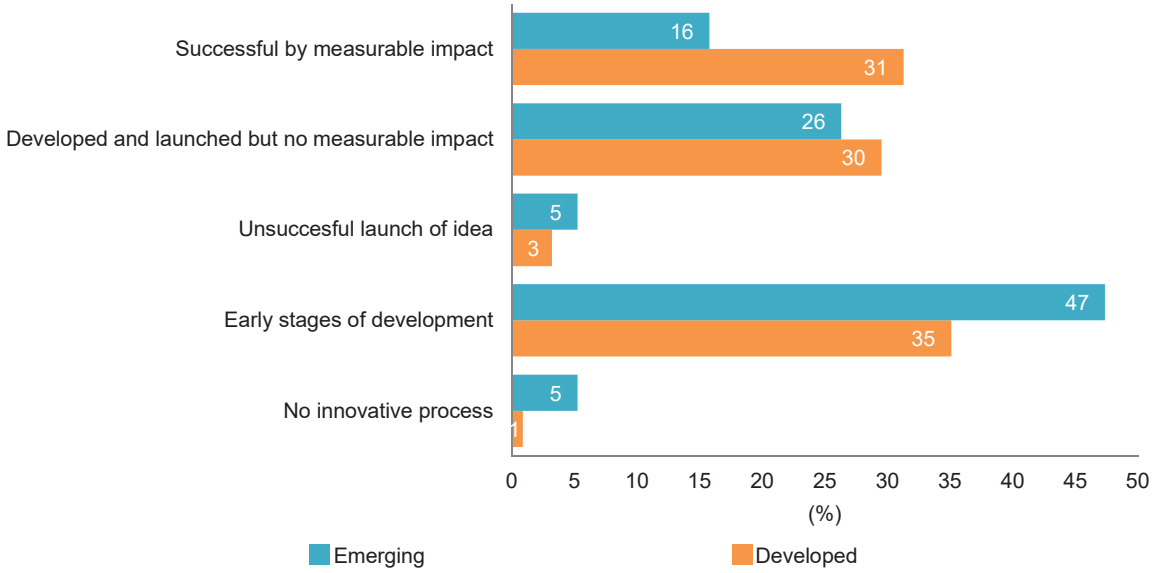
How Well Has the Insurance Industry Adopted and Implemented Innovation?



Source: A.M. Best data and research

Exhibit 3

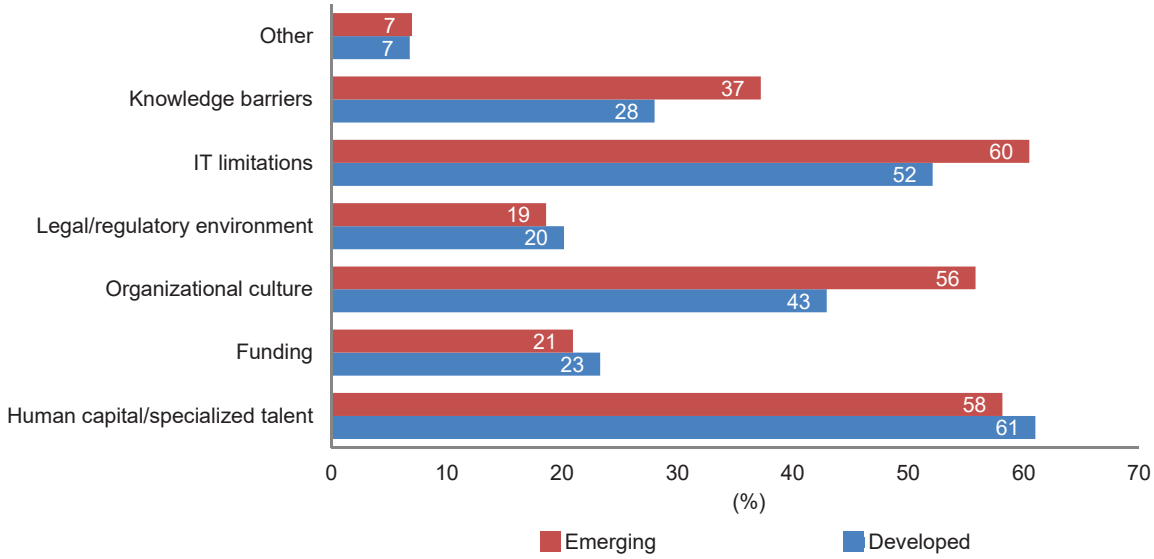
How Would You Describe the Maturity Level of Your Organization's Innovation Process?



Source: A.M. Best data and research

Exhibit 4

What Does or Did Your Organization Perceive as the Biggest Challenges to Developing the Innovation Process?



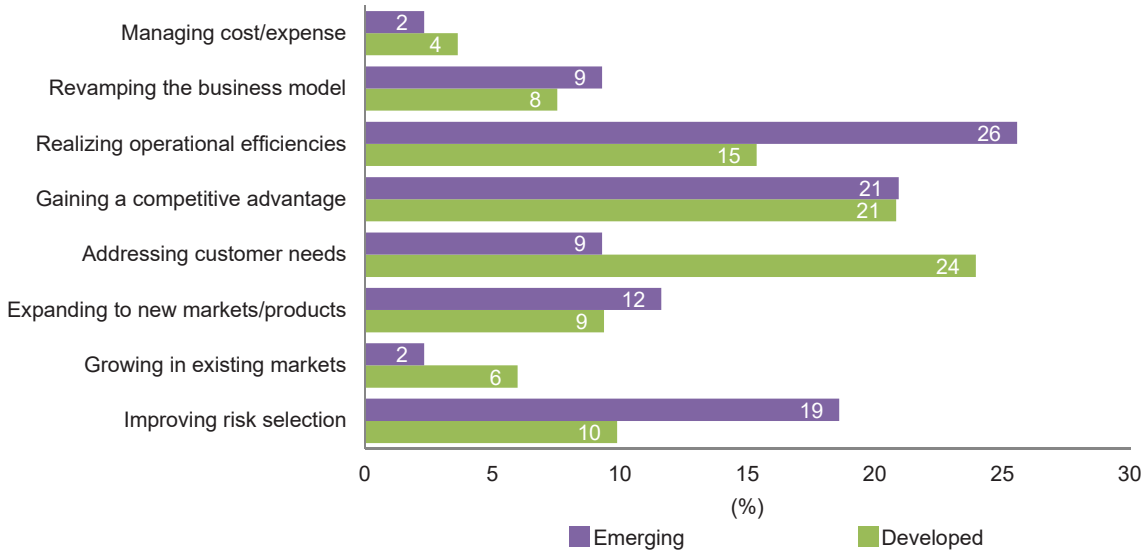
Source: A.M. Best data and research

The Emerging Markets Gap: Challenges vs. Rewards

Insurers in emerging markets have significant untapped potential, given the low level of insurance penetration. However, insurers operating in these markets believe that they have greater obstacles to overcome when developing an innovation process, than their counterparts in developed markets do (**Exhibit 4**). The top three innovation challenges are similar, irrespective of emerging or developed markets. Insurers indicate that human capital or talent,

Exhibit 5

What Is the Primary Reason Innovation Is Important to Your Organization Is?



Source: A.M. Best data and research

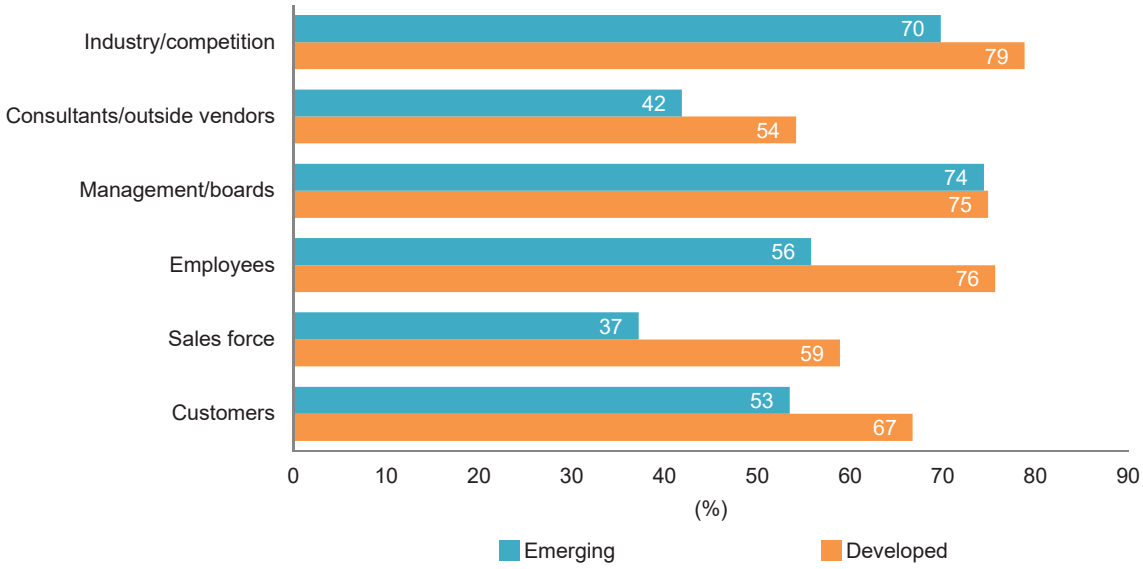
organizational culture, and IT limitations are the three biggest challenges. Large insurers in developed markets with economies of scale have greater access to partnerships with technology companies, as well as more capital to invest in technology or startups and to hire talent; insurers in emerging markets might not.

Insurers proffer different reasons as to why innovation is important to them, depending on where they operate. Those operating in emerging markets are more focused on realizing operational efficiencies because they may not have same economies of scale as insurers in developed markets. They are also focused on improving risk selection, while insurers doing business in developed markets are heavily focused on addressing customer needs, which has been a driving force behind the increase in data analytics in those geographic markets (**Exhibit 5**). The ability to improve operational efficiencies through innovation will be a key source of value creation if emerging markets insurers can improve efficiencies through innovation.

For insurers operating in emerging economies, risk selection has not historically been as sophisticated as it is in developed economies. In emerging markets, the level of data available varies significantly by market and product line. Risk selection could be improved by innovative technologies such as big data and artificial intelligence, but companies would also need to have in-house expertise to be able to make informed risk decisions, given that improvements in technology alone do not necessarily equate to better risk selection.

Moreover, most emerging markets insurers simply do not have either the human and financial resources to invest in these technologies. And for those companies that can afford to buy innovative solutions, the knowledge base to run and maintain these systems is not necessarily readily available. Human capital can be sourced into the business via consultancies or reinsurers based in developed markets, but this invariably comes at a high cost, so some companies may view some innovative technologies and ideas as not worth the investment.

Exhibit 6
How Does Your Company Identify Opportunities for Innovation?



Source: A.M. Best data and research

Primary insurers in emerging markets generally have a lower-income consumer base, which invariably leads to pressure on premium rates, with thin margins exacerbated by operational inefficiencies—which plays into gaining a competitive advantage. Companies that innovate and control their costs will be able to compete more effectively in the marketplace. One way to characterize emerging markets is by a growing middle class, many of whom may never have had personal lines insurance policies. The competitive advantage gained from innovation would allow insurers to capture this growing population. Insurers would still need to build consumer trust, create simple products, and raise brand awareness to take advantage of the improved techniques innovation offers, similarly to those insurers operating in developed countries (**Exhibit 6**).

Innovation is not just about technology. Emerging markets are looking for innovative ways to cover risks such as increasing frequency of flooding, agricultural losses, and healthcare. Public private partnerships can provide innovative ways to cover these risks. For example, in its 2017 annual report, the International Labor Organization (ILO) mentioned its partnership with APA Insurance in Kenya to develop an index-based insurance product to protect tea farmers against weather-related events.

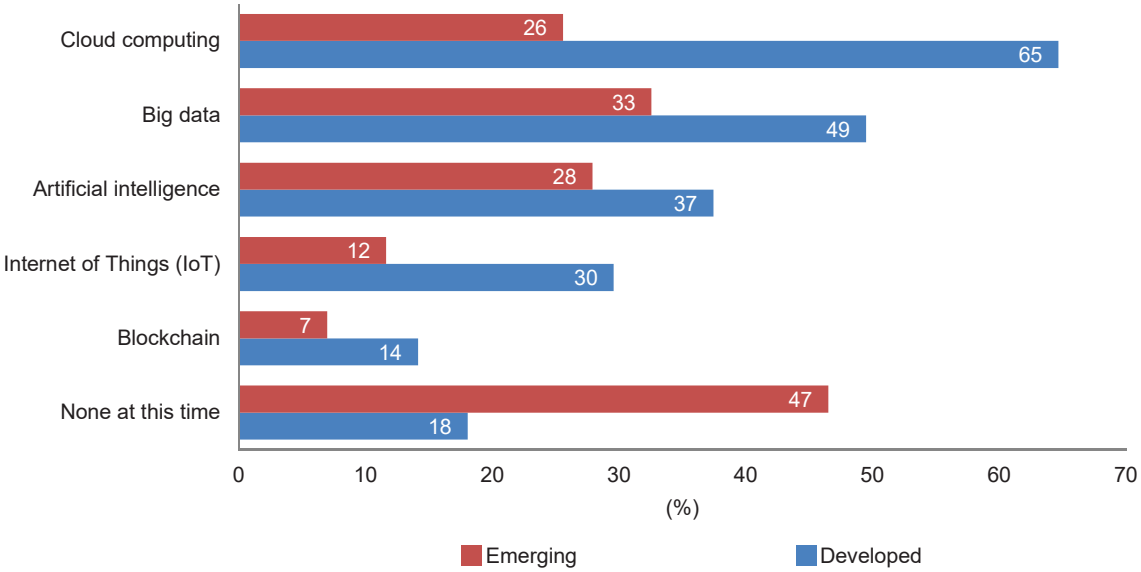
In August 2017, the Philippines established the first-of-its-kind catastrophic risk insurance program through the World Bank, providing 25 provinces with more than $100 million in insurance coverage against major typhoons, by pooling risk and transferring it to private reinsurance markets. Under this program, the government-owned insurance agency, Government Service Insurance System, will provide catastrophe risk insurance to both the national government and the 25 participating provinces. The World Bank will serve as an intermediary, transferring the agency's risk to a panel of international reinsurers: Nephila, Swiss Re, Munich Re via its subsidiary NewRe, Axa, and Hannover Re.

Innovation Investments Are Lacking

In light of these obstacles and operating landscape, it doesn't come as a complete surprise that nearly half of the insurance companies doing business in emerging markets have not

Exhibit 7

Has Your Company Invested in (or Is It Planning to Invest in) Any of the Following?



Source: A.M. Best data and research

invested—nor are they planning to invest—in any newly emerging technologies in the near term (**Exhibit 7**). Although emerging markets insurers are mindful of the benefits of innovation, they hesitate to invest owing to perceived limitations about IT systems and organizational structures. Of those that do invest, a third are investing in big data, while roughly a quarter are investing in artificial intelligence and cloud computing.

Insurers in emerging markets are attempting to reach a large population with policy values that tend to be quite low. Innovative solutions, including new distribution methods such as mobile phone apps, are helping them reach customers, bind policies, and pay claims.

Technological innovation could transform the insurance industry in emerging economies, opening the way to new business models, with big data and AI playing key roles. How companies respond and adapt to economic and technological innovation could well determine how successfully they capitalize on opportunities in these economies.

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Regulators Look to Keep Up with Innovation

Regulations can play an important role in encouraging innovation as well as establishing ground rules

Innovation has been a factor in the insurance industry since its beginning and continues today, albeit more critically than ever. The products and services insurers offer have evolved in tandem with the landscape. For example, the founding fathers of insurance may not have imagined that an organization could buy insurance to cover the risk of a talented or lucky golfer scoring a hole in one. Products covering cyber and flood risks are more traditional examples of the industry's willingness to innovate.

Technology now allows people and goods to be transported in driverless vehicles. Drones are used both as a delivery mechanism and to assess property from above. These tools create risks not envisioned just a generation ago. Both driverless vehicles and drones aim to improve convenience for consumers and for businesses, but pose numerous risks with regard data security, process safety, or collisions with aircraft or automobiles.

Changes in technology may also transform the playing field, as new competitors from outside the industry nudge out traditional competitors. For example, Amazon, which has already disrupted the retail industry, has formed a non-profit joint health venture with JPMorganChase and Berkshire Hathaway to deliver better healthcare for their employees. Lessons from this endeavor could prove critical to the way health insurance can be underwritten, priced, and regulated.

Regulatory Oversight Could Enforce Discipline

The insurance industry has evolved, but it has done so slowly. Regulations that come with capital requirements and compliance rules and difficulties in obtaining licenses to operate were among the competitive advantages of an established insurer, as new entrants were often reluctant and slow to enter the market.

Regulations can play an important role in encouraging innovation as well as establishing ground rules so that insurers have the capital to pay for the risks they assume and can operate in a way that doesn't create systemic risk owing to undue risk-taking. Regulations can also ensure that, as insurers amass huge amounts of policyholder and other information, they maintain sufficient protection and security to prevent compromising vital personal information. Moreover, regulations can help ensure that personal information and the variables used for precision underwriting do not discriminate or run afoul of established jurisdictional laws.

Around the globe, nations or groups of nations—such as the European Union and the Association of Southeast Asian Nations (ASEAN)—might operate differently. In this section, we look at how innovation-focused efforts in the insurance industry are being tackled across the globe.

National Association of Insurance Commissioners Innovation Task Force

According to the NAIC's Innovation and Technology (EX) Task Force, from a regulatory perspective, most states considered themselves to be "works in progress," with some "not ready," and just a few "ready" to fully tackle innovation issues. The NAIC may look to those states that are further ahead in the game as a source for developing best practices and model guidance.

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Innovation in the Sandbox

In the US, in addition to federal laws and regulations, each state has its own set of rules to which insurers must adhere. To promote innovation, some state agencies are encouraging innovators to operate in a kind of regulatory sandbox. The Iowa Insurance Division (IID), for example, has developed a program that encourages innovators in the insurance industry to ask the IID questions about how insurance regulations might come into play as new ideas are brought to market. New technology, as well as new uses of existing technology, enable insurers to create new products, services, and delivery methods, generally following a consumer-driven approach. It's important that regulators such as the IID provide a roadmap to keep innovators on track. Innovation centers such as the Hartford InsurTech Hub in Connecticut bring together a large pool of talent from both start-ups and existing carriers, often resulting in the creation of pilot programs and new concepts.

On the other side of the coin, however, Superintendent Maria Vullo, of the New York State Department of Financial Services, commenting on the Treasury Department's endorsement of regulatory sandboxes for fintech companies, said the following:

> The New York State Department of Financial Services fiercely opposes the Department of Treasury's endorsement of regulatory 'sandboxes' for financial technology companies. The idea that innovation will flourish only by allowing companies to evade laws that protect consumers, and which also safeguard markets and mitigate risk for the financial services industry, is preposterous. Toddlers play in sandboxes. Adults play by the rules.

The ideas that appear to be gaining the greatest traction are those that focus on improving the overall experience for end-users, by streamlining transactions, simplifying the review of long documents, or building communications tools to reduce processing time, for example. Concepts such as blockchain, wearables, autonomous vehicles, and the IoT have received the greatest attention, but less-publicized products such as RiskGenius (which allows for the electronic review of documents for specific inclusions and exclusions) have been making inroads in the insurance industry. RiskGenius also features a built-in messaging system.

The results of our innovation survey bear out that better use of data is top-of-mind for many insurers. In its presentation to the NAIC, States Title, Inc., demonstrated how it uses predictive analytics when underwriting title insurance, shaving roughly three to five weeks off of the processing time. States Title is currently working with insurance regulators in Illinois and Arizona as it fine-tunes its products.

The NAIC task force pointed to other examples as well. Hippo, a Texas-based homeowners' insurance company, is writing business at the rate of thousands of policies a month across nine states. According to Hippo, consumers can purchase a homeowners' policy, based on verifiable third-party data, in less than five minutes. Hippo notes that consumers in 2018 expect that purchasing insurance should be as easy as using Google or Amazon.

On the healthcare side, Quest Analytics has developed network adequacy tools, currently in use by about 300 plans, and that have been adopted or are in the process of being adopted by state insurance regulators in California, New York, and elsewhere. Automation is seen as the key to properly monitoring network adequacy. Quest notes the push for more data and more accurate information across the healthcare segment. It further notes that regulators are most focused on the appropriateness of the network—whether there are a sufficient number of providers from which to choose—and billing accuracy.

Big Data is a Big Deal

Our innovation survey finds that insurers tend to be much more focused on improving data and analytics. Consistent with the insurance industry's focus, the task force includes a distinct Big Data (EX) Working Group that has addressed the growing use of automated underwriting, the need for consistent guidance across jurisdictions when reviewing predictive models, the availability of NAIC resources when reviewing predictive models as almost all states are requesting NAIC assistance in this endeavor, and the success (or failure) of statutory confidentiality protections as states share predictive modeling information. The NAIC is expected to continue upon and to even expand its leadership role as emerging technologies morph into everyday tools.

Insurance Innovation Around the Globe

Insurance-focused innovation continues to take place throughout the world; below we explore what this means from a regulatory perspective in a few foreign jurisdictions.

Australia: ASIC and APRA

The Australian Securities and Investments Commission (ASIC)—an integrated corporate, markets, financial services, and consumer credit regulator—created an Innovation Hub in 2015 to encourage fintech companies to innovate while providing resources to answer questions that companies might have. ASIC also guides new businesses with respect to regulatory issues, which cuts the time and costs associated with applying for a license or requesting legal relief. The organization has developed a regulatory framework to encourage innovators to test new products and services for up to 12 months without needing to acquire a license.

ASIC and its various task forces and working groups provide regulatory support and guidance for the insurance industry as innovation—including robo-advice, digital marketplace lending, equity crowd-funding, and blockchain—continues apace.

The Australian Prudential Regulation Authority (APRA), which has supervisory authority over insurers, also educates and guides innovators, but with a somewhat different approach. The level of its engagement with respect to new technology varies according to the level of risk. APRA aims to use a principles-based framework that does not favor any particular technology or specific business model.

Europe: EIOPA

The European Insurance and Occupational Pensions Authority (EIOPA) held an insurtech roundtable in 2017 to harness thought leadership on how digital trends are changing the insurance value chain. Deep dives into robust data are valuable for insurers from the perspective of both product customization and competition. In addition to start-ups that have designed efficient, innovative tools, competition is coming from unexpected places. Companies such as Amazon, Apple, and Facebook may have more data on individuals than insurers, or any other business. We've already seen Amazon form a joint venture in the healthcare segment with JPMorganChase and Berkshire Hathaway. At the moment, Amazon isn't regulated as an insurer, but what the ownership of data will mean for the industry, for consumers, and for regulators remains to be seen.

EIOPA summarized the importance of big data for insurers:

> As far as insurance underwriting and pricing is concerned, the use of Big Data processes in insurance enables more granular segmentation of risks, increases the effectiveness of risk identification, and also allows for pricing that is more risk-sensitive. This facilitates

underwriting costs and uncertainty to be reduced, and provides for greater resilience in the underwriting process.

EIOPA, the European Banking Authority (EBA), and the European Securities and Markets Authority (ESMA) together comprise the European supervisory authorities (ESAs). The primary role of the ESAs is to monitor emerging risks for consumers and financial institutions and to adopt, as needed, regulations that protect consumers and the safety and soundness of the markets. The ESAs have taken particular notice of the growing use of big data. While big data is generally viewed as a positive, caution flags have been raised with respect to the accuracy of that data, as inaccurate data could lead to misguided decisions. The ESAs believe, however, that implementation of the General Data Protection Regulation (GDPR) in Europe will help mitigate these risks, similarly to the NAIC's Insurance Data Security Model Law, which was adopted by the NAIC in October 2017.

Regulators have also raised concerns that customization based on big data could affect the availability, affordability, and pricing of products and services. Some recommend more transparency for consumers about how big data affects them, while others point to increased cyber risks. From a regulatory perspective, some believe that the current regulatory and supervisory framework is sufficient with respect to big data, while others suggest that further guidance would be helpful, particularly as the definition of big data continues to evolve.

Bermuda: Legislative Framework to Promote Innovation

The Insurance Amendment Act of 2018 passed in Bermuda creates a regulatory sandbox for insurers and promotes innovation in a controlled manner. This act is in conjunction with an innovation Hub established by the Bermuda Monetary Authority (BMA). The BMA with its leadership position in the insurance-linked securities (ILS) market would like to replicate these models in the blockchain technologies and cryptocurrencies.

India: IRDAI

In 2017, the Insurance Regulatory and Development Authority of India (IRDAI) formed a working group focused on insurance-related technological advancements. In March 2018, the working group released a report on wearables and portable devices, with a number of key findings:

- Insurers consider investing in technology essential, given the significant risk of disruption if they don't.
- Many insurers have created dedicated teams focused on potential disruption.
- Technology will help insurers assess risks better.
- Data analytics and predictive models will help insurers better understand the risks they take on with respect to their core business.
- AI and machine learning will help insurers and agents underwrite risk more effectively, as they collect more data from more sources.
- Wearables can play a key role in the life and health segments.
- Telematics and the IoT can track driving habits and thereby provide better intelligence in the motor insurance segment.
- AI and IoT are both valuable in detecting fraud.

The IRDAI considers it critical that data be used for the intended purpose, as any sharing of data should require the consent of the policyholder. The organization is concerned that "Conventional risk pool mechanisms may be challenged even as there is a move [toward an] individualistic pricing approach with the use of wearables." The IRDAI nonetheless supports regulatory encouragement of technological innovation in the insurance segment and believes

that regulators should play a leading role in facilitating this innovation while ensuring the proper and appropriate collection and use of personal data.

China: CIRC

The China Insurance Regulatory Commission (CIRC), the primary insurance regulator in mainland China, continues to make progress in encouraging innovation, including the following:

- Approval of online-only insurance licenses
- Authorization of innovative products for use in the provinces
- Implementation of changes to the China Risk-Oriented Solvency System (C-ROSS) to support the retail insurance business, noting that insuring simple risk such as auto insurance requires less capital than commercial insurance
- CIRC acceptance of new products are launching more quickly as the CIRC accepts a wide range of pricing and underwriting practices, including the use of dynamic pricing and underwriting

Global

Regulators across the globe have been active in this area as well, and increased collaboration between regulators could help implement policies faster and better as they learn from each other and tailor their approach so the insurance marketplace can embrace innovation appropriately.

The growing emphasis on innovation at insurers, in addition to an increasing number of new entrants looking to offer insurance products, calls for more robust dialogue among regulators, insurers, and stakeholders such as A.M. Best, to further the understanding of changes in the marketplace and of privacy and security issues, that will help facilitate doing business without compromising regulations.

Trend Review
September 24, 2018

A.M. Best's Innovation Survey – Frequently Asked Questions

For insurers, the ability to address accelerating technological and societal changes through innovation will be increasingly critical to their long-term financial strength.

This FAQ document covers questions related to the recently released survey on innovation and the subsequent steps that A.M. Best intends to take based on its analysis of the survey.

Why is A.M. Best conducting the survey now?

Historically, A.M. Best has captured innovation indirectly through the various building blocks of its rating process. We launched the innovation initiative to consider a more explicit analysis of innovation in the rating process; the survey was thus designed to assess the state of innovation in the insurance industry. A.M. Best believes that the pace of innovation in the insurance industry is accelerating and that an insurer's ability to innovate is increasingly critical to its long-term financial strength.

How does A.M. Best define innovation?

A.M. Best defines innovation as a multi-stage process whereby an organization transforms ideas into new or significantly improved products, processes, services, or business models that have a measurable impact over time and enable an organization to stay relevant and successful. These new or significantly improved products, processes, services, or business models can be organically grown or adopted from external sources.

This definition purposefully avoids equating being innovative with being technologically advanced. Companies can take many paths to innovation; companies with limited resources may find unique ways to innovate as they strive to maximize the full potential of such resources.

Does A.M. Best believe that specific segments of the insurance industry are disproportionately impacted by innovation?

The impact of innovation on the insurance industry isn't segment-specific; more than 80% of survey respondents indicated that innovation was moderately to extremely critical to the success of their organizations. Innovation can be a means of maintaining market relevance, developing meaningful solutions to ever-evolving risks, and improving operational efficiencies for all types of insurance companies.

How will A.M. Best use the results of the survey?

We will use the results to inform the development of an innovation scoring framework and associated criteria procedure. We will also discuss the aggregated survey results in a variety of research reports, including a special report on innovation and presentation materials. Individual survey responses will be kept confidential.

Will my company be required to elaborate on our responses to the survey?

Your analyst may discuss your survey responses with you to gain a deeper understanding of your company's innovation process. When the innovation scoring criteria procedure goes into effect, your analyst may use the survey responses as a starting point for a deeper dialogue, to assess the state of innovation at your company.

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What are the next steps in A.M. Best's innovation initiative?

In addition to publishing the special report on innovation, A.M. Best will be speaking about innovation and the survey results at several upcoming industry conferences and market events. We will also provide the aggregated survey results to the companies that responded to the survey. The next step in our innovation initiative is the development of a new criteria procedure focused on evaluating innovation. We expect to release this criteria procedure for a minimum 30-day public comment period in 2019. We are also evaluating the most appropriate placement for an assessment of innovation in the rating process in accordance with Best's Credit Rating Methodology (BCRM). Any changes made to the BCRM to more explicitly incorporate innovation would likewise be released for a 30-day public comment period. We expect to release proposed changes to the BCRM for public comment after collecting and reviewing industry comments on the innovation criteria procedure. The date on which the innovation criteria procedure and BCRM updates go into effect depends on the volume and depth of comments received during the public comment periods.

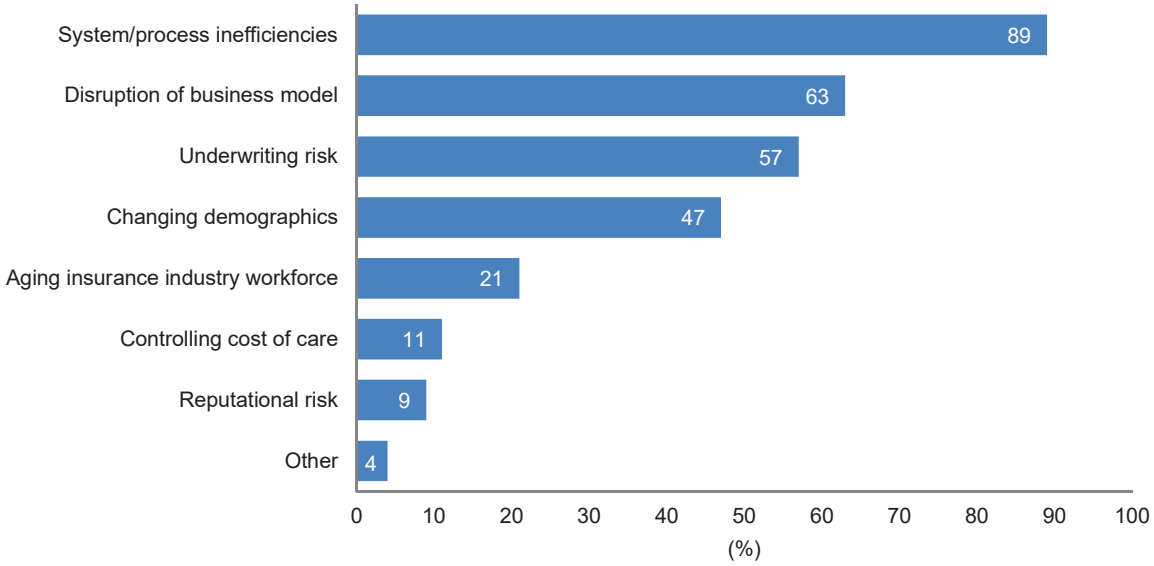
How will the potential changes to criteria and the BCRM impact ratings?

Since innovation is currently captured indirectly through the building blocks of the rating process, A.M. Best does not expect significant rating movements as a result of the updates. However, we do believe that, for insurers, the ability to address accelerating technological and societal changes through innovation will be increasingly critical to their long-term financial strength.

Appendix

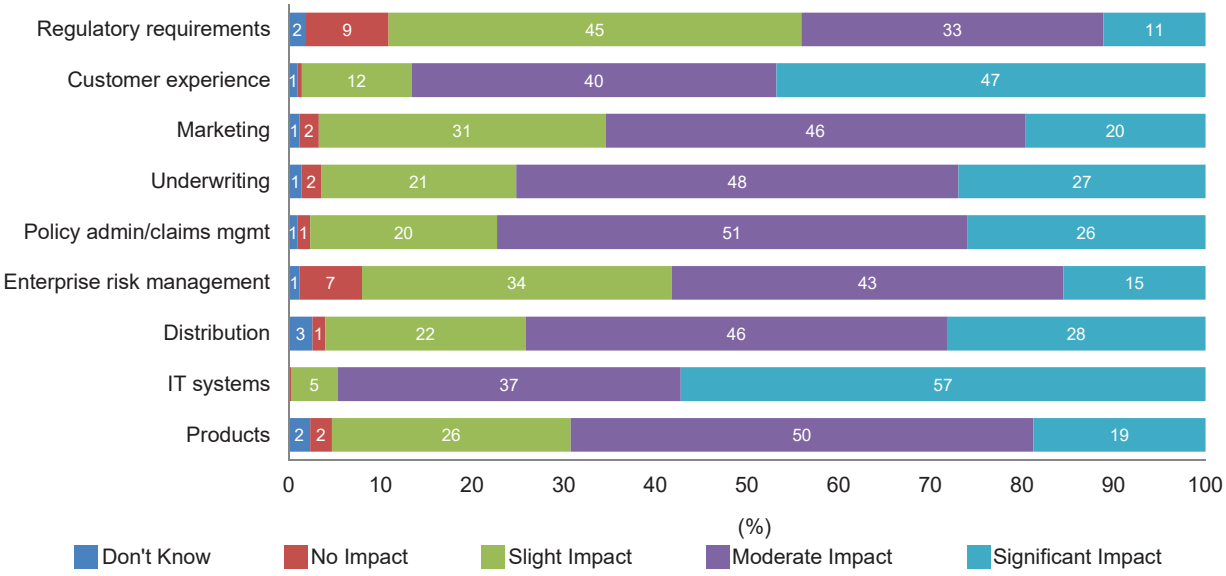
Below, we provide a breakdown of the responses to all of the questions in the survey, except for Question 20, which required a written response. (Note that all figures in this report have been rounded.)

Q1. Identify the three most important challenges innovation can help insurers overcome.



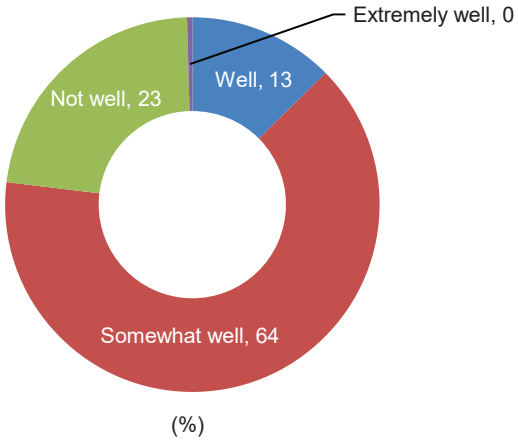
Source: A.M. Best data and research

Q2. When considering the insurance industry, to what degree do you expect innovation to impact the following areas over the next three years?



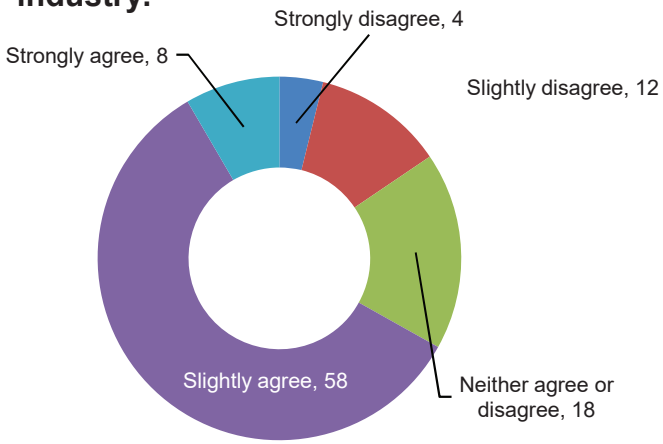
Source: A.M. Best data and research

Q3. How well has the insurance industry adopted and implemented innovation?



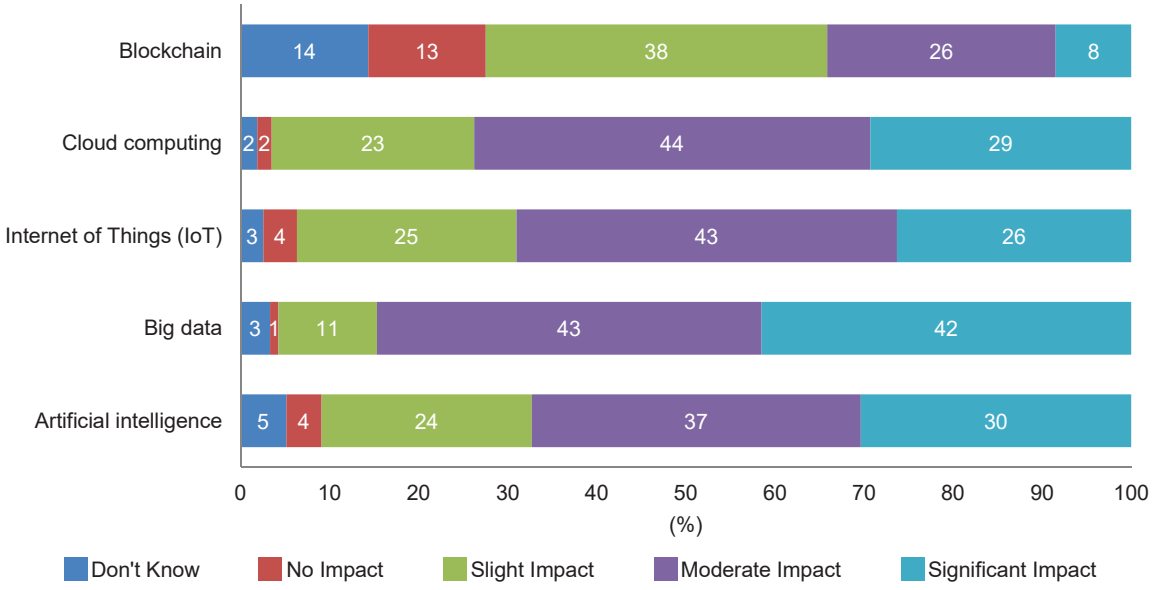
Source: A.M. Best data and research

Q4. Over the past three years, there has been a lot of innovation in the insurance industry.



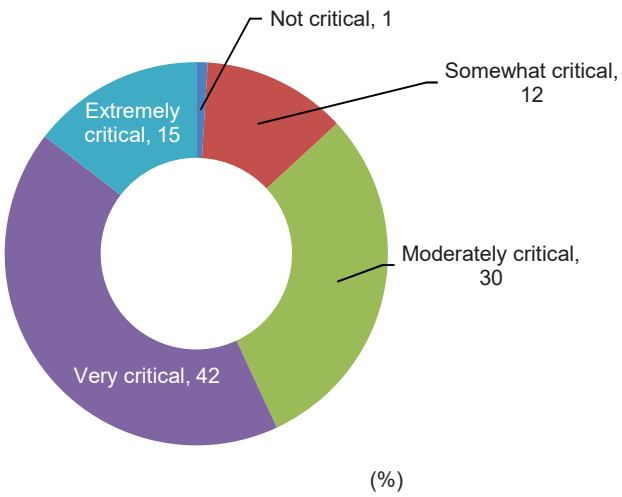
Source: A.M. Best data and research

Q5. Describe the impact that you believe the technologies listed below will have on the insurance industry over the next three years.



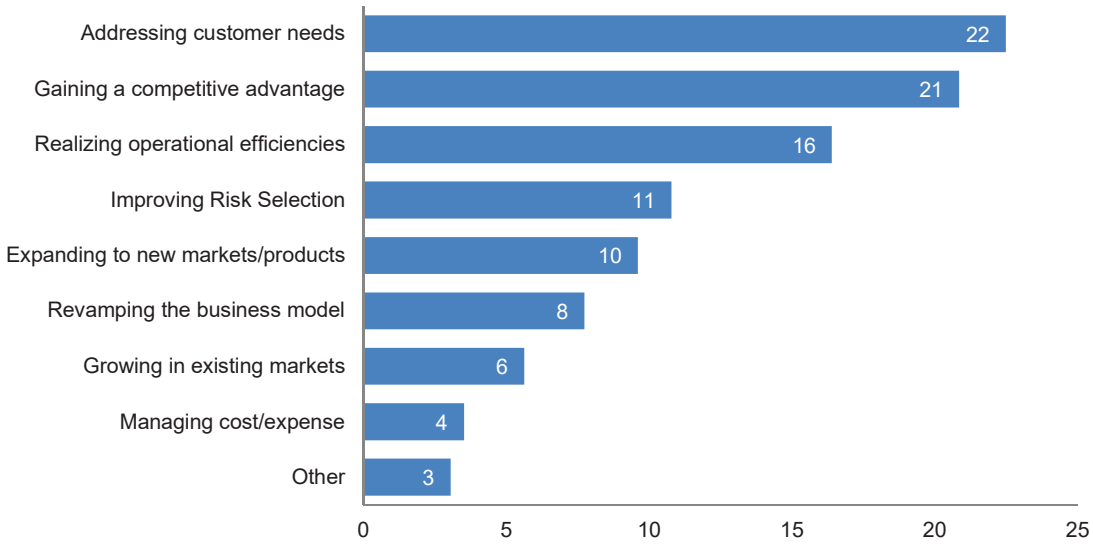
Source: A.M. Best data and research

Q6. How critical is innovation to the success of your organization?



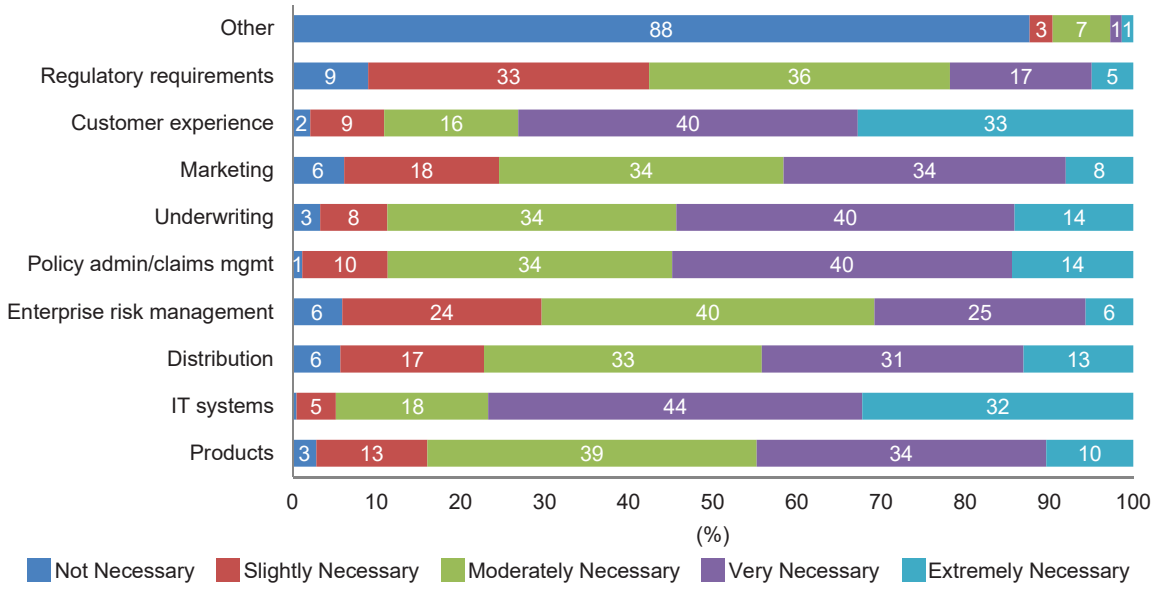
Source: A.M. Best data and research

Q7. The primary reason that innovation is important to your organization is:



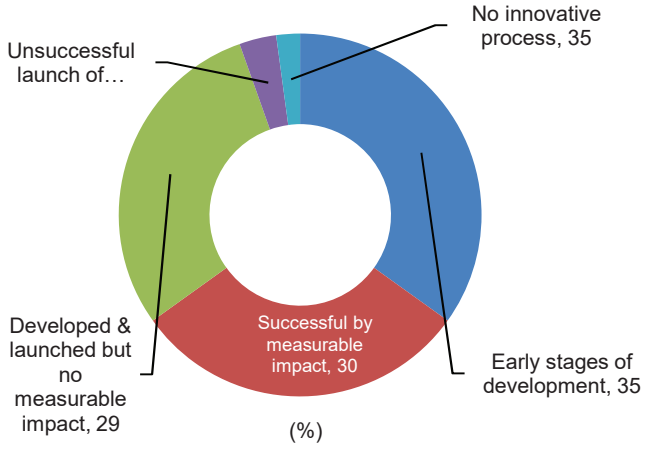
Source: A.M. Best data and research

Q8. When considering your organization, how necessary is it to innovate in the following areas?



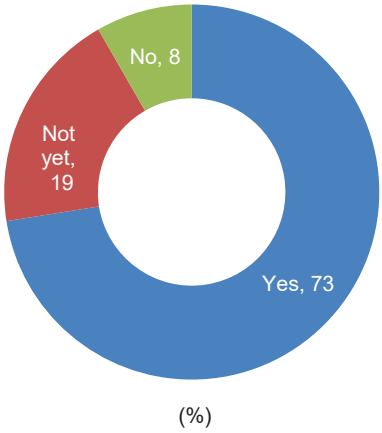
Source: A.M. Best data and research

Q9. How would you describe the maturity level of your organization's innovation process?



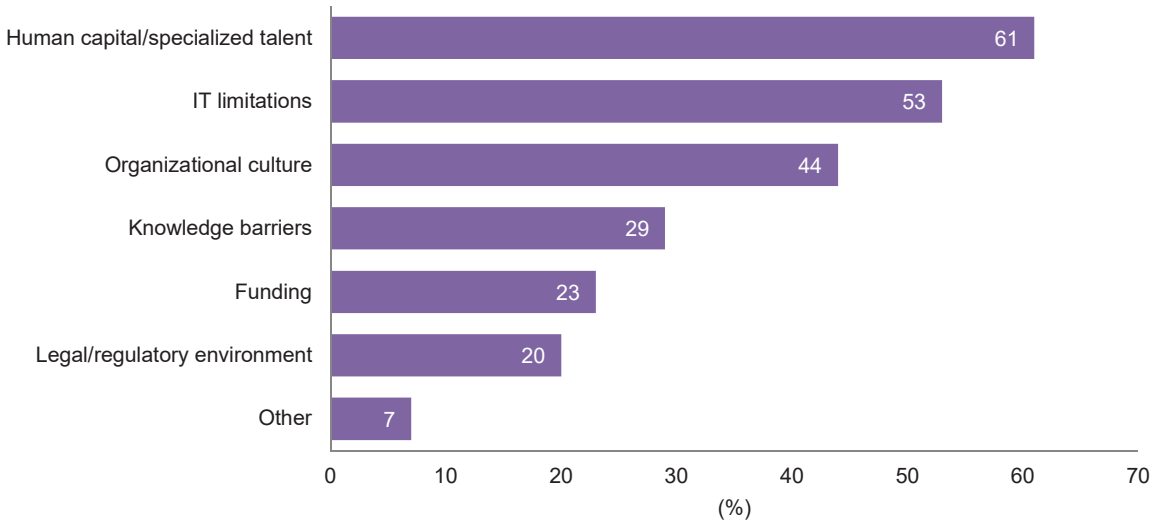
Source: A.M. Best data and research

Q10. Within the last 3 years, has your company introduced any new or significantly improved products, processes, services, or business models that you expect to have a measurable impact over time?



Source: A.M. Best data and research

Q11. What does or did your organization perceive as the biggest challenges to developing the innovation process?



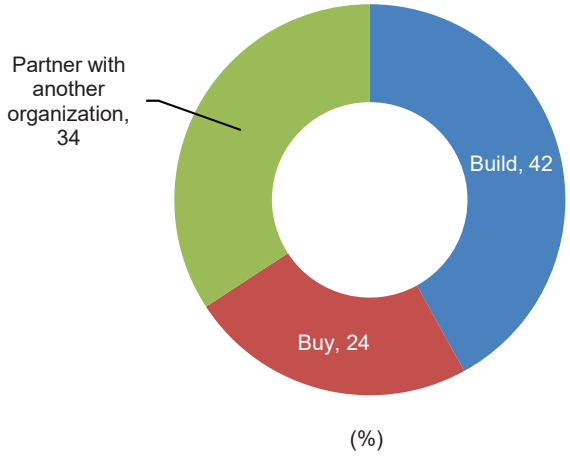
Source: A.M. Best data and research

Q12. Which approach best describes your firm?

	%
Our current innovation strategy is a key component of our overall strategic objectives.	45
We are developing an innovation strategy that will be aligned to our overall strategic objectives.	35
Our current innovation strategy is important but not explicitly aligned with our overall strategic objectives.	8
We do not have an innovation strategy nor do we plan to create one.	6
We are developing an innovation strategy but it will not be explicitly tied to our overall strategic objectives.	6

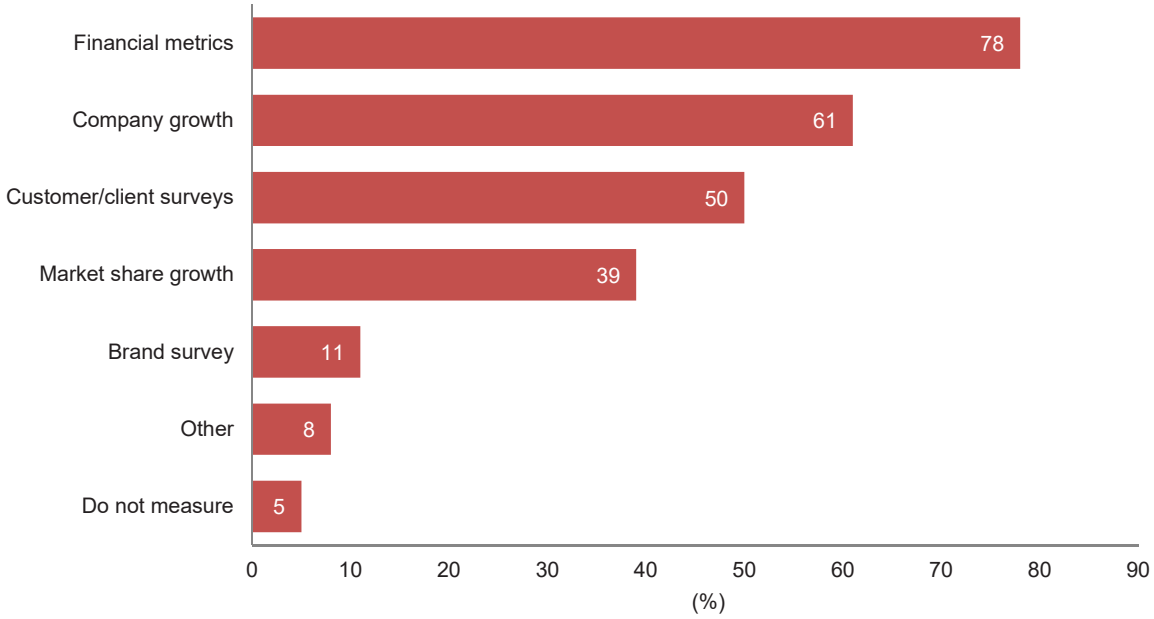
Source: A.M. Best data and research

Q13. In terms of new or significantly improved products, processes, services, or business models, are you most likely to:



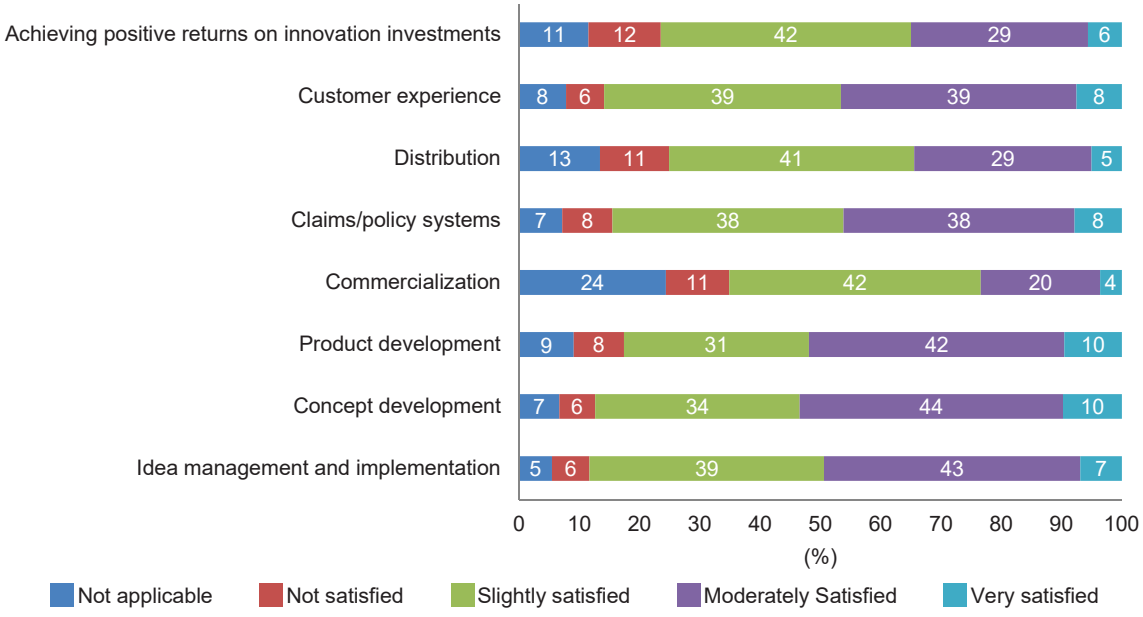
Source: A.M. Best data and research

Q14. How do you measure the success of innovation initiatives?



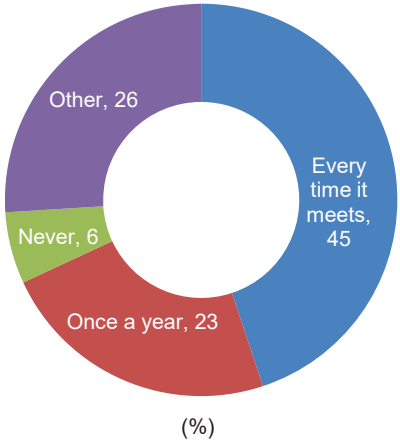
Source: A.M. Best data and research

Q15. How satisfied are you with your innovation efforts as they relate to the following?



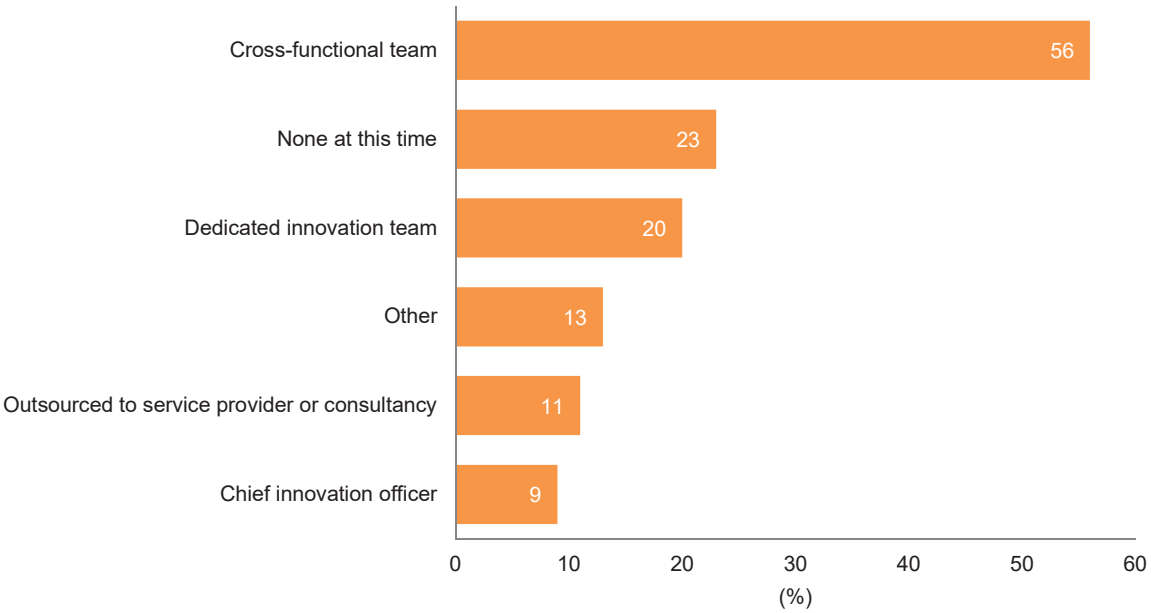
Source: A.M. Best data and research

Q16. How often does your board of directors discuss innovation?



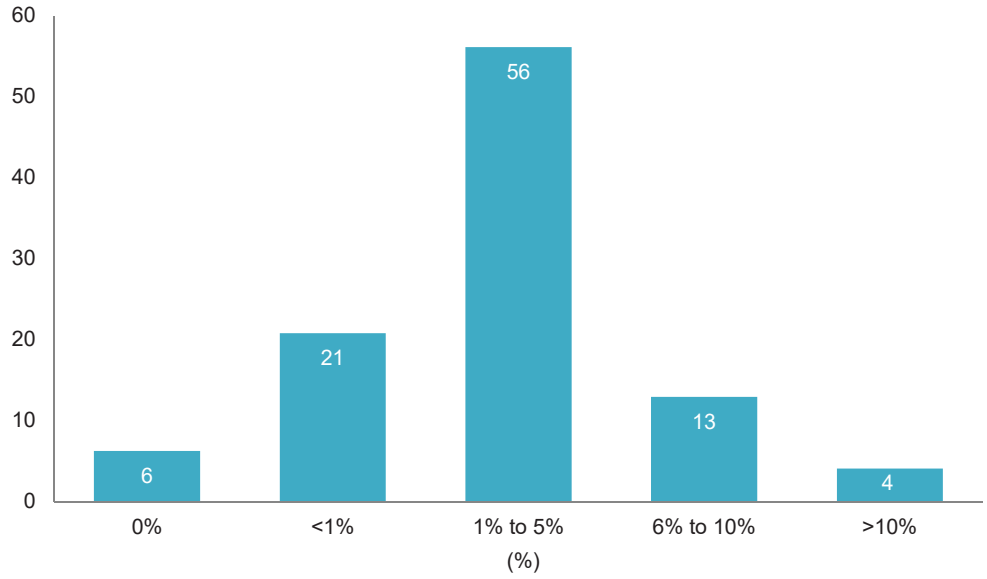
Source: A.M. Best data and research

Q17. Does your company have personnel that focus on innovation?



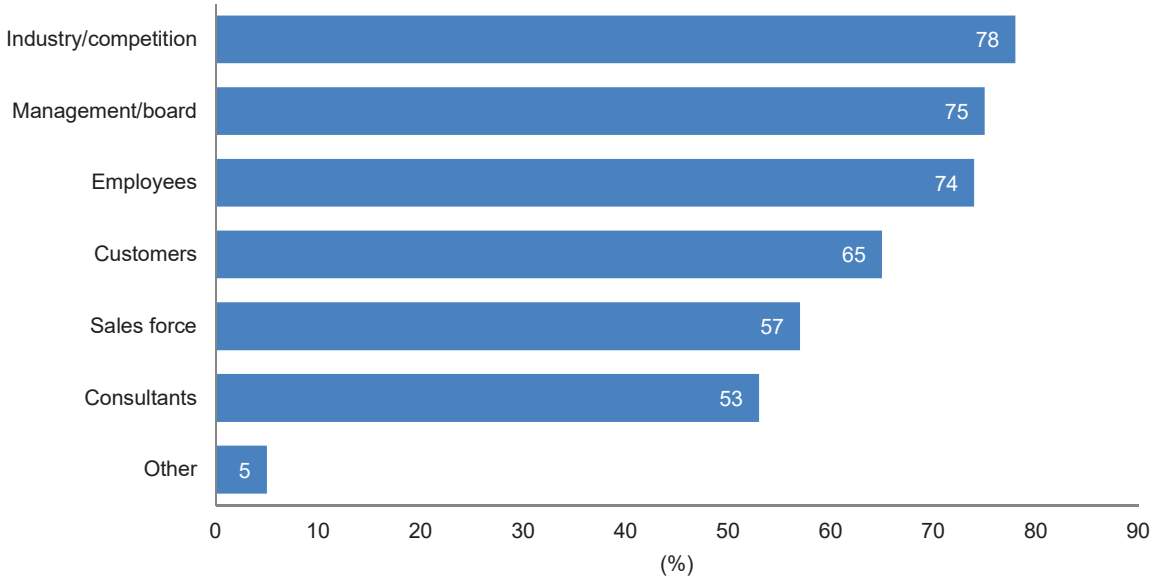
Source: A.M. Best data and research

Q18. What percentage of your company's total annual budget is allocated to innovation?



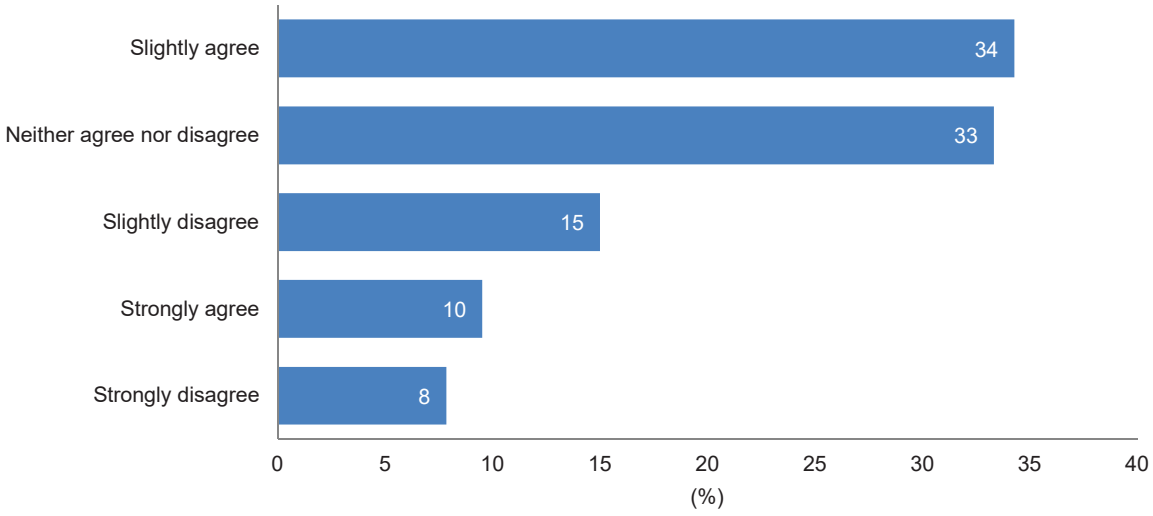
Source: A.M. Best data and research

Q19. How does your company identify opportunities for innovation?



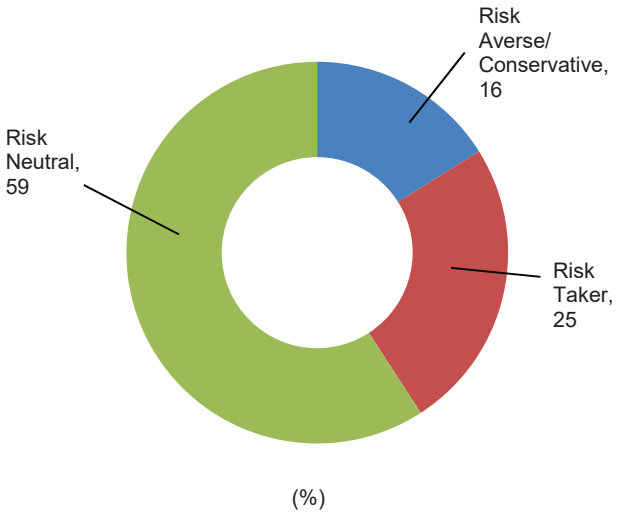
Source: A.M. Best data and research

Q21. Your company's process for sourcing innovative ideas is well-defined, clearly communicated, and understood throughout the organization.



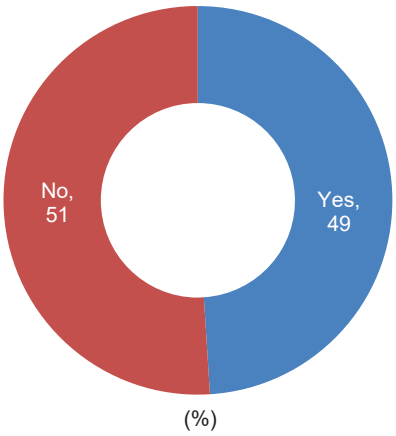
Source: A.M. Best data and research

Q22. Which best describes your executive team's risk tolerance for innovation?



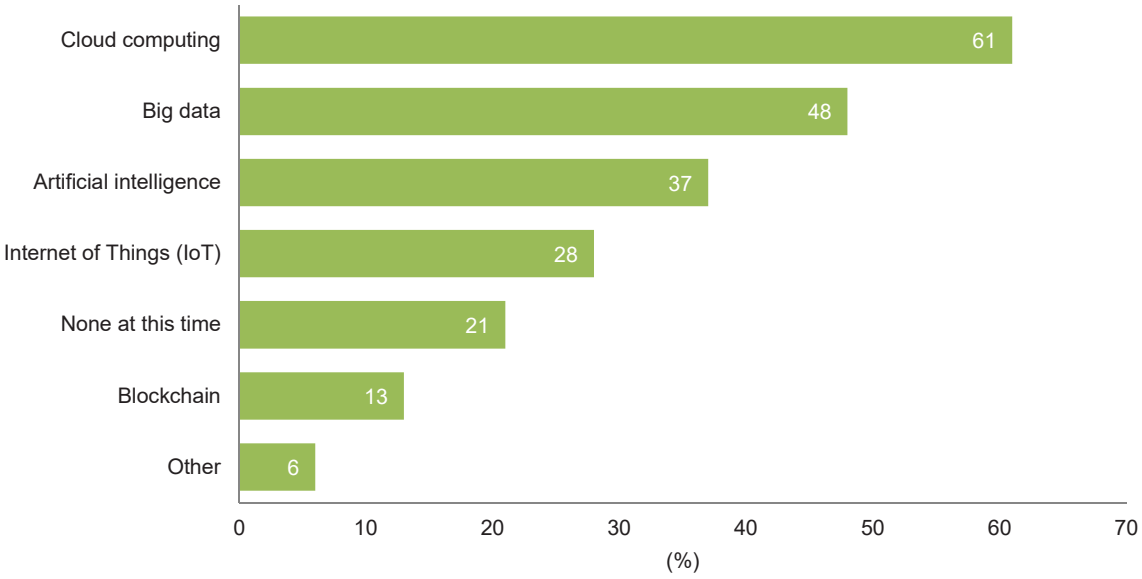
Source: A.M. Best data and research

Q23. In the past three years, has your company participated in any pilot programs of any new technologies, devices, or processes?



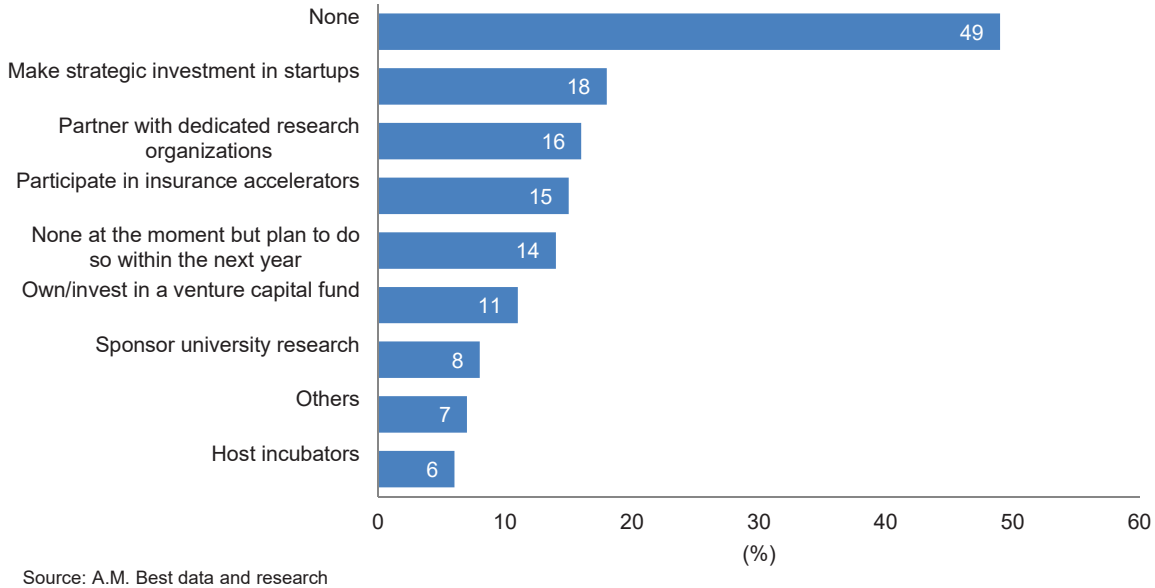
Source: A.M. Best data and research

Q24. Has your company invested in (or is it planning to invest in) any of the following?



Source: A.M. Best data and research

Q25. Identify and describe any innovative partnerships with insurtech companies or entities outside of the traditional insurance space.



Source: A.M. Best data and research

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