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Emerging risks in insurance: Job automation

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Overview

Job automation has shaped cultures and economies since before the agricultural revolution, throughout industrial revolutions and into the current digital age. Leading companies in many industries have emerged due to automation. The insurance industry will not be immune to this phenomenon, with automation and innovation continuing to drive the scope for significant change. This paper looks at how automation has affected and will affect the nature of insurance companies' processes and the nature of their clients' needs. It also identifies some of the key issues potentially faced by insurance companies when setting their strategies in the context of an increasingly automated world.

Changing nature of insurers

Traditional automation has been transformative in automating simple, repeatable tasks in back-end processes. Robotic process automation (RPA) combined with artificial intelligence (AI) and machine-learning capabilities can be, and are being, used to automate high volume and high frequency tasks that have traditionally required significant human intervention as well as perform tasks that were not possible in the past. In this section, we discuss some examples of how automation and RPA are transforming the way insurance companies operate.

SOURCING AND WRITING NEW BUSINESS

AI can be used to complement and support the role of the insurance broker or financial adviser, and potentially help to address the growing 'advice gap'[1]. For example, SPIXII has created a virtual insurance manager that uses chatbots to establish an initial assessment of the customer's insurance needs. An insurance broker or financial adviser can then use this output to refine the product recommendation, and use their softer skills to, for example, explain how the product works.

Parts of the underwriting process can be automated with precise data related to the applicant from various sources (not merely from the policy application form) being automatically gathered and processed. Intelligent software robots can update internal systems with the data and produce a report or premium recommendation. This also helps to improve the insurance buying experience as, provided the policyholder understands and gives their permission, more information can be obtained from external sources and the applicant only needs to respond to fewer questions.

The real-time nature of RPA can also assist an insurer in managing risk aggregation when writing new business because the insurer can review a wide variety of metrics on the suitability of risks using live data at the point of underwriting.

CLAIMS MANAGEMENT

Claims registration and processing are areas where automation is currently having an impact. Online portals using chatbots can offer customers personalised guidance on submitting important information and provide clear feedback on the next steps.

Automation can be used to quickly register the claim notification, automatically informing loss adjusters and claims handlers and assimilating all the disparate claims information from various sources. This speeds up the claims process significantly and creates a better customer experience.

RPA is also being leveraged across the spectrum of claims assessment and fraud detection to enable early detection of fraud trends and suspicious claims.

POLICY ADMINISTRATION

RPA can be used to replace customer-facing agents in tasks such as answering questions about the policy status or payments or processing policy renewals. It can also enhance the effectiveness of agents by more quickly giving them access to the right information from back-end systems, leading to improved resolution rates and customer experience.

Additionally, automated workflows can ensure that an agent's responses to a customer are first passed into the compliance system where they are automatically sent for approval. Responses that are approved are sent to the customer immediately, while others are formally reviewed and appropriate remediation actions can be taken.

CLAIMS RESERVING AND LIABILITY VALUATION

New analytical solutions are starting to permeate reserving and valuation analyses with insurers assessing whether there is value in using cognitive computing capabilities[2] to automate their actuarial processes. This could give reserving and valuation actuaries more time to work on in-depth analyses for reserving and other value-adding work.

[1] The "advice gap" describes an absence or lack of expert advice, which can result in consumers failing to recognise the need for insurance products or the implications of default product choices.

[2] Cognitive computing refers to the use of computers to mimic human thought processes and brain activity in order to solve problems.

Job automation in the wider economy

It is easy to call to mind dozens of jobs, from checkout cashiers to assembly line workers, which have already been replaced, in full or in part, by automated systems and machinery. The topic of job automation in the UK economy has been recently discussed in a review by the Office of National Statistics[3] (ONS) in which it determined 7.4% of jobs in England are at high risk of automation.

To illustrate, in April to June 2019, 9.2%[4] of the UK's overall workforce was employed in manufacturing. This compares with 15.4% in the same period of 1999, which translates to 1.2 million workers. While this is likely due in part to the expatriation of manufacturing to other countries for economic and political reasons, economic output from this sector has remained broadly constant over time[5], suggesting that automation of industrial manufacturing processes is a major driver of the change in employment. A recent BBC News article[6] featured a claim that up to 20 million manufacturing jobs around the world could be replaced by robots by 2030.

By contrast, over the same period, the proportion of the UK's overall workforce employed in information and communication work has increased from 3.4% to 4.1% (or 427,000 workers) and the proportion employed in professional, scientific and technical activities has increased from 6.1% to 7.7% (or 882,000 workers). This provides a useful contrast with the manufacturing sector, suggesting that the UK workforce as a whole is adapting to changes in the nature and availability of work driven (in part) by increasing automation in certain sectors.

The impact of job automation on insurers

Changes in the distribution of the labour force inevitably lead to changes in the demand for insurance products and changes in the nature of insurance products. For example, the reduction in employment within the manufacturing sector is likely to lead to a reshaping of the demand for employer's liability insurance in these potentially high-risk professions, but also to an increase in the demand for commercial property and cyber insurance to protect manufacturers' technology and machinery. In time, these changes will also inevitably transform the mix of business of life insurers that rate their premiums based on the occupation of the insured.

One sector of the economy that is expected to change materially in the future due to automation is the automotive industry. Automated "assisted driving" is already present on UK roads and is likely to become increasingly ubiquitous. In addition to private motor vehicles, this technology will also affect taxis and road haulage. It is likely that autonomous vehicles will revolutionise the motor insurance industry because human drivers are replaced by automation. For example, rating of customers is likely to be less focussed on the customers themselves and their claim history and more around the effectiveness of the vehicle technology they use and the geography in which they are based. Insurers will also be able to adjust claims based on data automatically collected by the autonomous vehicle. In the longer term, claim frequencies may decrease as autonomous driving removes the risk of human error. However, insurers will have to actively consider new severe "tail" risks such as catastrophic failure of AI driving systems or malicious systems hacking.

Robotics and automation are also permeating the healthcare sector with robotic solutions for surgery and diagnosis. If adopted by the National Health Service (NHS) in England, this automation could enhance the productivity of the health system substantially[7]. If this has the effect of reducing waiting times and providing greater access to care in the public sector, the private health insurance industry could potentially see a decline in demand.

Automation also affects the pricing of insurance. As insurers are able to automate processes including underwriting, administration and claims handling, they are able to provide their services at increasingly competitive prices for their customers. For example, innovative insurtech companies such as artificial.io are reducing costs with automation and passing savings on to their customers. Therefore, in the long term, we might expect to see lower insurance prices due to lower expenses in the industry once firms are either forced to adopt these new technologies or have been forced out of the market.

LONG TERM EFFECTS OF AN AUTOMATED ECONOMY

It has been widely speculated that a continued increase in automation over a long period of time could lead to a reduced demand for labour in some industries, and in aggregate across the economy. This goes as far back as the 1930s when John Maynard Keynes warned of a new disease – "technological unemployment". While industry-specific changes in demand are inevitable, questions regarding the impact on the wider economy and its ability to adapt are more difficult to address.

[3] Office for National Statistics. The probability of automation in England: 2011 and 2017. Retrieved on February 12, 2020, from https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/theprobabilityofautomationinengland/2011and2017

[4] Office for National Statistics. Dataset. EMP13: Employment by industry. Retrieved on February 13, 2020, from https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/employmentbyindustryemp13

[5] Office for National Statistics. Output. Economic output and activity of the UK. Includes manufacturing, production and services, and other measures of economic activity. Retrieved on February 13, 2020, from https://www.ons.gov.uk/economy/economicoutputandproductivity/output

[6] BBC News. (June 26, 2019). Robots 'to replace up to 20 million factory jobs' by 2030. Retrieved on February 12, 2020, from https://www.bbc.com/news/business-48760799

[7] Bostock, Nick. (June 19, 2018). Third of GP time could be freed up by 'automation', says former health minister. Gponline.com. Retrieved on February 12, 2020, from https://www.gponline.com/third-gp-time-freed-automation-says-former-health-minister/article/1485452

If a reduced demand for labour arises due to the proliferation of job automation, it is possible that there would be a corresponding increase in unemployment, and political pressure on governments to act to protect the labour force. The effects of such protectionist pressure can be seen in the USA, where Donald Trump has attempted to boost the coal industry in order to protect jobs, although with limited success[8]. Alternative political responses to this high level of unemployment could include increases to state funded welfare benefits or the introduction of universal basic income.

Were such an unemployment crisis to occur, it is likely that demand for private health and life insurance would decrease among certain socioeconomic groups as they become more reliant on the state. It is also likely that typical insurance trends related to high unemployment such as increased crime, fraud and demand for acceleration in claims payments would materialise.

However, if automation does indeed lead to a decreased aggregate demand for labour, we would expect this trend to be borne out in a marked increase in productivity metrics, such as real economic output per worker. Such a trend has yet to materialise.

As an alternative to Keynes' view, it may be possible that automation will continue to increase productivity without materially increasing unemployment. In this case, automation would be a powerful engine of economic growth, enabling the labour force to become increasingly skilled and productive. It is certainly true that there will be new jobs created in the development, maintenance, sale and programming of automated systems and machines. From an insurance perspective, we might then be less likely to see a drop in demand.

In either case, an increasingly automated economy will favour those in the labour market with skills related to technology and management. This will increase demand for high quality, specialised education, and those able to access this education are most likely to succeed. Increased automation therefore has the potential to increase inequality because those with the available resources to invest in their own and their children's education will be increasingly better off than those who cannot afford to do so. It could also be argued that as the provision of education becomes more automated, access to education may improve across all socioeconomic groups and lead to reductions in inequality. Nonetheless, it is certainly the case that lower skilled jobs are at greater risk of automation, and those earning relatively low salaries in these jobs may be less able to invest in retraining or developing new skills, potentially leading to increased poverty and decreased social mobility, at least over the short to medium term.

Limits of job automation

Job automation has had and will continue to have a profound impact on the way insurance companies operate as well as the risks that they insure against. Although it is reasonable to expect that the sophistication of automation techniques will increase over time, automation may have its limits.

Given that jobs and job roles are continuously evolving, it is more helpful to think of the limits of automation in terms of what tasks and activities can and cannot be automated rather than jobs as a whole. For example, a decade ago, there was no job role for "social media management" whereas now, companies have entire departments dedicated to this function. Further, for certain roles and professions, we do not necessarily expect that the entire role can be automated but rather that certain tasks performed by people in certain roles will be automated.

Automating processes within an insurance company is a journey rather than a singular goal achieved through a one-time automation project. The legacy systems currently in place, current company structures and staffing levels may make it prohibitively expensive to automate all possible functions over a very short space of time. Certain tasks could be automated in the short to medium term while others will form part of a company's longer-term strategy. It is also worth considering that while it may be possible to automate certain tasks, the cost associated with automation may limit the value of the effort. Automation is often most suited to repetitive tasks where the methodology is well-established rather than one-off projects where the methodology is yet to be finalised.

Certain aspects of insurance pricing, underwriting, reserving and analytics can already be automated today, but the need for expert judgement will likely persist for some time: to interpret results, identify additional avenues to explore and make recommendations to the business as to what additional strategies and plans should be put in place following the production of automated results.

Automation may not be much help when it comes to tasks that require non-technical, creative and innovative solutions. An example is developing a company's strategy and identifying opportunities and business solutions to stay ahead of competitors. Automation and data analytics may help in producing key insights, but ultimately, the idea generation and decision-making will continue to be done by human beings.

Similarly, parts of managerial functions could (and have been) replaced by automation, but the "human elements" of a managerial role will be best performed by an actual human being. For example, automated solutions already exist for workflow and project management, budgeting, dashboard reporting and monitoring key performance indicators; however,

[8] Dlouhy, Jennifer A., Natter, Ari, and Loh, Tim. (August 21, 2018). Bloomberg. Trump Promised to Bring Back Coal. It's Declining Again. Retrieved on February 12, 2020, from https://www.bloomberg.com/news/articles/2018-08-21/trump-promised-to-bring-back-coal-it-s-declining-again

interpreting this automated information and taking action because of it will still require human intervention. Further, the softer skills required of managers will still be relevant-- for example, motivating and guiding team members, business planning and coordinating with other teams within the company.

The future of insurers

Insurers must think carefully about integrating new technology within their businesses to achieve better outcomes for their stakeholders, such as their policyholders and shareholders. Such changes are likely to occur within the context of a wider societal shift towards adoption of new technology, which will result in the automation of certain types of roles and demand for new types of pension and insurance products.

Insurers will need to adapt their workforces as this shift occurs, either retraining existing staff into new roles or employing new staff with those skills that increase in demand. In particular, it is crucial that the adoption of new automation techniques is well understood within the business, both by subject matter experts and the risk function, to ensure risk management evolves to support new business dynamics.

How Milliman can help

Milliman consultants have considerable experience helping firms to develop their risk management frameworks. We are well placed to benchmark firms' approaches against the rest of the industry, and provide insight and advice that is tailored to your individual circumstances and needs.

We help our clients introduce robust processes for identifying and assessing emerging risks ranging from building up a clear risk narrative through to the use of new analytical techniques and AI.

If you have any questions or comments on this paper, on the subject of automation or on any other aspect of your risk management framework, please contact any of the consultants below or your usual Milliman consultant.

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