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Insurance disrupted
General insurance in
a connected world



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Introducing Deloitte Digital

We are a global practice in over 28 countries. We harness our collective, local industry experience and time-tested methodologies to deliver innovative solutions to help our clients transform their customer journeys.

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Foreword

Welcome to this Deloitte report on innovation in general insurance (GI), focusing on digital technology.

Many in the industry agree that digital technology threatens general insurers. The conventional view is that innovative new entrants with business models enabled by digital technology could pick off the best parts of the value chain.

The rise of price comparison websites to a £1 billion industry is often given as the most obvious and dramatic example of digital disruption in GI.

Deloitte's previous reports on GI found evidence of the threat of disruption in general insurance. In *What makes customers tick?* Deloitte highlighted the frustrations customers can have transacting GI. In *Recruiting beyond the risk averse*, Deloitte found that insurance tends to attract people who are less keen to innovate than their peers in other sectors.

However, Deloitte's view on the potential impact of digital technology in GI is different from the conventional view: digital technology presents profound opportunities, and not just threats, for incumbent insurers.

Our findings on telematics-based insurance illustrate this view well. Telematics – technologies that send, receive or store information relating to remote objects, via telecommunication devices – give insurers the chance to reinvent themselves. For example, they can use telematics to help to customers to avoid or minimise losses in real time.

The threat for insurers is that others seize the emerging opportunities of telematics; the opportunity is that incumbent insurers with experience in telematics can enjoy a significant first-mover advantage in data and insight.

We look forward to hearing your thoughts on this report and, more broadly, the future of GI.



Rich Hurley

Partner,
Financial Services Digital Lead





Insurance, but not as you know it

The traditional nature of many general insurers' operating models means that they are threatened by digital technology across the value chain.

Traditional general insurers could be losing relevance for customers because their products and services are failing to keep pace with rapid technological development in the connected world. Two reasons stand out.

First, GI services do not provide frequent and tangible benefits, which customers increasingly expect and receive as standard from popular connected services, such as mobile navigation.

Second, GI product innovation may not be keeping up with the emergence of new risks caused by digital technology, such as cyber-attacks.

The online customer experience in GI can be poor. For example, customers can be frustrated by the amount of data they can enter when transacting GI online.

The nature of the business makes it difficult for general insurers to innovate. For example, they can lack insight into their customers because GI is a low-touch product that is often intermediated: more than half of insurance customers deal with their insurers once a year, or less often, according to some surveys.¹

General insurers can lack people with an innovative mindset. At the World Economic Forum's Financial Innovation event in December 2014, there was just one insurer out of nearly 100 companies invited.²

As a result, new entrants are springing up to innovate the traditional GI model using digital technology. For example new peer-to-peer GI networks, enabled by social media, threaten general insurers' underwriting income by encouraging customers to self-insure.

Which digital technologies have the greatest potential to disrupt GI over the next ten years? And, to what extent are digital technologies a threat to incumbent insurers?

To answer these questions Deloitte researched digital technologies that have specific applications in GI. Deloitte commissioned an online survey of 2,955 insurance customers (comprising of motor (1,424), home (877) and health (654)) to understand customers' perspectives of digital technologies and, therefore, which applications could have high take-up.



The nine killer applications of digital technology in general insurance

This research has identified nine applications of digital technology – the nine killer applications of GI – that could have the greatest potential to disrupt or change GI over the next ten years.

The nine killer applications (see appendix) were identified on the basis that they have the following characteristics:

- high potential demand among customers
- high potential impact on the bottom line
- lack of regulatory barriers
- technologically possible today.

The nine killer applications are set out in Figure 1 below, which is intended to give an indication of when, and how big, their impact could be.

Our focus on these killer applications is highly selective. We have excluded digital technologies likely to disrupt many other sectors in addition to GI, such as analytics. Our focus also excludes major potential disruptions that lack an obvious technology angle, such as the flow of capital from capital markets into the insurance industry.

This section explores why the nine killer applications have great potential to disrupt GI, and the opportunities and threats they pose for insurers.

Figure 1. The nine killer applications of digital technology in General Insurance



Source: Deloitte



1. Telematics-based services

Telematics technology enables telematics-based insurance. It allows a flow of data from connected devices to insurers who use this data for risk assessment and pricing; the customer receives the chance for a premium discount and other benefits, such as assistance in an emergency. Telematics-based motor insurance is available from many insurers in Europe and has been available for over a decade; telematics-based health and home insurance have recently emerged and are available from a smaller number of European insurers.^{3,4}

Telematics-based insurance is a popular concept: over a third of health, home and motor insurance customers surveyed by Deloitte are willing to track their behaviour and share this data with insurers in return for a more accurate premium (see Figure 2).

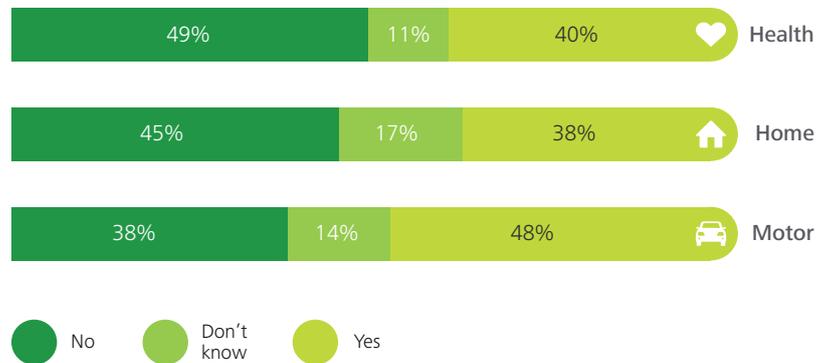
One trend driving up the adoption of telematics-based insurance is an increasing willingness to share data with insurers. Young customers are more willing to share their data with insurers than older customers, perhaps because they are more digitally-savvy. According to the Deloitte survey, 63 per cent of customers in the 25-34 age bracket are willing to share their data with home insurers in return for a more accurate premium, compared with 38 per cent of all customers (see survey methodology on page 13).

In the UK, telematics-based motor insurance has been available for more than a decade.⁵ However, less than five per cent of customers have it.⁶ Why do so few customers buy telematics-based insurance when many more appear to want it?

One of the main reasons for low take up of telematics-based insurance is the meagre savings on offer among mainstream users. However, in customer segments where telematics-based insurance offers large savings, such as young UK drivers, it is much more popular. By April 2015, the average car insurance premium for 17 year olds (£1,901) was over three times the average for all policy holders (£591).⁷ As a result, UK motor insurance customers aged 18-24 are 1.7 times more likely than average to have telematics-based insurance.⁸

Telematics-based insurance appears unlikely to win many more customers in its current form, i.e. offering only the possibility of a lower premium. However, telematics has great potential to disrupt GI if it facilitates new connected services. Two types of new connected service stand out for their potential to win customers.

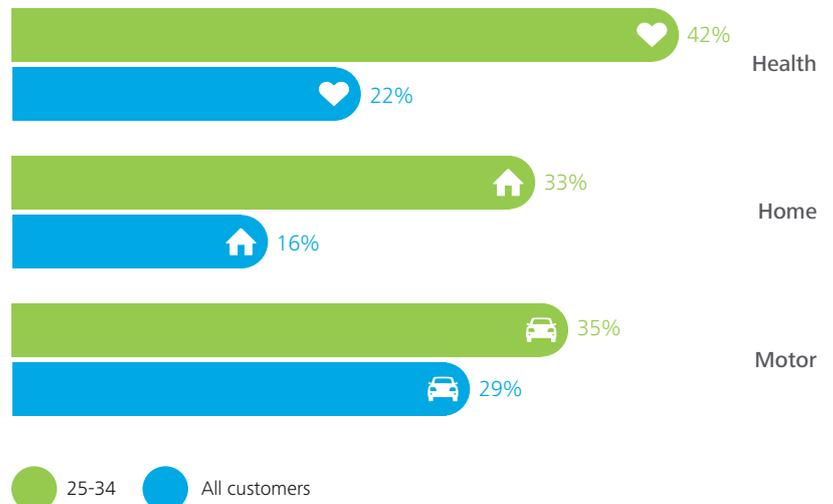
Figure 2. Proportion of customers who would be willing to track their behaviour and share this data with insurers for a more accurate premium



Source: Deloitte/YouGov 2-7 April 2015

Sample: Health (654); home (877); motor (1,424)

Figure 3. Proportion of customers who would like a service that detects potential issues or problems and provides assistance by age



Source: Deloitte/YouGov 2-7 April 2015

Sample: Health 25-34 (38) all (654); home 25-34 (46) all (877); motor 25-34 (108) all (1,424) (see survey methodology)

First, telematics could provide people with information they really want. For example, telematics could tell environmentally-friendly people how to reduce their carbon footprints by driving differently.⁹ Others might like to know how they can minimise risk, either by the way that they drive, or by choosing routes where the environment is safer. Taken in aggregate, it is likely that there are many people with information requirements that could be met by a single, customisable telematics platform.

Second, telematics can help people avoid or minimise losses. For example, telematics gives home insurance customers the ability to limit damage from a leaking water pipe by shutting off the leak from a smartphone.¹⁰ Many people want these services at the moment, and many more could do so in future (see Figure 3).

New connected services are a huge opportunity for insurers. They represent a chance for insurers to become more relevant in a world of digital technology where, in contrast to insurance, popular services provide frequent and tangible benefits, for example mobile navigation apps.

Insurers that develop new connected services first will have a first-mover advantage for two main reasons. First, these insurers will build up data, and experience of converting data into insight, faster than their peers. Second, first-movers could enjoy the benefits of network effects: the more people use their services, the better they become for new customers.

Original Equipment Manufacturers (OEMs), such as car makers and technology companies, have advantages over insurers in providing new connected services, for example lower costs to install telematics technology. These players, rather than insurers, could capture the emerging opportunities of telematics. For now, customers have no clear favourites to provide them with new connected services. The top three selections in the Deloitte survey for provider of a connected service to manage motor risk were narrowly separated: insurer (44 per cent), car manufacturer (37 per cent) and roadside assistance company (34 per cent).



2. Self-driving car insurance

Multiple technologies enable self-driving cars. Perhaps the most important three are artificial intelligence (AI), which enables self-driving cars to make driving decisions, and sensors and connectivity, which combined gather and transmit information for decision-making.

OEMs are developing self-driving cars rapidly. For example, in April 2014, Google announced that its self-driving cars had driven nearly 700,000 autonomous miles.¹¹ OEMs suggest that they could launch self-driving cars within four to eight years.

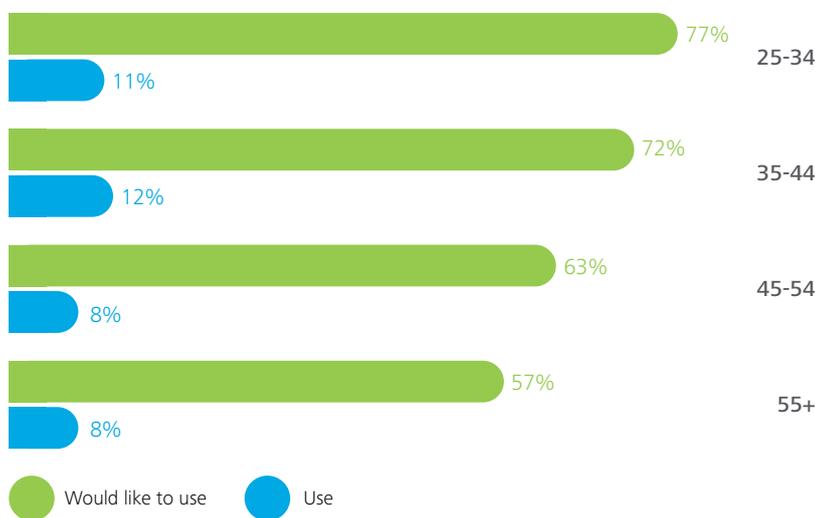
Implementing an ecosystem that would allow self-driving cars to be introduced on public roads would be complex and time-consuming. For example, it would require a high degree of cooperation between government and companies from different sectors. The potential timing of such an ecosystem is highly uncertain. Nonetheless, given the rapid pace of technological development, Deloitte estimates that by 2025 up to half of the cars on the roads will be 'smart' and therefore could be safer than older cars (see appendix for more information on this estimate).

There will be a transition to a more complicated world in which there are many smart, but also older, cars on the roads. Over the next ten years self-driving cars will make the motor risk pool more heterogeneous and complicated due to the interplay of three factors.

- **Self-driving cars could be safer than human drivers**
Most obviously, self-driving mechanisms would not suffer from human frailties, such as becoming tired. The results of initial tests indicate that self-driving cars are indeed safer than human drivers.¹² Self-driving cars therefore have great potential to reduce car accidents: according to some estimates, human error accounts for more than 90 per cent of car accidents.¹³
- **Self-driving cars would not eliminate risk**
Even self-driving cars would not avoid certain accidents, such as those caused by environmental and human factors. Google's self-driving cars have been in 11 accidents in six years of testing. According to Google, each of these incidents was the result of human error, such as a human-driven car crashing into a self-driving car.¹⁴
- **Self-driving cars could introduce new risks**
There are many potential ways in which self-driving cars could introduce new risks, ranging from failure of the self-driving mechanism to hacking.

In the long-term, self-driving cars could shrink the motor insurance market by reducing accidents and therefore premiums. However, in the short-term, the introduction of self-driving cars and increasing complexity of the risks associated with them is an opportunity for certain insurers. Those insurers with the most sophisticated understanding of how risk could change will be likely winners. Capturing data and understanding how risk could change will be key. For now, insurers with telematics are in the best position because of the data they can capture.

Figure 4. Proportion of customers who would like to use the internet on smartphones to transact GI vs. usage of smartphones for GI transactions by age



Source: Deloitte/YouGov 2-7 April 2015

Sample: Health/home/motor combined would like to use 25-34 (188) 35-44 (358) 45-54 (510) 55+ (1,476); Health/home/motor combined use 25-34 (192) 35-44 (366) 45-54 (560) 55+ (1,826)



3. Mobile internet transactions

Smartphones and tablets allow customers to research, buy and manage (i.e. transact) general insurance online wherever and whenever they choose.

Many customers would like to use their smartphones for GI transactions. Even among customers older than 55, who are less likely to use smartphones than younger customers, well over half (57 per cent) would like to transact GI via smartphones. However, few customers use smartphones in this way (see Figure 4). What explains why so many more people would like to transact GI on smartphones than actually do?

One important reason is that many customers are happy transacting on their computers. According to the Deloitte survey, three-quarters (74 per cent) of customers are happy transacting GI on their PCs and laptops.

Smartphones give insurers the chance to improve customer experience. For example, smartphones could automate claims data submission. They could allow customers to photograph damage, wherever and whenever it occurs, and submit these photos to their insurers. This convenience would not be possible on a PC or laptop. This could dramatically improve customer satisfaction. A previous Deloitte study found that 85 per cent of GI customers who put less effort than they expected into claims were satisfied with their experience. By contrast, just 24 per cent of those who put in more effort than expected were satisfied.¹⁵

The insurers that migrate customers to smartphones most effectively, and then provide a good multichannel experience, are likely to have the most satisfied, and therefore loyal, customers. A good multichannel experience is key. Many customers may be likely to continue transacting on their PCs while speaking to insurance company staff on the telephone for more complex issues, such as claims.

New entrants could prove better than incumbent insurers at using smartphones to improve GI. New entrants can build themselves around digital technology in ways that older companies, encumbered with legacy technology, perhaps cannot. For instance Oscar, a health insurance startup, says it has built a highly customer-centric model using digital technology: among other digital services, it provides customers with an online doctor finder.¹⁶ Oscar was founded in 2013 and has already achieved annual revenue of \$200 million.¹⁷



4. Price comparison websites

Price comparison websites (PCWs) allow customers to find insurance quickly by aggregating policies from multiple insurers and listing them based on quoted price.

Usage of PCWs is lower in continental Europe than in the UK. For example, two-thirds (68 per cent) of UK motor insurance customers use PCWs compared to just over one third (38 per cent) in Germany.¹⁸ However, the trend towards using PCWs in continental Europe could accelerate markedly if tech firms, which are well placed to sell insurance as they have popular brands and know how to build appealing websites, launch PCWs for continental European markets as planned.¹⁹ Tech firms have more popular brands than PCWs.²⁰ In addition, tech firms could build PCWs that are more convenient and therefore popular than traditional PCWs. For example, Google's listing of search results for car insurance includes a tool that makes quoting via Google's own aggregator faster than on a traditional PCW.²¹

The increasing use of PCWs could commoditise some of Europe's largest markets, such as the German motor market, by making customers more price-sensitive. In a more commoditised market, low-cost insurers would likely gain market share. Scale, and other sources of efficiency, would become more important as a mechanism to compete on price. Insurers might merge to achieve greater scale. New entrants would be well placed to gain market share from incumbents in such a scenario. They can achieve lower expense ratios due to more modern systems and processes than older rivals.



5. Peer-to-peer insurance

Social media facilitates peer-to-peer insurance (P2PI) by allowing insurance customers to form online networks that share risk (see Figure 5). P2PI works by the following simplified, six-stage process:

- customers join or start their own online social networks to share risk
- members of a network pay a portion of their premium into a mutual pool
- members pay the balance of their premium to an insurer
- the mutual pool funds claims
- the insurer acts like a reinsurer funding claims that the pool cannot meet because its funds have been exhausted, and also provides services to the pool, such as policy administration
- money left in the pool at end of the year, i.e. after claims have been paid, is refunded to members or carried forward to another year, thereby generating savings for members that would have been an insurer's profit in a traditional insurance model.

Guevara is a UK P2P motor insurance network which says it saves its members up to 80 per cent on their premiums.²² Friendsurance, a German P2P network, says its property insurance members save a third on average.²³ According to the company, its members can save money in four ways.²⁴

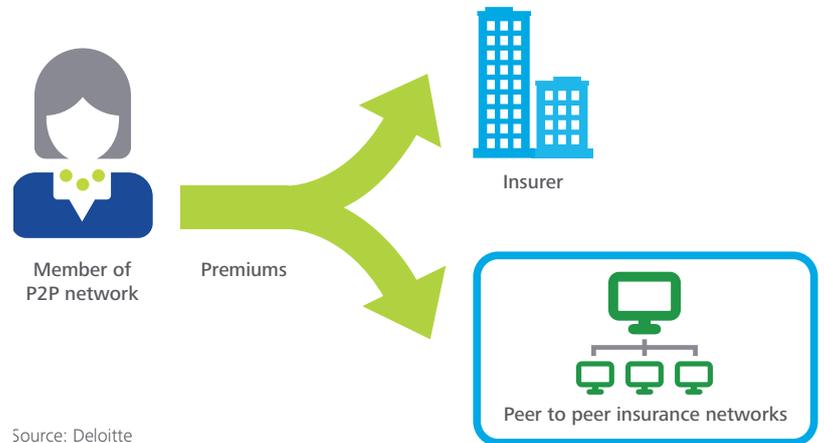
First, members are less likely to make fraudulent claims than traditional insurance customers. Making fraudulent claims risks the disapproval of fellow members and being thrown out of the network.

Second, members can select risks for their network better than insurers. Members share risk information that insurers do not have access to because it falls outside the scope of material facts, which must be disclosed.

Third, Friendsurance reckons that claims costs can be lower in P2PI than in an insurer. Members pay each other small claims, without the cost of claims handling staff.

Finally, P2PI should have lower acquisition costs than a traditional insurer because the members do the marketing. Members are incentivised to attract more members to the network. Increasing the size of a network increases its money and, therefore, the savings on offer for members.

Figure 5. Illustration of how peer-to-peer insurance works



Source: Deloitte

P2PI could win many customers due to the savings it offers. Guevara wrote over £100,000 of premium in its first two days of operation.²⁵ Friendsurance says it is growing at 20 per cent per month.²⁶

Were P2PI to win many customers it would threaten incumbent insurers: customers would switch from buying insurance from incumbents to insuring themselves in P2PI networks. In addition to shrinking the GI market, this switch would commoditise the market for traditional GI, which incumbents provide. It would lead to a reduction in demand for traditional insurance without an equivalent reduction in supply, with lower prices the outcome.

In this scenario, P2PI would also lead to adverse selection in the market for traditional insurance, with poor risks being excluded from P2PI by members vetting their networks.

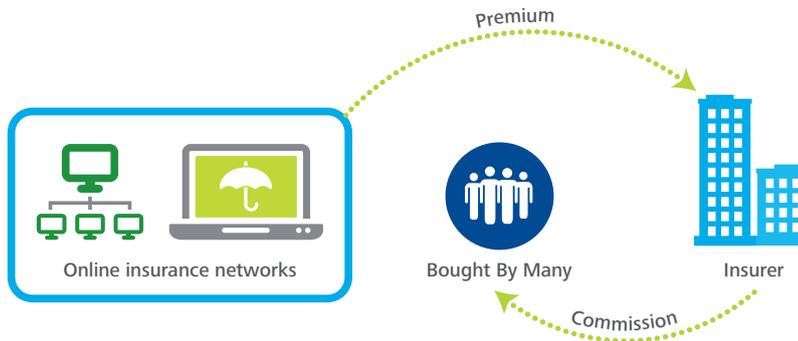


6. Social brokers

Social brokers are new type of online intermediary. Bought By Many (BBM) was the first social broker in Europe. In simplified terms, BBM works by the following three-stage process, with social media enabling the first stage (see Figure 6):

- it identifies customer segments with poorly-served insurance needs (e.g. people with heart conditions who need travel insurance), by what they say on social media (e.g. 'likes') and other online behaviour
- it groups customers with similar needs
- it negotiates insurance on behalf of groups.

Figure 6. How Bought By Many works



Source: Deloitte

Social brokers have the potential to attract many customers for two reasons. First, social brokers can offer their customers substantial savings. BBM says it saves its customers 19 per cent on average by using their collective buying power.²⁷ Second, there could be many people in customer segments with poorly served insurance needs. For example, up to one million people buy motor insurance for the first time in the UK each year. Many of these people could be poorly served because they pay higher premiums than they should. One reason is that they lack the driving history to prove their prudence. BBM had a young drivers group with over 10,000 members as of May 2015, and more than 65,000 members in total.²⁸

Social brokers represent opportunities for insurers. BBM claims its business can be more valuable to insurers than business distributed via other channels. This, says BBM, is because it can identify good risks, i.e. customers for whom insurers can provide a discount compared to the market yet still underwrite profitably.

Social brokers also imply threats to insurers. At present, social brokers are intermediaries and do not carry risk. However, it could be possible for social brokers to use their customer insight to become successful underwriters. Social brokers hold the relationship with customers, not insurers, making it harder for insurers to gain customer insight and build loyalty.



7. Cyber risk insurance

A range of digital technologies, perhaps best described under the umbrella term of connectivity, are increasing the threat from cyber-attacks.

Insurers are collecting large and increasing volumes of customer data that is stored in digital formats. This data is increasingly available; for example, it can be accessed from an ever expanding number of locations, such as mobiles/tablets, websites, the cloud and the systems of the partners insurers work with.

Customers and regulators' concerns about data security are increasing, driven in part by a greater awareness of data security issues due to recent high-profile hacking scandals.

Insurers' IT infrastructures are evolving in a way that exacerbates the potential consequences of breaches. In particular, the layering of new systems onto legacy platforms means that insurers are increasingly exposed to attacks accessing the core of their networks.

Cyber-attacks threaten insurers' customers. For example, in February 2015 the second-largest US health insurer disclosed that it had been hacked. The hack compromised sensitive personal data, including social security numbers, names and telephone numbers, belonging to approximately 80 million people.²⁹ European insurers are likely to have been the subject of numerous attacks unreported in the press.

Cyber risk insurance represents a large and under-developed market. Research commissioned by the Department for Business, Innovation and Skills showed that in the year to March 2013, 87 per cent of small firms experienced a security breach, which was up 11 percentage points on the year to March 2012.³⁰ Ninety three per cent of large organisations had also been targeted.³¹ Some attacks caused more than £1 million of damage.³² However, recent Marsh and Zurich cyber risk surveys indicate that only ten per cent of firms have cyber cover (whether as a stand-alone policy or implicit in other policies).³³



8. Sharing economy insurance

Social media facilitates the sharing economy. It allows buyers and sellers to transact in online marketplaces, such as Uber and Airbnb, both of which are growing rapidly. For example, the number of Airbnb guests more than doubled in 2013 to six million.³⁴

The sharing economy creates markets for new types of insurance. For example, those who sell services in online marketplaces could need liability cover for buyers (see Figure 7). Home Protect, a US insurer, appears to be the only insurer that covers Airbnb hosts as standard.³⁵

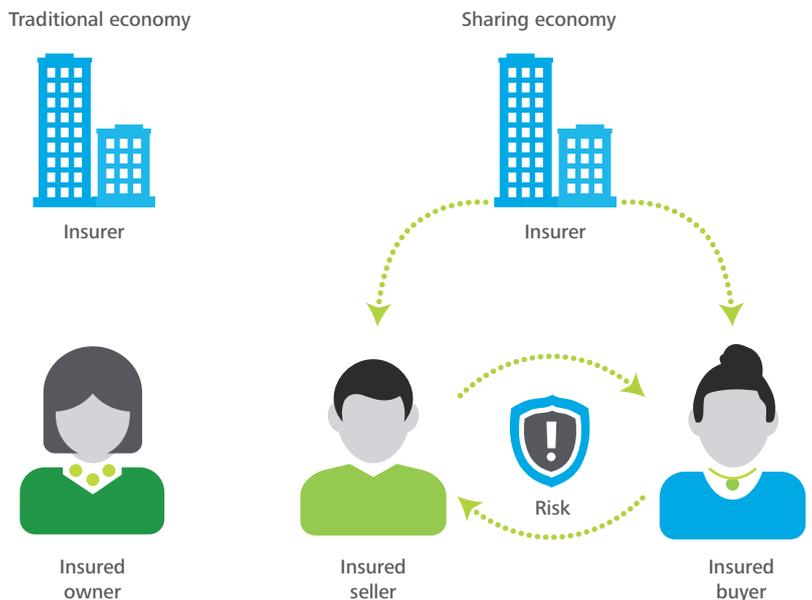
Service-users might also like to be covered in case of negligence – rather than having to go through possibly cumbersome redress processes or the expense and aggravation of legal action.

Ultimately, insurance could move from insuring people as owners of assets, as currently, to insuring people as users of assets as standard. Currently, comprehensive motor insurance does cover individuals other than the owner or named drivers. However, this ‘driving other cars’ or DOC clause is designed for emergency or irregular use only.³⁶ There is a gap in the market for those individuals who would like to be insured to drive any car. One British insurer has experimented with smartphone-based insurance for such individuals, but has not brought it to market. In such a scenario, policies that protect people from all risks – ‘omniline’ policies – could emerge. Composite insurers would be better placed than other insurers as they could offer a broader range of covers.

It is likely that VCWs have broader appeal than implied by Figure 8. Many of the customers who say they find it easy to work out the value of policies could be confusing price with value. A previous Deloitte study found evidence of behaviour.³⁷

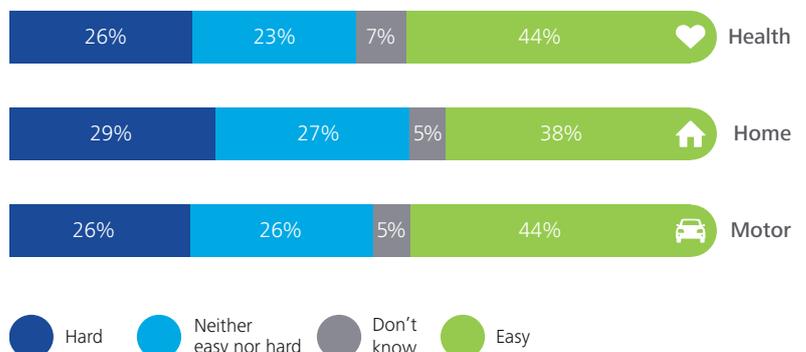
Increasing use of VCWs means that customers could develop a deeper understanding of GI products and, ideally, make better informed purchases as a result.

Figure 7. Illustration of insurance needs in the sharing economy



Source: Deloitte

Figure 8. Proportion of customers who find it difficult to work out if GI is good value for money



Source: Deloitte/YouGov 2-7 April 2015

Sample: Health (654); home (877); motor (1,424)

N.B. figures do not add up to 100% due to rounding.



9. Value comparison websites

Value comparison websites (VCWs) are a new type of online intermediary. Fluo, which was founded in 2013 to serve the French market, is the first VCW in Europe. It helps customers choose a policy based on value rather than price. It does so by listing policies based on factors that determine how well policies could meet customers’ needs, such as perils covered. In contrast, PCWs list policies based on price.

VCWs could become a major distribution channel. They could prove popular because many customers struggle to work out the value of GI policies. According to the Deloitte survey, over a quarter of health, home and motor insurance customers admit to finding it difficult to work out if GI is good value for money (see Figure 8).

Conclusions – How to respond to the nine killer applications

In the following section we outline responses insurers should consider to the nine killer applications.

Develop new telematics-based services

Digital technology gives insurers the chance to address one of the major drawbacks of GI for customers, that it is intangible absent a claim. Insurers that take this opportunity stand to win many customers. This report has outlined two examples of potentially popular new telematics-based services; there are many others that remain unexplored. Insurers can provide telematics-based services more effectively in partnership with players from other sectors than on their own. For example, home insurers can partner with utilities to obtain data for telematics-based home insurance. This can be more cost-efficient than investing in telematics technology to obtain this data directly.

Develop new products for digital risk

Cyber risk insurance represents two key opportunities for insurers. First, it is a large and under-developed market. Second, developing new cyber risk solutions gives insurers the chance to demonstrate to government, customers and other stakeholders the critical role that the industry can play in a digital society. Insurers can improve their cyber offerings through partnerships. For example, insurers can partner with experts in cyber-attack response.

Digital technology is causing structural shifts in the economy: people are increasingly transacting in online marketplaces. Insurers that start preparing for the sharing economy now can pioneer policies that would be more relevant for people who do not own assets, but instead use other people's.

Prepare now for self-driving cars

Insurers must step up their preparations for a connected world in which motor risk is more complicated: this is the likely short-to-medium-term impact of self-driving cars. Insurers should capture and analyse data that allows them to understand the potential impact of self-driving cars on motor insurance. Telematics-based insurance could therefore serve an important dual purpose: as a means to win customers now, but also, a means to understand future risks better.

Use smartphones to improve customer experience

The opportunities of smartphones remain largely untapped. There are many ways to improve GI with smartphones and this report has touched on only one, automation of claims data entry. However, the low levels of smartphone usage for GI among customers point to challenges.

Insurers must be more innovative to persuade large numbers of customers to switch from PC to smartphone transactions. Startups unencumbered by legacy technology could be the first to achieve this and reap the rewards of more satisfied, and therefore more loyal, customers.

Exploit data and analytics

The increasing use of PCWs and spread of peer-to-peer insurance suggest that tomorrow's GI markets will be more commoditised. However, insurers can use digital technology to avoid competing on price and writing unprofitable business: data and analytics have great potential to improve pricing and operational efficiency.

Strengthen defences against cyber-attacks

Insurers that take two clear actions will benefit from stronger defences against mounting cyber-attacks. First, insurers can step up their assessments of the maturity of their internal IT security. Second, they can enhance their customer data security to strike the optimal balance between improving the customer experience via digital transactions and introducing new risks, such as customer data loss.

Work with new types of intermediaries

Insurers that partner with social brokers stand to gain access to high-value niche customers who can help diversify risk. In addition, social brokers' customers could prove more loyal than customers in other distribution channels as they engage with each other in online communities.

Insurers that support adoption of VCWs will help wean customers off their tendency to buy solely on price. They can do this by developing more transparent products that lend themselves to comparison on VCWs, such as flexible products that allow customers to tailor cover to match their needs.

This research has highlighted nine applications of digital technology that have great potential to disrupt GI. A common theme is that the nine killer applications present major opportunities, and not just threats, to incumbent insurers. However, to seize these opportunities, insurers will have to think differently, be more innovative and move faster.

Appendix

Survey methodology

The online survey of 2,955 motor (1,424), home (654) and health (877) insurance customers was conducted on behalf of Deloitte by YouGov plc on 2-7 April 2015.

The statistic that 63 per cent of customers in the 25-34 age bracket are willing to share their data with home insurers for a more accurate premium is based on a sample of 46. Due to the small sample, it is an indication of customer views that is not statistically reliable.

In Figure 3, the proportions of health and home insurance customers aged 25-34 are based on samples of 38 and 46 respectively. Due to the small samples, these data points are indications of customer views that are not statistically reliable.

Definition of killer applications

The definition of killer applications in this report is uses of digital technology with great potential to change General Insurance.

Estimate of proportion of smart cars in 2025

The definition of smart cars in this estimate is semi-autonomous vehicles. It includes vehicles that have sensing, communicating and decision-making capabilities that enhance safety on the road, e.g. braking assistance, collision avoidance, lane recognition. The definition of smart cars is not limited to self-driving cars. The estimate is based on the rate of new car model release, adoption and fleet churn in the UK.

Endnotes

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