



The second category involves Technology which has supported more complex products and pricing; it has enabled consumers to have access to detailed information relating to products and has made selling across multiple channels possible. Technology has the distinct traits of being fast-paced and disruptive!

### Disruption

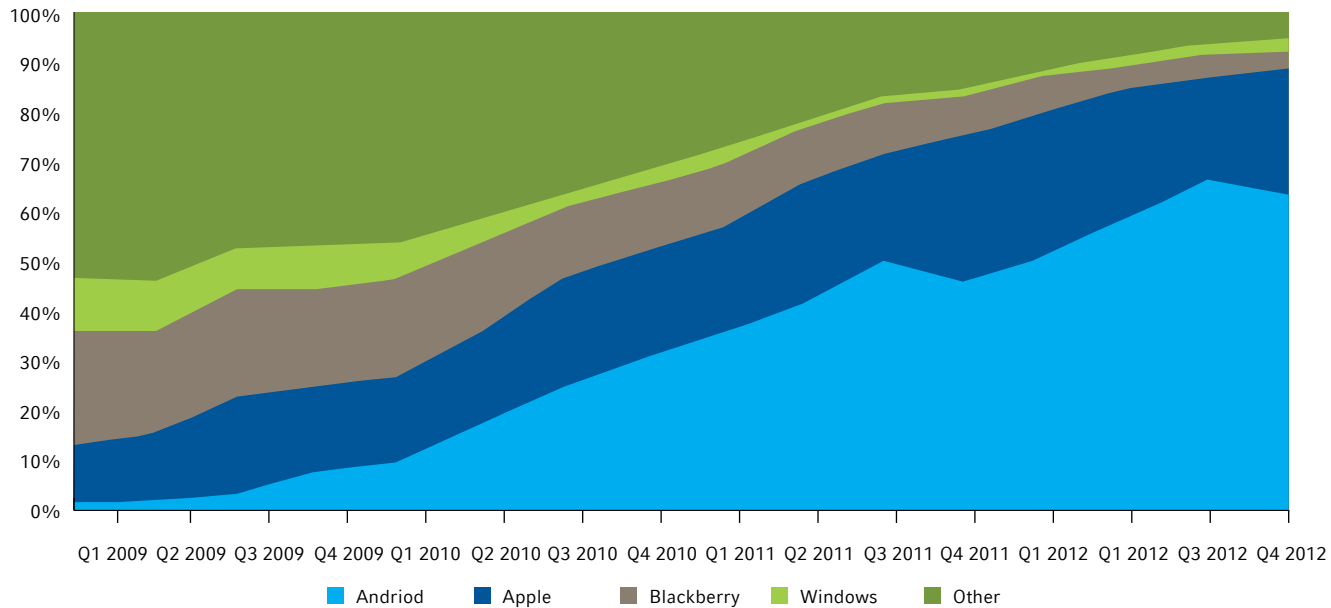
Disruptive events are occurrences that happen suddenly or unexpectedly with the result of altering the current status quo. In a corporate sense, such events often leave companies that could not adapt quickly enough out of business. As an example, what would you say is the most disruptive consumer technology of the last ten years?

It is undoubtedly the progress made in mobile telephones with the advent of the smartphone. Aside from the initial impact of the traditional mobile phone - that many of us became accustomed to over the 1990s and 2000s - the smartphone had a devastating effect on many companies and industries.

Dominant mobile phone manufacturers, like Nokia, have all but gone out of business due to their inability to foresee the major shift to the new technology and their incapacity to adapt their business to the new trend. The rise of Android as the market leader in mobile platforms has altered the playing field and Apple's intelligent 'touch' devices have certainly revolutionised the market. Telecommunication companies have contributed to this transformation by providing faster connection speeds.

The compact digital camera market has been severely affected, since most smartphones have built-in cameras that perform at a high standard. The camera on your phone is a ready companion and avoids having to carry multiple devices. It has the advantage of being able to instantly share pictures with your contacts and to post them on social media platforms. Digital SLR cameras are not yet under threat from your smartphone due to their advanced functionality and the ability to attach lenses for various types of photography. The same is true of the portable camcorder industry - most smartphones have the ability to record high definition video although the storage space on a mobile device can be a limiting factor.

Global Mobile Platform Market Share in %



Turning our attention to a different type of disruptive event, the current men's world high jump record of 2.45 metres was set in 1993; the women's record is 2.09 metres and was set in 1987. Both these records are the longest standing ones in the history of the sport. By contrast, in 1895, the men's record was merely 1.97 metres. By 1936, the record had increased by 10 centimetres and the 2.20 metre mark was overcome in the 1960s.

What caused such a change in the record over time? Humans have certainly not grown taller and we haven't developed springs in our feet! There have been developments in fitness, physique and equipment over the years (as well as the use of artificial stimulants) but by far the biggest contributor to the rise in the record has been the invention of new jumping techniques.

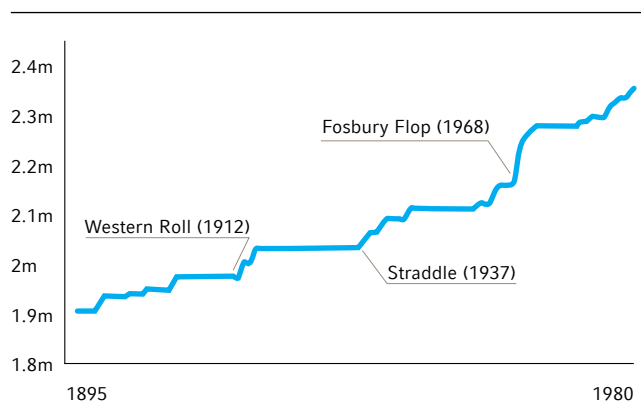
Early high-jumpers used to stand next to an elevated bar and simply leap over. This soon progressed to a more elaborate approach where the jumper would approach the bar at a trot and use a 'scissors' motion with their legs to try and clear the bar.

The 1895 record was set using the scissors technique but then flattening the back while clearing the bar. In 1912, a more efficient method called the Western Roll was developed where the jumper runs towards the bar in a diagonal trajectory and uses his one leg to thrust over the bar with the body in a sideways position.

By 1960, this style was further modified so that the jumper twisted his body, belly towards the ground, while attempting to jump over the bar. This was known as the Straddle. The current technique employed by almost all high-jumpers, known as the Fosbury Flop, involved running towards the bar on a diagonal and jumping towards the bar while attempting to clear it backwards. It was first used in 1968 by Dick Fosbury to win the Olympic gold medal that year. A few years earlier, foam mattress became the standard for landing pits, whereas before that sawdust, sand or woodchips were used.

The invention of new techniques, aided by softer landing pits, left the old record holders scratching their heads since their records were improved by significant margins each time.

World High Jump Records (men's) 1895 - 1980 in metres



## Underwriting considerations

The typical application process for life insurance products involves asking the customer questions on his medical history, his occupation and his participation in risky activities. The traditional application form was filled out by an applicant, usually in the presence of an advisor (salesman), and then it was submitted to the insurer to assess the relevant risk. A disclosure of a medical condition or disease often prompted further questioning and the need for a doctor's report along with some medical testing. This underwriting process has evolved over the years to be more automated, through electronic systems, and to be more professional, by conducting the medical questioning through a tele-interview by a nurse. This led to an overall improvement in the quality of the disclosures made and the efficiency of the application process.

The main aim of underwriting is to assess the relative riskiness of a customer based on, mainly, his medical history. This relies on the honesty of the applicant, although this is often mitigated by having some level of medical testing for all customers and by insurers having the ability to access medical records at the time a claim is made.

But what would happen if the customer had knowledge about a potentially serious medical condition that he was legally not required to disclose to the insurer and the insurer had no way to prove this at claim stage?

A crucial element of the underwriting process is to ensure that customers disclose all material facts regarding their application. For example, suppose that you went for your annual medical check-up and your doctor raised some concerns regarding your health due to some dark marks on your arm. He advised you to go for a blood test to find a cause for the marks. After your consultation with the doctor you decided to call your local life insurance company to apply for life, disability and critical illness cover, in case your condition was a serious one. Fortunately, most underwriting practices would ask you to disclose any imminent medical tests or any recent doctor visits and hence your application would be postponed until the test results were available.

Medical technology has enabled us to live longer and to have a better quality of life after recovering from a serious medical condition. This technology has historically only been accessible to qualified medical professionals but in the past decade, smartphones and medical applications (apps) have brought this technology directly to the consumer. One such app is called uChek. It is available to anyone with a smartphone and it can do an analysis of the chemicals in your urine to provide an indication of the risk of having a medical condition such as kidney disease or diabetes. Usually, this test is performed by your doctor using a urine dipstick or at a medical laboratory.

By bringing these types of health tests directly to consumers, the ability for potential applicants to anti-select against an insurance company has significantly increased. You simply purchase the app for your particular smartphone and you are sent a urine dipstick and a special mat. Once you have placed the dipstick in your urine, you lay it on the mat and take a picture of it with your smartphone. The mat neutralises the effects of the surrounding light on the picture and the app uses the photo to analyse up to 25 medical conditions. You can simply buy the app, do a self-check on your health and then apply for a life insurance policy, if you are worried about the results. The current underwriting process does not require that you disclose the fact that you performed your own medical check and that there was a possibility that you had a medical condition.

Another such app is called DoctorMole; by taking a picture of a mole on your skin with your smartphone, the app has the ability to determine the malignancy of a mole. This app uses

the photo of the mole along with a technology called Augmented Reality to determine the probability that a mole is in fact malignant. Augmented Reality has several ground-breaking applications in the medical app field and is an area of particular interest to many future-technology watchers.



Smartphone apps such as DoctorMole enable consumers to perform their own medical checks in some instances.

A subtle but significant development has been the Food and Drug Administration (FDA) paying more attention to the use of medical apps in the consumer space. The FDA, the leading authority responsible for protecting and promoting public health in the USA, has a department dedicated to the testing of medical apps and to the drafting of rules for these apps. The approval of a particular app by the FDA effectively renders the app as suitable for use by consumers and it also means that any 'results' produced by the app are accurate. Is there scope for life insurers to use such apps as part of their underwriting process since they are cheaper to access and more convenient for consumers? Should there be specific mention of self-diagnosis using approved apps as part of the underwriting process?

## Adoption of new technology

A 2013 survey by consulting firm EY<sup>1</sup> had some telling insights into the mindset of insurance companies around the world. Around 80% of the companies interviewed admitted

1 EY Global insurance digital survey 2013: <http://www.ey.com/GL/en/Industries/Financial-Services/Insurance/Insurance-in-a-digital-world--The-time-is-now>

to being behind in the digital spectrum. This included areas relating to how insurers engage with customers, the use of analytics in their company and utilising mobile and social media to reach and service customers.

The companies were forthright in the reasons they provided as to why they lagged in the adoption of new technology. The major obstacle to embracing new trends in technology was legacy systems that required substantial investment to modernise them and extensive effort to migrate existing data. This is a direct consequence of the maturity of the industry, with many companies having been established decades ago. Other factors included the slow delivery related to IT projects, especially in large organisations, and resistance to change due to cultural constraints, especially by intermediaries. We can argue that since insurance companies are aware that they are not utilising technology in a way that new-age consumers are already familiar with, they are in a vulnerable position.

Will newer companies be able to attract today's consumer and gain market share or will a technology-savvy company from outside the insurance sphere take advantage of our comfort zone?

Over the past few years, the motor insurance industry has taken significant steps in using new technology not only to create new products but also to monitor the behaviour of drivers. Pay-as-you-drive policies have gained some traction and the use of telematics devices, to record the various aspects of driving, are becoming common practice.

Similarly, the number of "health devices" marketed and sold is increasing. Ranging from simple pedometers that measure the number of steps taken in a day, to more sophisticated blood pressure wrist monitors, these devices are now more accessible and allow consumers to progressively track their health statuses. The ability to link the devices to apps that can store data and monitor trends over time makes them ideal telematics devices for life insurance.

Futuristic sounding contraptions, such as the Scanadu Scout, enable consumers to monitor physiological parameters such as pulse transit time, heart rate, electrical heart activity, body temperature and blood oxygenation. The device is simply touched against your temple and can produce the

parameter readings in 10 seconds, with 99% accuracy. By passing this information on a regular basis to an app, this creates a sequence of metrics that can be used as part of a dynamic monitoring experience. Can we use such devices and the associated data to refine our underwriting approach or to place a greater emphasis on monitoring at regular intervals throughout a life insurance contract rather than relying on a set of disclosures at the onset of a policy? Is this a natural way not only to charge premiums that vary over time based on the "health status" of a customer but also to encourage healthy behaviour and to allow insurance companies more opportunities to interact with their policyholders?



Smartphones and wearable "health devices" have made medical technology directly accessible to consumers.

## What are the limits?

Numerous market surveys are conducted that attempt to predict the next disruptive technology. This places a disparate emphasis on the continuous need to innovate in order to stay competitive. The word innovation is often associated with the invention of new things. We prefer to think of innovation, in a life assurance context, as the adoption of existing ideas and technology in a way that advances our industry.

Let's consider the concept of 3D printing to illustrate this in a pragmatic way. 3D printing has been earmarked as one of the most disruptive inventions of this decade and it is expected to have a dramatic influence on the manufacturing industry. These printers have been shown to be able to print a plastic gun that has the ability to fire live rounds of ammunition or to print intricately shaped 3D candy pieces.

Recently, 3D printers using biomaterials successfully 'printed' a fully functioning kidney! These printers are being used in reconstructive surgery to print 'custom parts' of the body. What impact will this have on future mortality improvements and how will Critical Illness product definitions have to change to accommodate this?

There are obvious questions around the security of new technology and how we can ensure that the identity of customers is linked to a device or to the data it produces. There are further considerations relating to the infrastructure required to adopt technology in a scalable manner. Regulatory and ethical matters are likely to be at the forefront of whether new types of technology can be used in the various facets of life insurance and in the medical domain.

While the combination of these factors could delay the wide-scale adoption of any technology, we should be innovating on the assumption that the necessary obstacles will be overcome sooner rather than later. Most of us are comfortable to spend large amounts of money on online purchases and we are fully confident in online banking – the same will hold true of using technology in life assurance in the future.

Is it a timely coincidence that a company like Google has recently purchased a thermostat manufacturer (with the intention of extending the ability of wireless health devices)? Is it telling that Google has developed a contact lens that measures the level of glucose levels in a person's tears, thereby assisting diabetics with their ongoing monitoring? Why would Google announce that it is planning on spending significant amounts of cash on developing nanoparticles that will be able to detect cancer at an early stage?

Has the once timeless approach to life insurance run out of time?

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