

Insurance 2020: Are Actuaries being replaced by algorithms?

Will processing power and big data replace floors of Asian actuaries in HK/China sooner than we think?



The emergence of sophisticated algorithms is fundamentally changing how insurance is priced and sold. The role of the actuary needs to adapt to these changes as demands on insurers keep pace with consumer expectations.

With the proliferation of data and a smarter, interconnected world, specifically in Asia; actuaries should embrace the paradigm shift of digital which will allow insurers to offer products more tailored to customer needs, applying self-learning algorithms which adapt in-step with human interactions.

Macro drivers of change in the insurance industry

Clients are using our Insurance 2020 guidance to help them judge the implications of specific trends for their particular organizations and determine the strategies needed to respond. The central message from Insurance 2020 is that whatever organizations are doing in the short term – be this dealing with market instability or just going about day-to-day business – they need to be looking at how to keep pace with the sweeping Social, Technological, Economic, Environmental and Political (STEEP) developments ahead. We foresee changes in technology, social and economic drivers in Asia in the near term, disrupting the current approach to pricing and sales of insurance.

Social

Customer Behaviors

- Social Networking
- Customer Expectations
- Risk Awareness
- Health

Demographic Shifts

- Changing Middle Class
- New Family Structure
- Dependency Ratio
- Ageing

Talent Drain

Stakeholder Trust

Corporate Social Responsibility

Economic

Urbanization

New Growth Opportunities

Fiscal Pressure

Inflation/Deflation

Risk Sharing & Transfer

Social Security & Benefits

Distributor Shift

Partnerships

Environmental

Climate Change & Catastrophes

Sustainability

Pollution

Political

Regulatory Reform

Geo-political Risk

Rise of State-Directed Capitalism

Terrorism

Tax Treatment

Sharia Compliance (Takaful)

Technological

Information & Analytics

Devices & Sensors

Software & Applications

Medical Advances

Further analysis of technology, social and economic drivers

The two technology areas we see significant change in are organisations adoption of information and analytics, along with developments in devices and sensors. By 2018, it is anticipated China will have over a quarter of the world's total 2.5 billion smartphones¹. Specifically this will enable a significant amount of data capture and changes to the way we interact, and organisations that use this information effectively will stand to gain over their competitors.

Expectations of consumers are also rising across the world, but this even more-so true for Asia. The population here have adapted more to mobile (bypassing broadband adoption), embrace social networking and alternate forms of media, and are certainly more trustworthy in terms of willingness to provide customer data if they foresee a tailored offering for them. PwC's "Mobile advertising: What do consumers want?" analysis (2014) found that 59% of Chinese consumers would be willing to share personal data for more targeted specific ads, more than double both the US (27%) and UK (26%).

Economic factors to be cognisant of are demographic shifts and urbanisation. In 1800, 2% of the world's population lived in cities. Today, it is over 50%. Over the next decade, New York, Beijing, Shanghai and London alone will need US\$8 trillion in infrastructure investments. The numbers living in urban slums have risen by a third since 1990. Cities occupy 0.5% of the world's surface, but consume 75% of its resources. This continues to fundamentally change the insurance market and drives access to information and data capture which allow insurers to adequately price the risks which they take on.

Connected devices

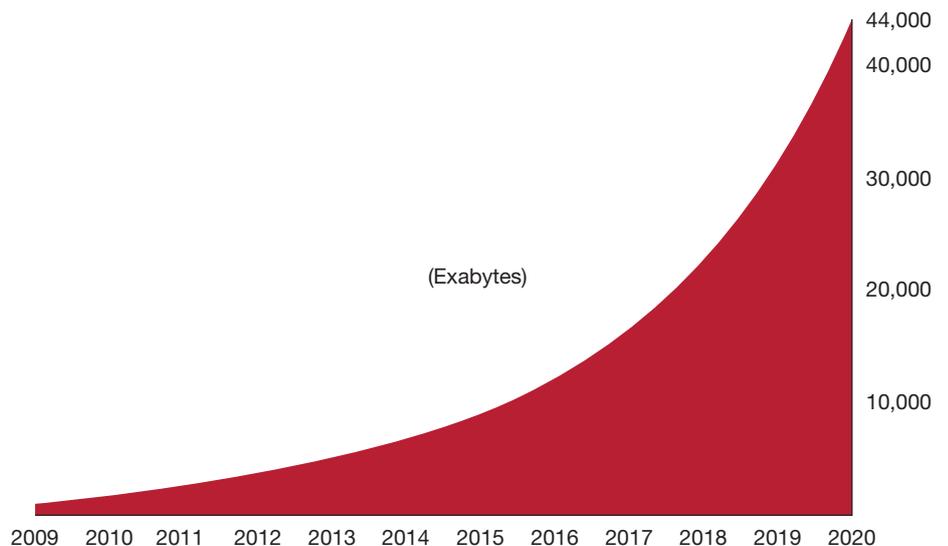
Strategic implications of a more connected world and increase in data collected

The world is evolving with emergence of smart objects, popularised by 'the internet of things' network of electronics, software and sensor – we're moving to a more connected, and more interactive environment. Cities, buildings, transport, health, industry, energy usage and leisure will all interact, and resources will be allocated effectively in this global connected marketplace.

Volume of data being produced

By end of 2020 the digital universe will be 44,000 exabytes, a 50-fold increase since the start of 2010². Whilst not all of this data is useful – insurance companies need an approach to analysing the portions that are, and bringing forth the insights and analysis which help drive business outcomes. We are already seeing emergence of such approaches through application of cognitive computing and further development of products in the machine learning space.

Digital universe: 50-fold growth from 2010 through end of 2020



Source: IDC – The Digital Universe of Opportunities: Rich Data and the Increasing Value of the Internet of Things (2014)

In recent time, HP has developed software called Autonomy which processes unstructured human information and synthesises into purpose built market offerings which help drive greater value through information and analytics. Similarly, IBM Watson has applied comparable approaches and natural language processing to make significant developments in the health space with millions benefiting from the fact that "evidence-based medicine is used less than 55% of the time when it comes to treating patients"³

¹ source: eMarketer, December 2014

² source: IDC – The Digital Universe of Opportunities: Rich Data and the Increasing Value of the Internet of Things, April 2014

³ source: The Atlantic, May 2013

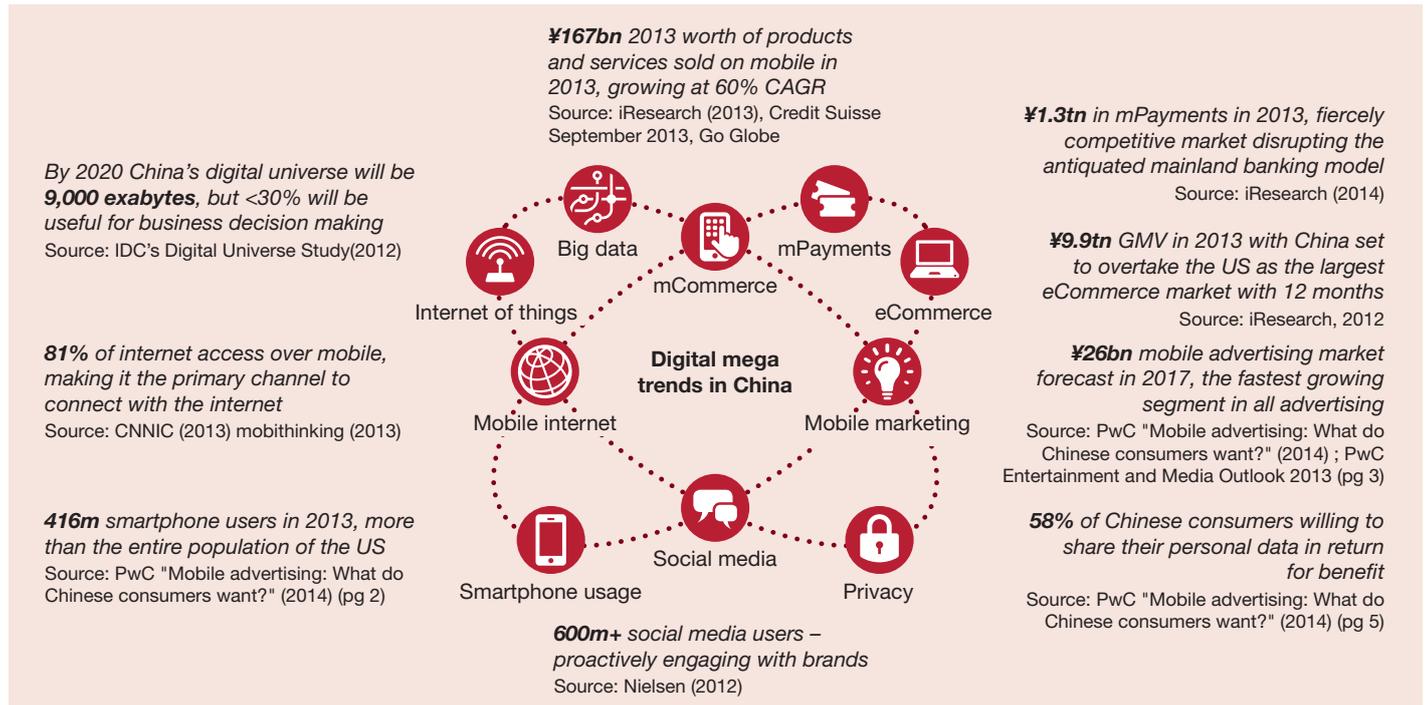
Sensors and self-learning algorithms to help understand customer needs

Digital innovation has been the catalyst for this customer revolution, but it can also offer the opportunity to develop the sharper customer engagement, insight and experience needed to meet these more exacting demands. Most insurers

are still primarily focused on e-commerce – doing what they do already – but, digitally. The leaders are developing deeper, more personal and longer lasting relationships by using their digital capabilities to gain an enhanced knowledge of their customers (e.g. through sensor technologies) and harnessing that information to profile

customers more effectively, fine tune underwriting and deliver customised solutions. The competitive benefits include being able to move away from simply competing on price, while more effectively controlling risks and matching the experience being offered by the entrants targeting their sector.

The rise of the China ‘super-consumer’



Tailored customer products which are needs based

Customers are expecting more from their insurers, choice has never been easier, consumers are more connected via social and mobile, and there is more data available so they are more informed.

Organisations that stand to gain in the insurance industry are those who understand customer needs, can tailor their product offerings, and effectively transform their service models to engage with customers through their preferred channel at the customers preferred time.

This will involve the emergence of new needs based products for consumers to mitigate against smaller incremental risks specific to their stage of life and/or individual circumstance.

Significant increase in the micro product space

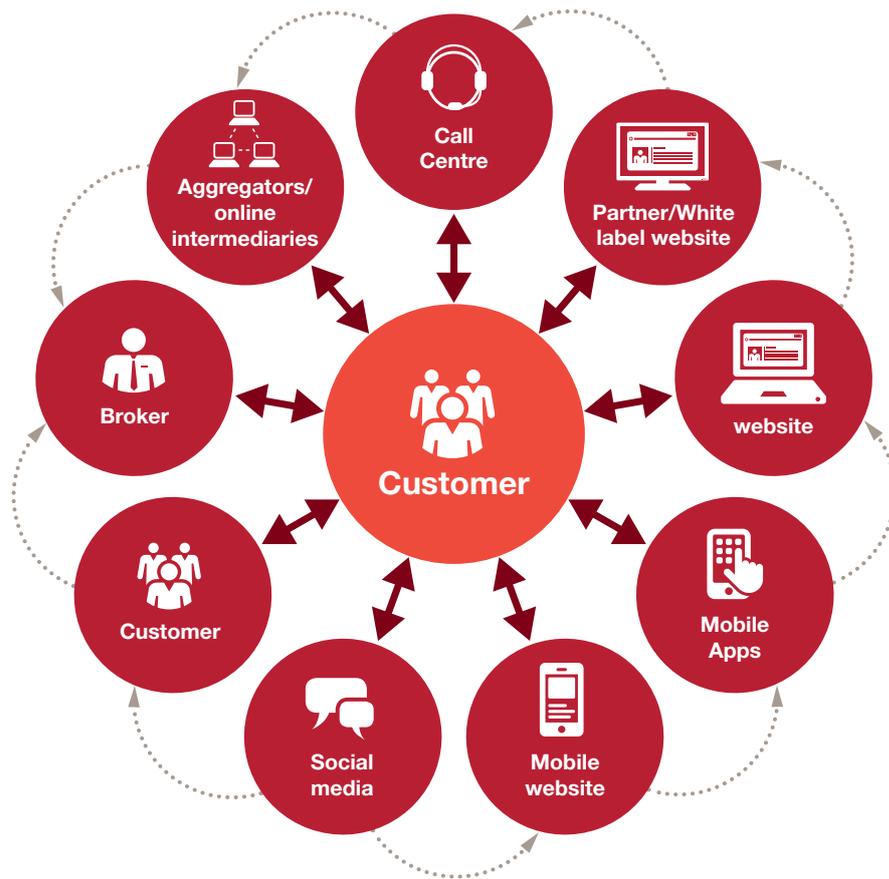
Where digital profiling and interaction can create real value is in enabling customers to understand how much risk they're exposed to and how much of this they want to be protected or insured against. The results are more carefully targeted and tailored policies capable of responding to each customer's particular risk profile, risk appetite and financial budget.

Examples include offering insurance for single journeys or lower premiums for people in higher or better protected homes in otherwise high-risk flood plains. In auto, we anticipate a lower number of crashes with the emergence of self-driving cars, lowering auto insurance premiums, and transfer of risk from driver fault to product warranty insurance. These risks will require a

more flexible pricing schedule, and more tailored offerings depending on reliability of manufacturer, consumer driving habits, lifestyle, city and connectedness of individual (sensors).

Need for real time risk pricing models

There is an ever growing need for real-time risk pricing models. Consumers are demanding it, and insurers who can provide such flexibility will see their market share increase. Practices of employees currently compiling reports for quarterly provisioning reviews will be too slow to respond to the market, and organisations need to adapt to real-time risk pricing 'in-the-moment' using self-learning techniques to keep pace with consumer requirements. Such algorithms will replace archaic manual handling and reporting in the near term.



How do organisations prepare?

Invest in new/emerging methods of data capture

Identify and actively pursue new methods of data capture. Examples of such are fitting sensors to cars for auto insurance, as well as digitising healthcare with the advent of wearable and smart pill technologies. Tracking sensors have already paved the way for the development of ‘pay as you go’ motor cover, which matches the premium to how much the car is used. This is now giving way to a more risk-sensitive ‘pay how you drive’ model, which allows insurers to judge how well the policyholder drives and reflect this in their pricing.

In China we have already seen some good examples outside of the insurance space of organisations adopting social media, smart phone, and digital technologies to achieve a number of business objectives. Such examples include China Merchant bank which launched “CMB Micro-customer

Service” which integrates their bank and WeChat accounts and NBA China (Basketball) which attracts over 75 million unique visitors to their tencent site/s monthly.

Embrace data lake technologies

Traditionally companies have invested in enterprise data warehouses and data/analytics marts. With the proliferation of data capture at an ever increasing rate, organisations who can apply self-learning algorithms straight to source (i.e. running off each of operational data sources (finance, customer), social and sensor – for example Hadoop) will adopt best use of BI and analytics from all available data to inform and influence decision makers.

Drive a culture of innovation

Harness and invest in a culture of innovation. Insurers must be able to use new ideas to reform and change their

business models, removing complexity on a constant basis. Adoption of digital should also be high by insurers, using social and digital media to influence their outlook on environment and risk assessment.

In this article, we have discussed how self-learning algorithms, along with new methods of data capture will fundamentally change the insurance industry and their current approach to actuarial valuation and risk management. We may not be able to totally replace all actuaries with sophisticated computer algorithms, as some level of oversight and governance is required, but we certainly foresee large aspects of their role will change with the proliferation of data, sensor technology, and application of cognitive computing across the industry. This will better align with consumer expectations, as the insurance industry evolves to offer needs based customer solutions.

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