EY's Digital Underwriting Survey

Underwriting transformation in the digital era

Building a better working world

Underwriting transformation in a digital era

The recently completed EY Digital Underwriting Survey reveals the important and rapid evolution that is proceeding within commercial and specialty insurance. Further, it clarifies the digital technologies and capabilities that are the impetus behind some of the biggest changes to underwriting, the essential function within insurance.

The "big idea" behind the results confirms that more insurers recognize that the future is now when it comes to digital. Insurers are planning to accelerate and expand their investments and activities to embrace digital insurance in its many forms. Both in response to the survey questions and in parallel interviews, the underwriting community expressed a belief that individual technologies are making a difference in advancing key capabilities, even if the initial use cases are narrowly defined.

Looking at 12 specific technologies and capabilities, the survey findings reveal that most insurers are investing now and plan to continue to increase investing. Further, they expect to broaden how they use these technologies. The bottom line is that survey respondents see clear and ample opportunities to expand adoption and increase the value to their business.

About the survey

In 2017, EY conducted a global online survey of more than 40 carrier, broker and InsurTech firms. The participants consisted of both business and IT executives. The findings were supplemented by individual interviews. The survey is the first to focus exclusively on the impact of digital technologies in the middle market and large commercial and specialty segments. The product lines represented include:

- Property
- Liability
- Auto
- Inland marine
- Professional liability
- Umbrella and excess

Insurers and InsurTechs were asked about their investments, while brokers were asked to provide their perspectives about those insurers' investments. InsurTech platform providers also were asked to respond with information about how they are enabling insurers.

The survey also covered the required skill set and technology impact on underwriters of the future and how these digital technologies will enable them. As such, the results complement other EY research, including the underwriting survey conducted in association with the Chartered Property Casualty Underwriter (CPCU®) Society.

Technology investments:


Predictive analytics


Big data capabilities


Machine learning


Artificial Intelligence (AI)


Automated portfolio management


Blockchain


Underwriting trading platforms


RPA


GIS


Sensor-based


Semantic web

Image and video analysis

Key themes emerging from the survey

1. Predictive analytics, big data, underwriting trading platforms and geographic information systems (GIS) are the most mature technologies currently being adopted. More than half of respondents indicate these technologies are in the rollout or refinement stage. However, these technologies have been narrowly focused on just a few specific areas (such as pricing models and demographic and location data).
2. Blockchain, robotic process automation (RPA) and sensor-based technologies are all high priorities for the future, with organizations planning to commit significant resources. Currently, most insurers engaged with these technologies report activity in the context of research programs, proof of concept or pilots.
3. There is a strong need for longer and closer monitoring time of early stage investments and the potential need for more rigor in business case development. Insurers currently measuring investment performance report strong, even compelling, returns, with most meeting or exceeding expectations.
4. Insurers and brokers agree that underwriting and pricing capabilities are the most important and potentially valuable in terms of future technology investments. These functions and processes have been augmented by the more mature technologies (predictive analytics, big data, automated portfolio management, underwriting trading platforms and GIS), as well as machine learning and sensor-based technologies.
5. Actuarial has benefited the most from predictive analytics and machine learning, while policy processing has been the focus of RPA initiatives. Product management capabilities have benefited from big data and automated portfolio management.

The value proposition for digital enablement is strong across and throughout the underwriting function. Digital is as much about culture as it is about toolsets, and underwriting organizations may have a way to go on the cultural front. For example, one reason for the limited applications and narrow use cases is that digital may lack a single unifying vision or leadership sponsor within underwriting. For the business value to be realized in a full and sustainable fashion, with broad adoption, underwriting needs to work more closely with IT and other partners to define and prioritize the use cases for these digital technologies.

Defining our terms: what digital transformation means

Digital transformation is a term now used so frequently in the insurance industry that it has come to mean different things to different people. Digital transformation is best defined as capitalizing on the power of technology to revisit business models, acquire customers in new channels and create essential user experiences.

Insurers that embrace digital capabilities can automate slow, error-prone and expensive processes for increased speed, accuracy and cost efficiency. They can integrate powerful insights into underwriting decision processes to improve the consistency of profitable risk selection. They can help deliver policyholder services through more preferred channels and intuitive experiences. And, they can support faster learning and refinement of underwriting rules as well as insight-driven product innovation. However, fully achieving the value of digital capabilities is dependent on a modern architecture for core policy, billing and claims processing, which compels replacement of these legacy systems.

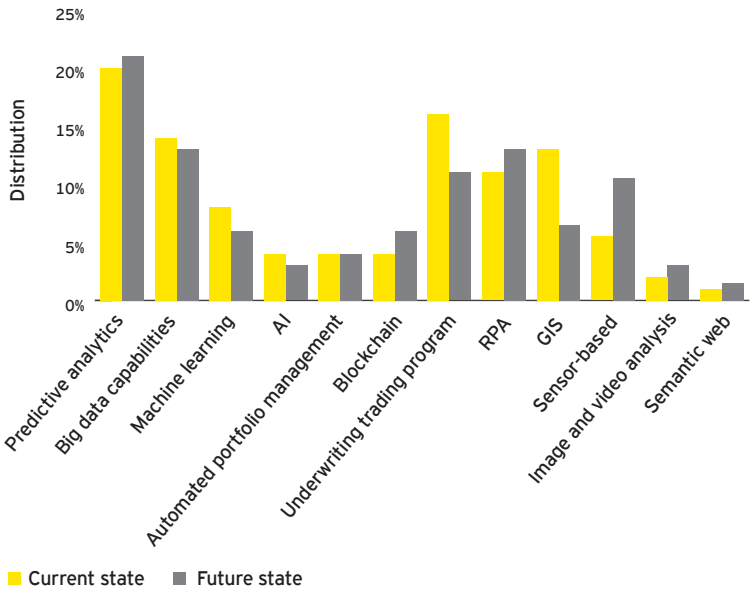
Key survey findings

1. Current and future: investments, benefits and impacts

The survey looked at 12 different technologies and found clear delineation between two tiers based on the level of adoption. Predictive analytics, big data, underwriting trading platforms, RPA and GIS are the technologies with the most activity to date. They also will remain the priority for future investments. Sensor-based technology is becoming a priority for future state investments (see Figure 1).

Figure 1

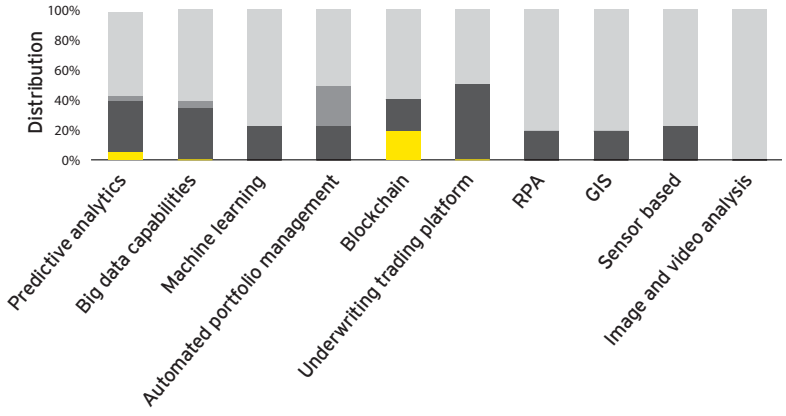
Current versus future state investments



Actual versus projected benefits: Not all participants currently are able to compare actual business benefits with the original business case for investing in new technologies. Those firms that have data on the actual versus the projected benefits generally report that their expectations have been met. In the case of predictive analytics and blockchain, the benefits actually exceeded the business case (see Figure 2).

Figure 2

Current state business case expectations



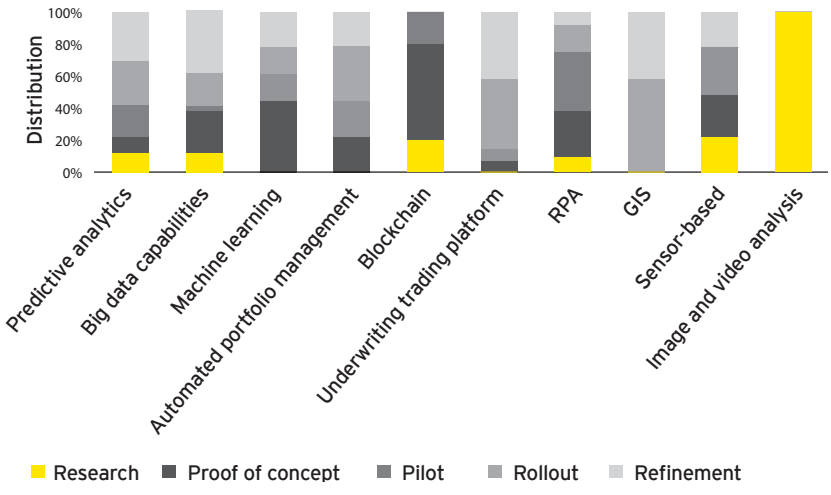
Artificial Intelligence and Semantic Web answers received no responses in this survey

The fact that some insurers are investing in technologies without having a perfectly clear or completely quantified business case suggests the industry is growing accustomed to experimentation. That is, they are making investments in the new capabilities without knowing exactly if and how they will be deployed and scaled or if those investments will pay off.

Current adoption: Half of the technologies – machine learning, artificial intelligence, blockchain, RPA, sensor-based, image and video, and semantic web – are in research, proof-of-concept or pilot phases. For the majority of respondents, predictive analytics, big data, automated portfolio management, underwriting trading platform and GIS are in rollout or refinement stages (see Figure 3).

Figure 3

Current state stage



Artificial Intelligence and Semantic Web answers received no responses in this survey

Investment focus: The technology investments are focused on specific tools, data types and capabilities.

Predictive analytics: pricing

Big data: location and demographic data

Underwriting trading platform: underwriting workstation, policy administration systems and agent portals

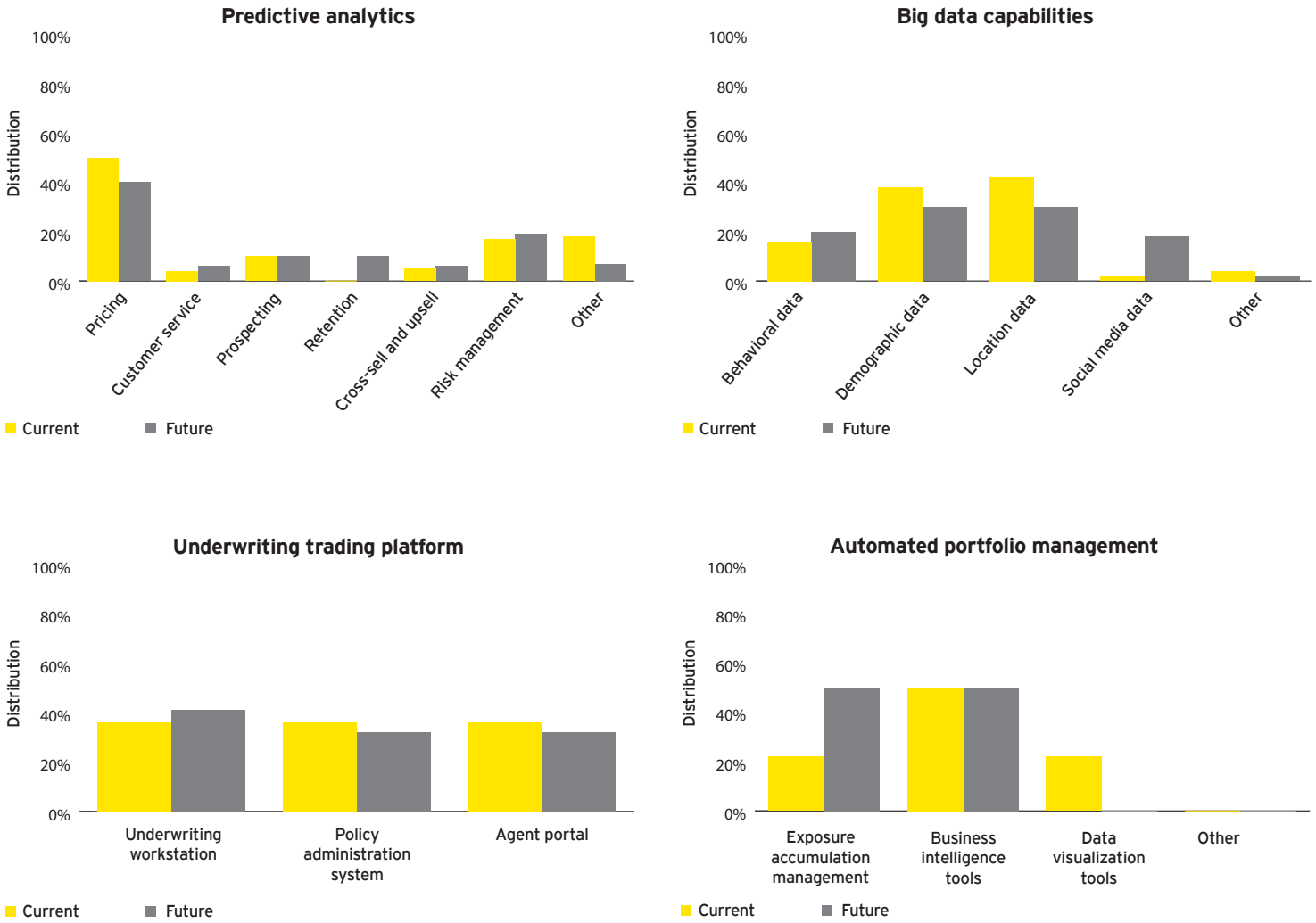
Automated portfolio management: business intelligence tools and exposure accumulation management

It's worth noting that all types of insurers in the survey balanced investments in these technologies across the segments, with the exception of automated portfolio management, RPA and sensor based, all of which make up a higher investment priority for the middle market segment.

Insurers are using a variety of partners for implementing technology solutions, though there has been very limited engagement with InsurTech firms to date.

Looking ahead, some of these priorities will shift and expand. For instance, while pricing will remain a primary focus of predictive analytics investments, market-facing analytical models will increase in importance. Similarly, in the big data realm, behavioral data and social media data will see increased activity in future investment, along with a continued focus on demographic and location data *(see Figure 4)*.

Figure 4



Other notable shifts in investment focus areas include:

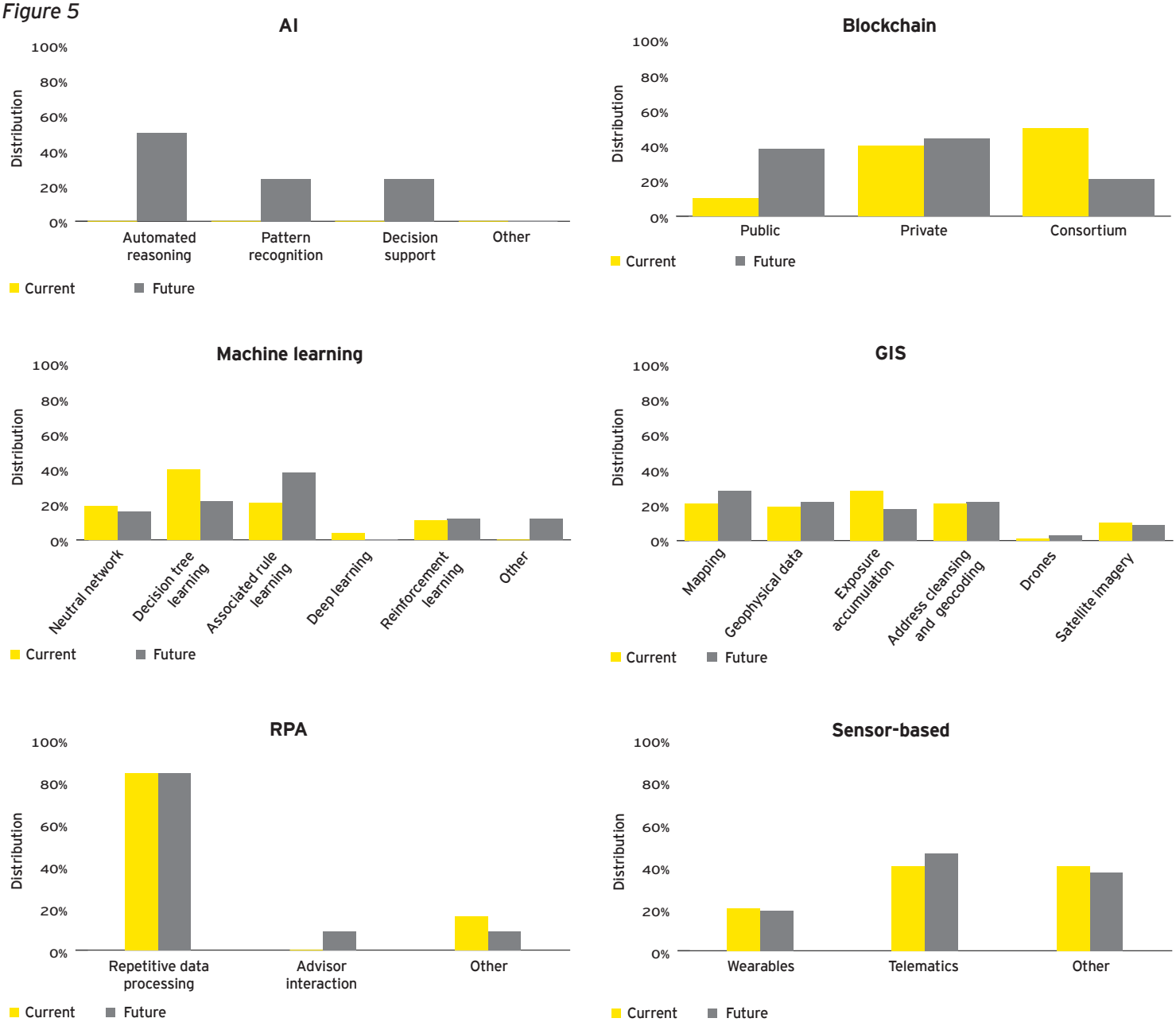
Machine learning: *shift from decision tree learning to associated rule learning*

AI: *primary focus on automated reasoning as investments expand*

Blockchain: *move from consortium to more public and private*

For GIS, the focus on mapping, geophysical, exposure accumulation and address standardization largely will continue. RPA investments have been, and will continue to be, almost completely focused on repetitive data processing. The use of telematics, which has dominated sensor-based investments to date, will remain the focus *(see Figure 5)*.

Figure 5



Functional impacts:

The impact of new technologies is being felt across the underwriting function at every level (see Figure 6).

To date, underwriting and pricing capabilities have been most impacted by the more mature technologies (predictive analytics, big data, automated portfolio management, underwriting trading platforms and GIS), as well as machine learning and sensor-based technologies. RPA will have an increasing impact in the future.

Actuarial has benefited the most from predictive analytics and machine learning, with expected future benefits from automated portfolio management. Policy processing has been the focus of RPA investments, and will continue to be in the future. Product management capabilities have benefited from big data and automated portfolio management.

Loss control expects to benefit from future investments in blockchain and sensor-based technologies. Future investments in big data are likely to show an increased focus on sales, service and distribution. Those functions will benefit broadly from expanding investments in both mature and emerging technologies.

Figure 6

Distribution key:

>15%

10%–15%

Current state capability area heat map

Current state capability areas	Predictive analytics	Big data capabilities	Machine learning	Artificial intelligence	Automated portfolio management	Blockchain	Underwriting trading platform	RPA	GIS	Sensor-based	Image and video analysis	Semantic web
Distribution	13%	7%	15%	0%	14%	7%	12%	18%	4%	9%	0%	0%
Sales and service	8%	5%	5%	0%	7%	7%	12%	14%	4%	0%	0%	0%
Product management	12%	17%	10%	0%	21%	7%	12%	0%	11%	18%	50%	0%
Loss control	7%	10%	5%	0%	0%	7%	5%	5%	11%	9%	0%	0%
Third-party data and collection	9%	5%	0%	0%	7%	13%	3%	5%	7%	18%	0%	0%
Work and task management	2%	5%	10%	0%	7%	20%	11%	14%	0%	0%	0%	0%
Policy processing	6%	7%	10%	0%	7%	13%	15%	32%	7%	0%	0%	0%
Actuarial	18%	15%	20%	0%	14%	7%	5%	5%	14%	9%	0%	0%
Knowledge management	1%	0%	0%	0%	0%	0%	4%	0%	4%	9%	0%	0%
Underwriting and pricing	25%	29%	25%	0%	21%	20%	20%	9%	39%	27%	50%	0%

Key benefits:

Predictive analytics, big data, automated portfolio management, underwriting trading platforms and sensor-based technologies have driven tangible benefits in loss ratio, net account growth, existing premium growth, productivity and expense reduction. Increased customer retention and improved customer journeys are most influenced by automated portfolio management, underwriting trading platforms and sensor-based technologies (see Figure 7).

Looking ahead, the path to increased value is clear to survey respondents. Future investments in both mature and newer technologies are expected to bring additional benefits in loss ratio, new account growth, customer retention and the customer journey. Productivity improvements are expected with RPA and image and video investments. Artificial intelligence, blockchain and semantic web future investments will bring benefits in the areas of loss ratio, net account growth and customer retention. Interestingly, a full 82% of respondents indicate that future investments in underwriting trading platforms already have a business case (see Figure 8).

Figure 7

Distribution key for benefits:

>15%

10%–15%

Current state benefits

Current state benefits		Predictive analytics	Big data capabilities	Machine learning	Artificial intelligence	Automated portfolio management	Blockchain	Underwriting trading platform	RPA	GIS	Sensor based	Image and Video analysis	Semantic web
Loss ratio improvements	1-3 points	26%	25%	13%	0%	50%	0%	31%	9%	9%	25%	0%	0%
	4-6 points	11%	0%	13%	0%	0%	0%	6%	18%	9%	0%	0%	0%
	7-10 points	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	>10 points	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Data not available	56%	75%	75%	0%	50%	100%	63%	73%	82%	75%	100%	0%
Net account growth	1%-5%	29%	23%	22%	0%	40%	0%	35%	8%	8%	20%	0%	0%
	6%-10%	11%	8%	11%	0%	0%	0%	6%	8%	0%	0%	0%	0%
	11%-15%	0%	0%	0%	0%	0%	0%	6%	0%	0%	0%	0%	0%
	16%-20%	0%	0%	0%	0%	0%	0%	6%	0%	0%	0%	0%	0%
	>20%	4%	8%	11%	0%	20%	17%	6%	8%	8%	20%	50%	0%
	Data not available	57%	62%	56%	0%	40%	83%	41%	75%	83%	60%	50%	0%
Existing premium growth	1-3 points	21%	31%	11%	0%	20%	0%	27%	17%	0%	20%	0%	0%
	4-6 points	14%	0%	11%	0%	0%	0%	20%	0%	0%	0%	0%	0%
	7-10 points	0%	0%	0%	0%	20%	0%	0%	0%	0%	0%	0%	0%
	>10 points	4%	8%	11%	0%	20%	17%	7%	8%	8%	20%	50%	0%
	Data not available	61%	62%	67%	0%	40%	83%	47%	75%	92%	60%	50%	0%
Productivity improvement	1%-5%	14%	15%	22%	0%	20%	0%	18%	25%	17%	20%	0%	0%
	6%-10%	18%	8%	11%	0%	0%	0%	18%	0%	0%	0%	0%	0%
	11%-15%	4%	0%	0%	0%	20%	0%	0%	0%	0%	0%	0%	0%
	16%-20%	4%	0%	0%	0%	0%	0%	18%	0%	0%	0%	0%	0%
	21%-25%	0%	0%	0%	0%	0%	0%	0%	17%	0%	0%	0%	0%
	>25%	4%	8%	11%	0%	20%	17%	6%	8%	8%	20%	50%	0%
	Data not available	57%	69%	56%	0%	40%	83%	41%	50%	75%	60%	50%	0%
Expense reduction	1-3 points	26%	17%	25%	0%	25%	0%	38%	27%	9%	25%	0%	0%
	4-6 points	4%	8%	0%	0%	0%	0%	6%	0%	0%	0%	0%	0%
	7-10 points	0%	0%	0%	0%	25%	0%	0%	9%	0%	0%	0%	0%
	>10 points	0%	0%	0%	0%	0%	0%	6%	9%	0%	0%	0%	0%
	Data not available	70%	75%	75%	0%	50%	100%	50%	55%	91%	75%	100%	0%
Customer retention	<80%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
	80%-85%	15%	0%	0%	0%	0%	0%	13%	0%	0%	0%	0%	0%
	86%-90%	19%	17%	25%	0%	25%	0%	19%	18%	0%	25%	0%	0%
	91%-95%	7%	8%	13%	0%	25%	0%	6%	0%	9%	0%	0%	0%
	96%-100%	0%	0%	0%	0%	0%	0%	6%	9%	0%	0%	0%	0%
	Data not available	59%	75%	63%	0%	50%	100%	56%	64%	91%	75%	100%	0%
Improvement in customer journey	High impact	19%	17%	13%	0%	50%	0%	38%	9%	0%	50%	0%	0%
	Medium impact	26%	17%	25%	0%	0%	20%	19%	45%	9%	0%	0%	0%
	Low impact	11%	33%	0%	0%	50%	0%	6%	9%	9%	0%	0%	0%
	N/A	44%	33%	63%	0%	0%	80%	38%	36%	82%	50%	100%	0%

Figure 8

Distribution key for benefits:

>15%

10%–15%

Future state benefits

Future state benefit and business case		Predictive analytics	Big data capabilities	Machine learning	AI	Automated portfolio management	Blockchain	Underwriting trading platform	RPA	GIS	Sensor-based	Image and video analysis	Semantic web
Benefits	Loss ratio improvements	19%	21%	33%	15%	27%	11%	16%	7%	31%	44%	33%	25%
	New account growth	17%	19%	22%	15%	18%	11%	21%	7%	19%	11%	0%	25%
	Existing premium growth	12%	14%	0%	15%	0%	11%	7%	4%	6%	6%	0%	25%
	Productivity improvement	13%	12%	11%	8%	18%	33%	12%	26%	13%	0%	0%	0%
	Expense reduction	13%	12%	11%	15%	9%	11%	14%	26%	13%	0%	33%	0%
	Customer retention	14%	16%	11%	15%	18%	0%	14%	11%	0%	11%	0%	25%
	Improvement in customer journey	11%	7%	11%	15%	9%	22%	16%	19%	19%	28%	33%	0%
Business case for investment	Yes	37%	17%	25%	0%	33%	20%	**82%**	36%	29%	25%	0%	0%
	No	63%	83%	75%	100%	67%	80%	18%	64%	71%	75%	100%	100%

2. Resource planning: the underwriting skill set

The multifaceted nature of the underwriter's job will continue to be important and only grow more diverse in terms of roles and responsibilities. Thus, it is not surprising to see survey respondents highlight a wide range of skills as important or very important. (see "The underwriter of the future.")

Consider how hiring and recruiting programs look beyond knowledge about product types and market segments to include skills in the realms of analytics and decision science. The majority of insurers are hiring millennials and Generation Y (individuals born between the early 1980s to the late 1990s), primarily from universities and other insurers. Training programs also focus on a combination of product, segments and decision science, with on-the-job learning as an important component.

The underwriter of the future

Leading insurers — and the community of professional underwriters — have embraced a vision for future underwriting that involves expanded roles and a focus on higher-value activities that go far beyond the traditional focus on risk evaluation and selection. As highlighted in previous thought leadership from EY, respondents to the Digital Underwriting Survey shared their ideas about how both the art and science of underwriting are evolving in four specific roles.

- **Sales executives:** growing the book of business, increasing retention rates, building relationships, lead generation and prospecting
- **Data scientists:** data-driven decision-making at the account and portfolio levels, risk insight, profitability analysis, predictive modeling for pricing and risk evaluation
- **Customer advocates:** improving the customer and agent experience, coordinating account services (loss control, claims, education) to strengthen customer loyalty and improve risk performance
- **Innovators:** creative problem solving, new product and service development

3. The broker perspective

Brokers serving the middle market commercial, large commercial and specialty sectors also participated in the survey. Brokers believe insurers are investing most in predictive analytics, big data, underwriting trading platforms, GIS and sensor-based technologies. Brokers perceive insurers to be making more investments in big data and sensor-based technology than insurers indicate they are making. Conversely, broker responses indicate less investment in predictive analytics than the insurers' responses.

In terms of the benefits of these investments, brokers believe big data and underwriting trading platforms deliver the greatest benefits across the board. They see both mature (predictive analytics and big data) and newer technologies (machine learning, RPA, sensors) driving expense reduction benefits. In this sense, there is greater alignment of *why* insurers are investing, rather than *how much* they are investing in each technology.

Future capabilities and benefits: Brokers value market-facing capabilities (distribution, sales and service), as well as product management, third-party data, and underwriting and pricing capabilities for future technology investments. Insurers and brokers are aligned around underwriting and pricing as the most important capabilities to be enabled by both mature and emerging technologies.

In terms of benefits, brokers emphasize new account growth, customer retention and customer journey as the most important benefit areas, though they acknowledge the importance of productivity improvement and expense reduction (see Figure 9).

Figure 9

Broker current state technology benefit perspective

		Predictive analytics	Big data capabilities	Machine learning	AI	Automated portfolio management	Block-chain	Underwriting trading platform	RPA	GIS	Sensor based	Image and video analysis	Semantic web
1	Loss ratio improvements	●	●			●							
2	Net account growth		●					●					●
3	Existing premium growth							●					
4	Productivity improvement		●					●	●				
5	Expense reduction	●	●	●					●		●		
6	Customer retention		●					●		●			
7	Customer journey		●					●					

The future of underwriting is now

The rapid maturation of digital technologies has transformed and disrupted a broad range of industries and it is well known that the insurance sector has been slow to develop the types of agile capabilities and rich experiences that today's consumers expect. The EY Digital Underwriting Survey underscores both the importance and urgency of digital transformation within this essential insurance function.

As highlighted by the survey results, underwriting stands to benefit greatly from this digital transformation, especially when digital enablement is combined with the modernization of the knowledge, skill set and roles of underwriting professionals. While the underwriting community has been enthusiastic in embracing EY's vision of the underwriter of the future, it is increasingly clear that the future already is here for many insurers.

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