

South African ACTUARY

Volume 2 Number 1 | MARCH 2018 | www.actuarialsociety.org.za

Quarterly e-magazine of the Actuarial Society of South Africa





Peter Withey

Presidential Perspective

Message from the ASSA PRESIDENT



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Editorial

Mike McDougall (Chief Executive)

Block chain, big data, machine learning, disclosure, governance and micro insurance are key subjects covered in this bumper edition of SA Actuary. For older actuaries, many of these concepts will be as meaningful and easy to understand as many of the contributors to this edition's grasp of the finer points of operating a slide rule or doing a net premium valuation based on a set of model points.

These are, however, the key subjects addressed in this edition of SA Actuary as we continue the discussions started in the 2017 ASSA Convention. As always, convention sessions rarely last long enough to exhaust discussion and many of us are spoilt for choice wishing to attend two or more concurrent sessions. This will provide the opportunity to consolidate what we learnt at the convention or gain exposure to what may be new concepts for many of us.

The juxtapositioning of the block chain, big data and machine learning with disclosure, governance and micro insurance is an ideal metaphor for two key drivers of our profession – namely rapidly evolving innovation and an environment of integrity, trust, serving the public good and professionalism. The strength and growth of our profession has been built on these attributes – the ability to manage and solve problems using a combination of sound technical skills and innovative thinking while gaining and maintaining the trust and confidence of our customers and the broader community. These are key requirements to us building our standing as a profession that has influence that is disproportionate with our size.

The third critical attribute for our profession is that of broader and inclusive transformation. We are a profession that aims to include all who have the aptitude and potential as well as the strength of



In this edition we feature two actuaries who are giving more to our profession than they take out.

character to join our ranks irrespective of their background. This is not just a frothy sounding nice to have but an existential imperative if we are to enhance our standing and influence as a profession. The scale of this challenge cannot be understated in terms of the time, energy and money required to create awareness, educate, support and mentor future actuaries. The innovation and integrity covered in many of the articles in this edition cannot be sustained unless, as a profession, we increase our focus on the third "I", inclusion.

In this edition we feature two actuaries who are giving more to our profession than they take out. One at the start of her career who is spearheading our drive for inclusion through her leadership in ASABA and passion for mentoring. The other, moving towards the twilight of his career, has throughout his career been a selfless champion of professionalism, ongoing professional development and integrity. 



Please send us your feedback. [CLICK HERE.](#)

Fhatuwani Nemakhavani

– A discussion with the new president of ASABA



Fhatuwani is the new ASABA President, with Memory Zimba as her President-elect. Fhatuwani was admitted as FASSA in 2017. She kindly agreed to respond to a few questions.

A bit on your term as ASABA President – when it started, when it ends, your main goals for this term.

I joined ASABA as a university student in 2009. At the time, I was in my first year of actuarial studies at the University of Pretoria. In 2012, I was elected Deputy President of the ASABA's University of Pretoria Chapter and that's where my journey of serving in ASABA began. From 2015 to 2017, I served as the Secretary General of the ASABA Organisation. I've now been recently elected as ASABA President and I will be serving as President for a term of two years which will run from 2018 to 2019.

The previous ASABA leadership did a great job in making ASABA a brand that it is today. ASABA is well known in the industry and our mission and vision remains the same: we want to see the Actuarial Profession's membership representing the country's demographics. I do not plan to re-invent the wheel. I believe in the current ASABA's programmes that we have in place. My goal is improving the efficiency and effectiveness of these programmes. I believe we can achieve so much more if we implement these programmes correctly. I would like to see ASABA operate professionally in the way we serve our members. I believe ASABA is still relevant even today. For as long as the number of actuaries in this country remains misaligned to the country's demographics and there is inequality of any form, ASABA will continue to exist and the transformation agenda shall remain.

Where did you grow up and go to school?

I grew up in a small village called Tswinga, around 10 km away from Thohoyandou town in the Limpopo province. I went to Tswinga Primary school from 1996 to 2003. I then attended secondary school at Marude Secondary School where I passed my matric in 2008. I was the first student from my school to ever pass matric with 100% in Mathematics.

How did you become aware of the actuarial profession?

A student by the name of Livhuwani Mugubi who was one year ahead of me at Marude Secondary School enrolled for Actuarial Science the year I did my matric. So that was my first reference to Actuarial Science, but I had no content whatsoever. Then I got an opportunity to attend the Department of Science and Technology and

Thuthuka matric camp during my matric year. It was during this camp where Ms Nokwanda Mkhize came to present about the South African Actuaries Development Programme (SAADP) bursary. Even after her presentation, I still did not understand what Actuarial Science was but I had, nonetheless, made up my mind that I will study Actuarial Science. I remember telling my older brother after the camp that I want to study Actuarial Science. He went and researched about it only to come back and tell me that it is one of the most difficult careers ever and advised that I reconsider my choice. And of course, it was a "challenge accepted" moment for me and I did not adhere to his advice; that's why I'm here.

Any memories from your university days that stand out?

My most formidable memory at university was my undergrad graduation. For me, there is nothing fulfilling as a student knowing that you've achieved what you came to university for. Having that degree in my hand was a proud moment in my life, especially coming from a family where no one has ever graduated from university. Also, what stood out with my graduation is that I got my degree with distinction, something I never imagined would be achievable given the challenges and the toughness of this degree. This memory will always stand out for me as the highlight of my university days.

Tell us a bit about your career – where you have worked, and where you are now.

Upon completion of my honours studies in 2012, I took up an Actuarial Analyst role at Liberty Life's Economic Capital team in January 2013. That was where my career started out. When I was a student, the first corporate environment I was exposed to was Liberty through an ASABA Mentorship programme and I remember telling my best friend, Emily, that when I finish studying, I would like to work for Liberty. And it happened. I was then promoted to Senior Actuarial Analyst in 2015, where I spent some time in Investment Product Development team before exploring the world of Actuarial Auditing between 2016 and 2017, also at Liberty.

I qualified as an Actuary in November 2017 and I now work at ABSA Life as an Actuarial Specialist in the Capital and Balance Sheet Management team. I'm responsible for all the investments management of ABSA Life together with all other life entities from the rest of Africa where we do business.

I remember telling my older brother after the camp that I want to study Actuarial Science. He went and researched about it only to come back and tell me that it is one of the most difficult careers ever and advised that I reconsider my choice.

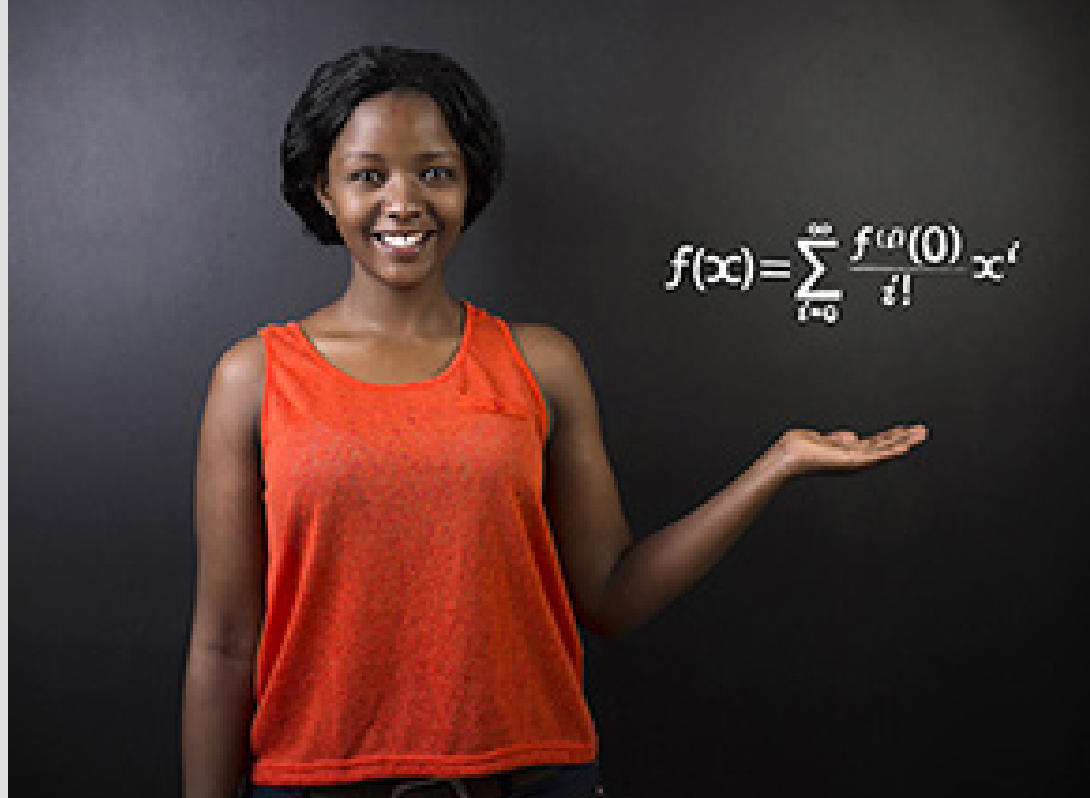
And of course, it was a "challenge accepted" moment for me".

What do you find particularly rewarding/pleasant about being an actuary?

There is a common saying that goes: "An Actuary is a Mathematician but a Mathematician is not an Actuary". Actuaries have a wider range of skills ranging from Statistics, Mathematics, Finance, and Economics etc. As a result, we are not only able to assess and quantify risks in insurance and investment, but also give an input or opinion on a wide range of issues in the corporate and elsewhere in the public sectors. This opens wider areas of practice for actuaries, besides the traditional spaces.

In a country where the unemployment rate among the youth is so high, the actuarial profession offers a lot of security in that regard. It's very hard to find a South African unemployed actuarial graduate.

You also get a lot of respect. All of a sudden, everyone wants to listen to you, hear your opinion of a particular matter, wants your advice. You become important all of a sudden. Not that I'm complaining 😊



$$f(x) = \sum_{i=0}^{\infty} \frac{f^{(i)}(0)}{i!} x^i$$

It's possible! You too can qualify and become an actuary if that's what you want. Make use of all resources made available to you either through the ASSA Academy or your employer.

What advice do you have for the current student members?

It's possible! You, too, can qualify and become an actuary if that's what you want. Make use of all resources made available to you either through the ASSA Academy or your employer. I found it very useful to attend the pre-exams sessions organised by the ASSA Academy which provides useful exam techniques important for tackling actuarial exams. I also remember when I was preparing for my last exam, Fellowship, we used to organise sessions at Liberty where we would invite different actuaries who specialise in different areas to come and address us on those areas. That was very useful for me.

So students should never give up but they should seek help from those who have completed similar exams and maximise on all resources available, including study leave days and revision materials.

Main challenges for the profession?

I think the actuarial profession doesn't get enough publicity compared to other professions such as the accounting profession. As a result, very few people in the general society appreciate the work of an actuary. We hear of CAs everywhere

in society, on radio, print media, television, TV drama, soapies, everywhere ... but we hardly hear of actuarial sciences. I believe there is a lot that can be done to market the actuarial profession in South Africa so that we can be relevant to the very people we serve.

Another challenge relates to the issue of transformation. The actuarial profession in South Africa is still not transformed (both racial and gender transformation). We also see the same picture in the corporate environment where all senior positions are occupied by white males, and a high number of black professionals assuming either middle management or entry level roles. With this also comes the issue of perceived payment discrepancies with a perceived downward bias against black people and women in the profession.

The biggest threat of all, which is equally a threat to all other professions, is the advancement of technology (such as AI, machine learning etc.). Many jobs are becoming extinct as new technology comes into the market. So no one knows where the actuarial profession will be 50 or 100 years from today and how relevant the profession will be then. 🚫



The importance of a governance structure that produces streetwise professionals

by **Edmond Vigoureux** (Head of Research and Development at QED Actuaries & Consultants (Pty) Ltd)

On 15 January 2009, Captain Chesley Burnett Sullenberger III (nicknamed "Captain Sully") boarded US Airways Flight 1549 from LaGuardia Airport in New York City. Captain Sully, the pilot in command, had at that point over 40 years of experience in the air.



He was also a highly experienced pilot instructor and expert on aviation safety. Three minutes into the flight, at only an altitude of 859 meters, the Airbus A320 struck a flock of Canada geese and consequently lost all engine power. The air traffic controller suggested that Captain Sully return to LaGuardia Airport or alternatively divert to Teterboro Airport. Captain Sully only had a few seconds to decide on a course of action and he decided to go against the air traffic controller's suggestions and attempted a forced water landing on the Hudson river – making it the only successful forced water landing in history, saving the lives of all 155 people on board Flight 1549.

Even though Captain Sully saved all the lives on board Flight 1549, he was aggressively hounded by the American National Transportation Safety Board (NTSB) seeking for a proverbial head to roll.

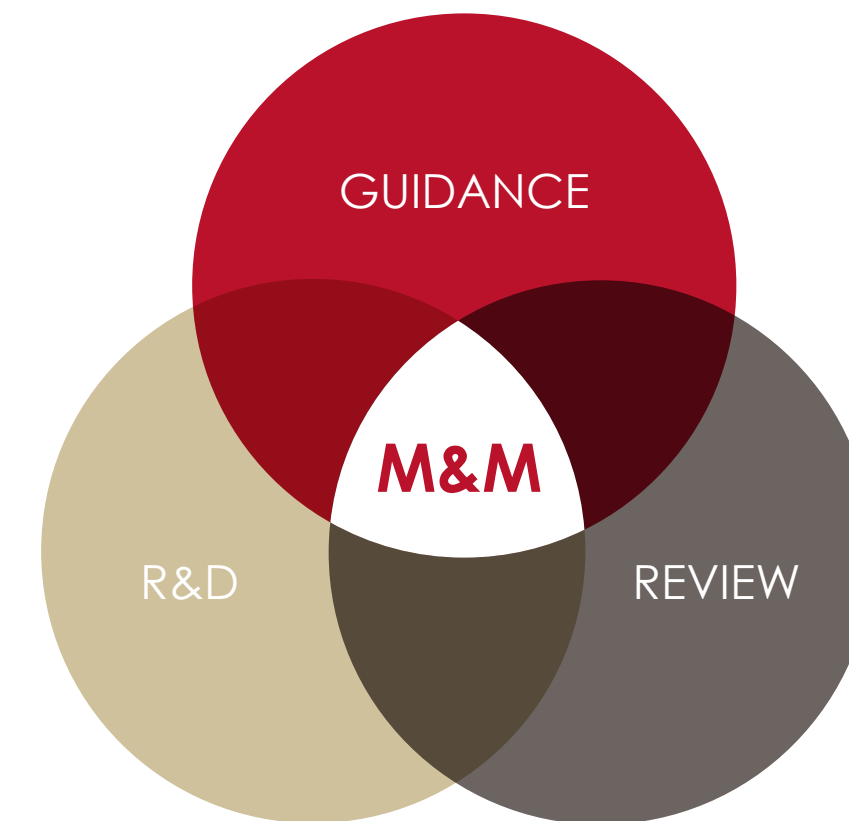
From take-off to "landing" Captain Sully followed all the required procedures and checks set out by the aviation authority. As such, the NTSB couldn't blame him in that regard; from a pure governance point of view he was faultless. The only option left to them was to attack his judgement call for attempting a very risky forced water landing instead of diverting to one of the airports as suggested by the air traffic control. In the end his "streetwiseness" prevailed: after performing multiple simulations it was proved that had he diverted to one of the airports he would have crashed into New York City, endangering thousands of lives.

Even though Captain Sully saved all the lives on board Flight 1549, he was aggressively hounded by the American National Transportation Safety Board (NTSB).

In an interview during the NTSB investigation he said: "I have almost 40 years of experience in the air but, in the end, I will get judged by 208 seconds" Doesn't that ring true for all professionals, especially actuaries: we can have

years or decades of experience in successful valuation or product pricing projects, but in the end, we will be judged by that one project that went awry. As with the aviation industry, it is necessary to have a sound governance structure to mitigate risks of costly errors. This article discusses enhancing governance structures to produce streetwise actuaries that can handle any situation that gets thrown at them.

Such a Governance Structure can be presented by three pillars or spheres:



GUIDANCE

The first pillar, Guidance, refers to all external and internal documentation and requirements that guide an actuarial staff member in doing his/her job to the best of his/her ability. Examples may include:

- The Standards of Actuarial Practice and Advisory Practice Notes (SAPs and APNs) issued by the Actuarial Society of South Africa.
- The relevant Acts and Regulations issued by the respective Regulator/s.
- Internal technical guidance notes, policies or guidelines on overall house views and acceptable principles and practices required from staff members to perform their duties at exemplary standards.
- Internal best practice procedures to ensure everyone adopts the same level of rigour.
- Required checklists put in place to provide proof of adhering to the guidance.

- Audit trails that provide a summary of the specific principles and practices followed on individual projects. This includes proper model and spreadsheet documentation.

Guidance should not be limited to what is issued by the profession. Whether working at an insurer, a consultancy or an audit firm, the actuary will need to supplement Professional Guidance with internal policies and guidance.

Pilots have an extensive body of guidelines, checklists and procedures that guide them in just about everything they do. These compulsory checks and procedures include the mundane routine jobs like take-off, cruising and landing; but also included are the very urgent and sometimes emergency situations like losing power in both engines. Captain Sully could have argued, with some level of reasonability, that he did not have enough time in the very time sensitive crisis to perform all

the checks and procedures required of him. It is impossible to say what the true outcome would have been if Captain Sully did not perform all the checks and procedures on that fateful day. He might have missed a crucial element in his haste leading to the death of all on the plane and even the death of civilians on the ground. One thing is however almost certain, he would have been found guilty of attempted manslaughter – ruining his reputation and his career.

This pillar sets out the very important technical requirements for actuaries to perform their job well. But, alas, as is the case for many governance structures, the guidance part is usually where it begins and ends – mere stagnant documents on the shelf.

Staff development is a crucial part of a good governance structure. The R&D pillar focuses on creating a conducive environment for learning and allowing for ample research and development time ...

THE AGE OF INNOVATION

We are in an age where innovation doesn't follow a linear trend, but rather an exponential one. Blackberry was one of the first victims who failed to realise this: linear innovation doesn't cut it anymore. It is therefore so important for industries to invest in innovation to ensure they are not left behind. This is emphasised by what Uber has done to the taxi industry and Airbnb to the hospitality industry. Hence, I would argue that the drive and need for innovation should form part of any governance structure.

A natural outflow of innovation is upskilling and developing your workforce. One of the more frequent arguments against investing in professional development is "What happens if you develop your staff and they leave?" A better

question is "What happens if you don't develop your staff and they stay?"

Staff development is a crucial part of a good governance structure. The R&D pillar focuses on creating a conducive environment for learning and allowing for ample research and development time for everyone in the actuarial department. Also, all staff should be encouraged and be given the appropriate resources and time to impart their knowledge and experience to other staff through informal on-the-job-training or formal training sessions.

THE STORY OF THE WORD "DORD"

In 1934 the Webster's Dictionary created a new word, by mistake, ... Their chemistry editor, Austin M Patterson, sent in a slip reading "D or d, abbreviation for density". The second edition of the Webster's dictionary contained the word "*dord* (*dôrd*), *n.* *Phsyics & Chem. Density*". There are two things that fascinate me about this story. 1. It is clear at no time did the science editor review the entry of his submission. This error was only picked up and corrected about 13 years after it was first published by an external party that queried the etymology of the word. 2. The person who entered the information never questioned the word, even though it seems strange – in fact, the person actually came up with the pronunciation of the word ...

The best actuaries I have come across in my life, my mentors, have one thing in common: they don't mind having their views debated and their work reviewed, more so they will encourage it from their peers and even juniors. This attribute, shared by a great many actuaries, contributes to an admirable self-correcting profession that is ever-evolving in an attempt to strive for perfection.

A culture of continuous review must be fostered in an actuarial department by creating review lines where all work must be reviewed by another experienced and knowledgeable person. Also, one of the most important review functions, that is usually overlooked, is self-review.

M&M CONFERENCES

At the heart of the Governance Structure, at the intersection of all three pillars ("Guidance", "R&D" and "Review"), lies a concept I borrowed from the American medical profession called Mortality and Morbidity (M&M) Conferences. Wikipedia provides the following definition for M&M Conferences:

"[Mortality and morbidity conferences] are usually peer reviews of mistakes occurring during the care of patients. The objectives of a well-run M&M conference are to learn from complications and errors, to modify behaviour and judgment based on previous experiences, and to prevent repetition of errors leading to complications."

Mortality and Morbidity Conferences (also aptly named for the actuarial profession) can be adjusted to provide a similar governance role for actuaries. They are regular meetings of all actuaries in a department to discuss (sans judgement) the major mistakes that occurred, the reason/s the mistakes happened and what should be put in place via the Guidance, R&D or Review processes to prevent it/them from recurring in the future. The M&M Conference is an example of the well-known but elusive feedback loop in the Actuarial Control Cycle. M&M Conferences are at the heart of a good governance structure, at the pinnacle of the Review process, without which the Guidance documents will become stagnant and R&D will become irrelevant.

As Oscar Wilde said, "Experience is the name everyone gives to his mistakes." M&M Conferences ensure that we learn from each other's mistakes and don't make the same mistakes.

CONCLUSION

The need of setting up a proper Internal Governance Structure is further emphasised by the following quote from the FSB's Board Notice 158 of 2014, "An insurer must establish, maintain and operate within an adequate and effective internal control system, comprising the totality of strategies, policies, procedures and controls, ... " The requirement for a good internal Governance Structure is becoming increasingly pertinent and relevant, not only in South Africa, but also internationally when one considers the role of the Quality Assurance Scheme (QAS) introduced by the Institute and Faculty of Actuaries over a year ago. The QAS accreditation is obtained by UK insurance companies that can demonstrate a strong commitment to assurance of the quality of actuarial work and actuarial professionalism.

Many people, including Warren Buffet, use the front-of-the-newspaper test to test the ethical nature and integrity of a decision or an action. Warren Buffet explains, "If an article appeared in a local newspaper about a decision or action you made, and your family and friends read the article, would you feel good about it?" 

The following was on the front page of the Daily News newspaper on 16 January 2009:

The front page of the New York newspapers on 16 January 2009 could have portrayed a much bleaker image of Captain Sully, was it not for the governance structure





Mickey Lowther – *Unsung Hero Wins Highest Award*

The Murray Medal is the most prestigious award the Actuarial Society can bestow on any of its members. The award recognises exceptional service to the profession. It is considered annually, but not necessarily made every year. The award was first made in 1973, and has been made 16 times since then. In 2017, the Murray Medal was awarded to Mickey Lowther for exceptional service to the profession and the Society in respect of professionalism, including education and lifelong professional learning. For more information, read on!

Where did you grow up and go to school?

I grew up in Durban, where my grandfather had started 'Lowther's Bakery' at the turn of the previous century. I went to Durban High School and what is now UKZN in Pietermaritzburg. SA universities didn't offer actuarial courses in those days, so I followed the route which is still preferred today in the US – a 'liberal arts degree' including subjects like maths, stats, psychology and philosophy, followed by distance professional learning while at work.

How did you become aware of the actuarial profession?

I participated in the Maths Olympiad one year. This was sponsored by Old Mutual, who drew our

attention to the profession. At varsity, Reg Munro and later Garth Griffin did valuable roadshows for interested students. But I also went to the SABC's roadshow and remember going for a (failed) voice test to become a newsreader!

Tell us a bit about your career – where you have worked, and where you are now.

After a short and not very successful spell as a maths teacher in Maritzburg, I became an actuarial student at Old Mutual in Pinelands in 1974. There were only mainframe computers in those days – the legendary roomful of spinning discs and flashing lights – and my first years in the life department were spent manually checking enormous printouts of per-policy valuation calculations called DEMRECS. These 'demonstration reconciliations' would be offloaded from trolleys into a mountain of paper to be corrected, sent back for another batch process, and done again until correct – using FACIT calculating machines on which we performed operations by spinning a handle forward and back.

After I qualified in 1978, I moved to the Pensions area as a valuator of the many stand-alone defined-benefit schemes that existed in those days. My time at Old Mutual was valuable, building up expertise and contacts, and hopefully providing some value to my employer and clients, but I did wonder if life might be possible outside the corporate world. So in 1986, I took the plunge and went on my own as a one-person actuarial practice. I immediately noted the much stronger

It would be presumptuous of me to offer advice, but what worked for me was to make a point of learning from my mistakes. So, one must first make some mistakes (!), then be aware that you have got something not quite right, reflect or analyse the issue, and implement a better solution going forward. If you are participating in the Actuarial Society's new Continuing Professional Development system, then you'll already recognise and be implementing these principles.

professional link between actuary and client – these were now MY clients, not Old Mutual's, and I was solely responsible for the success or failure of the actuarial service. This scenario probably spawned my activities in professionalism issues which were cited in my Murray Medal award.

Thirty-two years later, my practice is still going – and still as a one-person practice. Unlike some of my contemporaries, I did not end up creating a corporate of my own!

What do you find particularly rewarding/pleasant about being an actuary?

Although we are all individuals with differences, we have all got through the rigorous technical and normative actuarial curriculum. So I enjoy sharing some identity with any other actuary I meet or work with. Also, most of us clearly enjoy solving problems, and in this profession we actually get paid for doing so! And hopefully the solved problem is a benefit to the client and third parties too.

What advice do you have for the current student members?

It would be presumptuous of me to offer advice, but what worked for me was to make a point of learning from my mistakes. So, one must first make some mistakes (!), then be aware that you have got something not quite right, reflect or analyse the issue, and implement a better solution going forward. If you are participating in the Actuarial Society's new Continuing Professional Development system, then you'll already recognise

and be implementing these principles. [SAA note: Mickey has been the driving force behind the Society's outcomes-based CPD system, which is being watched with keen interest by various other actuarial bodies.]

Related to this, I found it useful to work up some of these learnings into a presentation or article. This usually deepened my understanding, and – especially for a sole-practitioner – reminded the relevant audience that I might have some expertise in that area.

Main challenges for the profession?

That's a big topic, so I'll limit myself to highlighting the challenge for the Actuarial Society of South Africa growing from a small informal organisation, where everyone knew everyone, to a bigger operation with systems and processes and controls. Our volunteers and staff seem to be doing a good job of this so far, including reflecting on our mistakes and implementing solutions!

Anything else you would like to add.

Thanks to SA Actuary for this virtual interview. President Roseanne Murphy Harris presented the Murray Medal to me during the recent volunteer's function in Cape Town. I said a few words, noting so many members and others who had worked with me along the way. Especially for the volunteers, I concluded (or would have concluded if I hadn't fluffed the punchline) that I have got much more out than I have put in. 🙏

The Impact of Non-Disclosure on the Industry and Customers

Pedrie le Roux – Head of Business Development, SCOR Global Life

1.1 Introduction

During the past year the South African life insurance industry was hit by some unwanted publicity. Headlines in the media reading: "Customers rue declined claims" and "Non-disclosure bites claimants" brought attention to the issue of non-disclosure in our industry and highlighted the negative effect of declined claims.

Unfortunately, to the public this would exclusively read as if the insurers are solely to blame – this is not always the case. Non-disclosure can happen through innocent or deliberate actions of the insured or through deficiencies in the insurer's processes.

Essentially our industry sells the promise to our customers that we will look after them in their time of need, so whichever way the non-disclosure happens it is our obligation to ensure we eradicate it so we can make good on these promises.

1.2 Background to SCOR's non-disclosure survey

Consistent feedback from our clients confirmed that a definite problem exists. What wasn't always clear however was whether companies realised the true financial impact that non-disclosure has as well as the processes and methods that they have in place to detect and reduce it. Anecdotal feedback was that companies have more of a reactive approach of detecting non-disclosure – meaning they will pick it up and deal with it when they come across it through the underwriting process or at claims stage. Very little was done to proactively pick up non-disclosure on policies where nothing was flagged during the underwriting process and which may never become a claim, but still non-disclosed something material which would have led to a different underwriting decision.

This prompted SCOR to conduct an industry wide non-disclosure survey during 2017 to dig a bit deeper and assess the impact that non-disclosure has on insurers, the industry and customers. The 9 insurance companies that took part write their business in the fully underwritten product space and focus on the retail affluent market. We look at some findings from our survey below.

1.3 Main survey findings

1.3.1 Definition of non-disclosure

All the respondents agreed that the most accurate definition of non-disclosure is:

"Where the applicant withholds or misrepresents information, to a relevant question asked in the application form and where such withholding or misrepresentation affects the underwriting terms that are offered."

1.3.2 Methods being used to detect non-disclosure

Below is a brief outline of the methods currently being used in the market to detect non-disclosure:

1. Asking for discretionary/routine evidence during the underwriting process

Check for non-disclosure prior to acceptance, by comparing evidence received on the application form with evidence received from third parties either due to disclosures made or due to size of sum assured.

2. Random post issue sampling

Check for non-disclosure by requesting doctors' reports on a random sample of standard rate cases after they have been issued and comparing the information with that given through the application process.

3. Management Information Analysis

Looking for distributor outliers, e.g. high levels of standard rates cases, more non-smokers than would be expected, cases just below cut off points on non-medical limit grids, distributor/medical service provider connections etc.

4. Targeted post issue sampling

Check for non-disclosure by requesting doctors' reports on a targeted sample of standard rate cases after they have been issued and comparing the information with that given through the application process.

1.3.3 What methods are insurers using to detect non-disclosure?

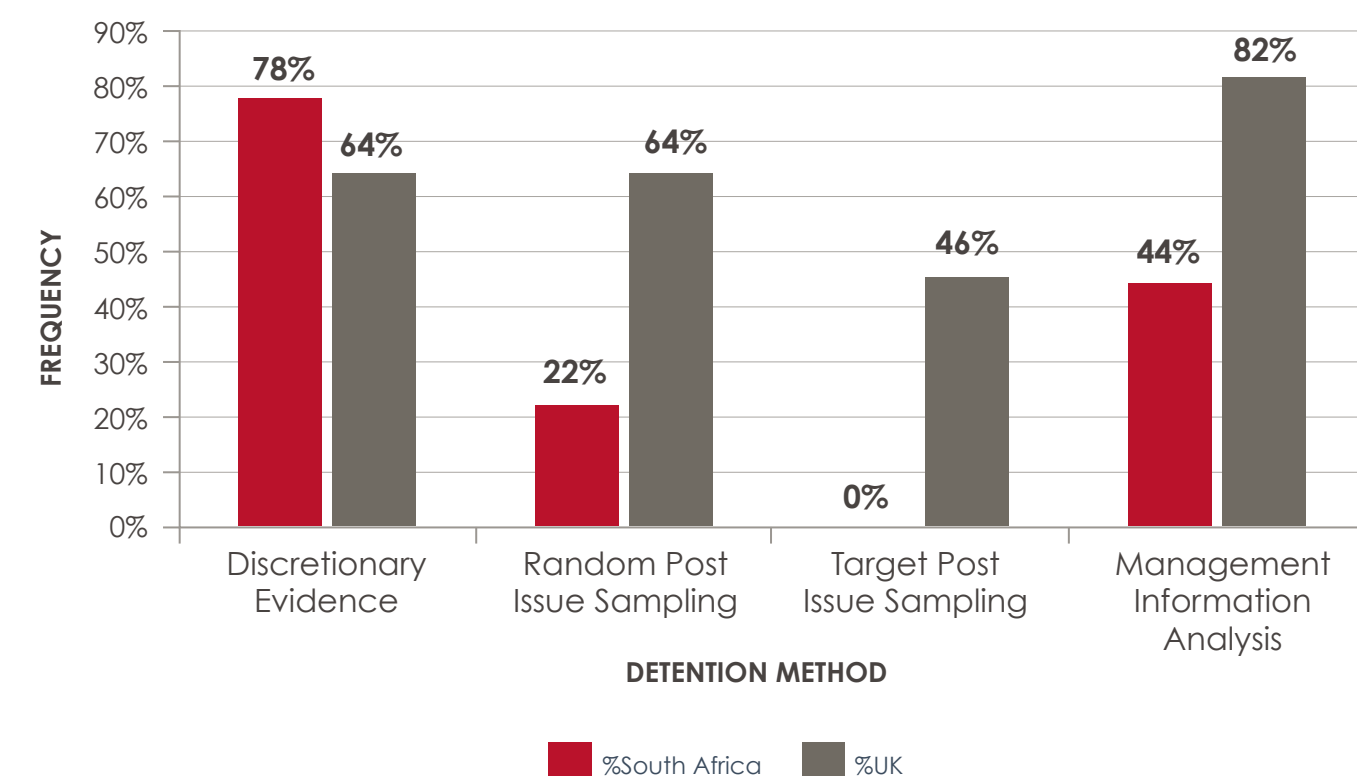
We would expect that checking through the process of receiving discretionary evidence will be most frequently used. This is because this method is the easiest and cheapest method to use as it forms part of the normal underwriting process. However, this doesn't give us the most accurate picture of the true embedded non-disclosure in an insurer's portfolio. The main reason for this is

that non-disclosure will only be picked up where discretionary evidence is received – these are usually triggered by actual disclosures made by the applicant. It is unlikely that someone will disclose certain conditions and then non-disclose other conditions. Hence, we expect the non-disclosure rates reported from this method to be lower than the actual embedded non-disclosure rates in the portfolio.

The most accurate representation of the true underlying non-disclosure rates will be through the random post issue sampling exercise. This method is done on a random sample of standard rates cases and hence no bias is introduced.

Some insurers are using MI analysis to check distributor behaviour, but the feedback is that the results of this analysis are not really shared across the business areas in a coherent way.

We compared which of the methods outlined are used by South African insurers to detect non-disclosure and compared it to the results of a similar survey that SCOR performed in the UK in 2015 and the graph below shows the comparison:



As can be seen a lot more checking through random and targeted post issue sampling exercises are done in the UK compared to South Africa where, as expected South African insurers mainly pick it up through receiving discretionary evidence. This raises the obvious question: Are South African insurers doing enough to proactively detect non-disclosure?

Even with the method's limitations mentioned above we asked insurers what was their best estimate of the non-disclosure rate they picked up through discretionary evidence. The feedback was varied, and we didn't get the feeling that insurers had much confidence in the figures they gave. They were also unable to provide data which supported their view of non-disclosure.

1.4 Impact of non-disclosure

In this section, we will have a look at how non-disclosure impacts insurers as well as their customers.

We wanted to highlight the financial impact that non-disclosure has on an insurer's portfolio. The financial impact is often ignored or companies just don't have a good handle on what non-disclosure is costing their business. The following example shows the potential financial impact on an insurer from non-disclosure:

1.4.1 Financial impact of non-disclosure on insurers

The table below shows the assumed composition of underwriting decisions in a portfolio of business:

Table 1:

Underwriting Decision	Extra Mortality Rate	Standard portfolio mix
Standard Rates	0%	17%
Rated	50%	15%
Exclusions *	225%	5%
Declined *	225%	5%
	Weighted Loading	30%

*The extra mortality loadings attached to cases where exclusions are applied or cases that are declined are our equivalent best estimate loadings for these risk management techniques.

The weighted loading across this portfolio of 30% means that if the experience is as expected we should load our standard risk rates by 30% to cover the risks involved.

The next table shows how this picture changes if 10% of these cases non-disclosed or misrepresented information would have changed the underwriting decision:

Table 2:

Underwriting Decision	Extra Mortality Rate	10% Non-disclosure
Standard Rates	0%	65%
Rated	50%	21%
Exclusions *	225%	7%
Declined *	225%	7%
	Weighted Loading	42%

This means we undercharged premiums by $((100\%+42\%)/((100\%+30\%))-1)=9.23\%$. This is an estimate of the amount of the financial impact that non-disclosure has on insurers.

So, what does this equate to for one year's worth of new business of an insurer? If we assume they write 25000 policies per annum and the average annual premium of these policies are R10,000. Let's also assume a present value factor of these policies of 7. This will mean that over the expected lifetime of one year's worth of new business, non-disclosure will cost the insurer approximately: $25000 \times R10,000 \times 7 \times 9.23\%=R140m$

This should highlight the significant financial impact that non-disclosure has on insurers and why its impact cannot be ignored.

1.4.2 Reputational risk to insurers

Apart from the significant financial impact that non-disclosure has on an insurer there is also a huge reputational risk to them through a higher number of declined claims and the cost of disputing these claims.

1.4.3 Impact of non-disclosure on the customers

Having outlined the impact that non-disclosure has on insurers, we turn our attention to their customers. This impact is often ignored as it is generally believed that non-disclosure only negatively impacts the insurers. However, below we outline how this may affect customers.

1. The cost of non-disclosure will eventually emerge in the claims experience resulting in higher standard rates and hence higher premiums for everyone. Those disclosing honestly and who are accepted at standard rates will pay a higher standard rate. Even those who disclose honestly and gets rated will also be rated on top of a higher standard rate. The only ones who benefit are those who either deliberately or unintentionally non-disclose and where this is not picked up at claims stage.
2. Difficulty in onboarding process. Not having a good handle on the non-disclosure rate may mask possible improvements that can be made to the onboarding process and hence improve the customer journey. These improvements in the customer journey can be achieved through:
 - a) Improvements to application form questions that ask more targeted questions to the cohort of lives involved
 - b) Revision of non-medical limit grids that allow the insurers to ask for less/more correct information.

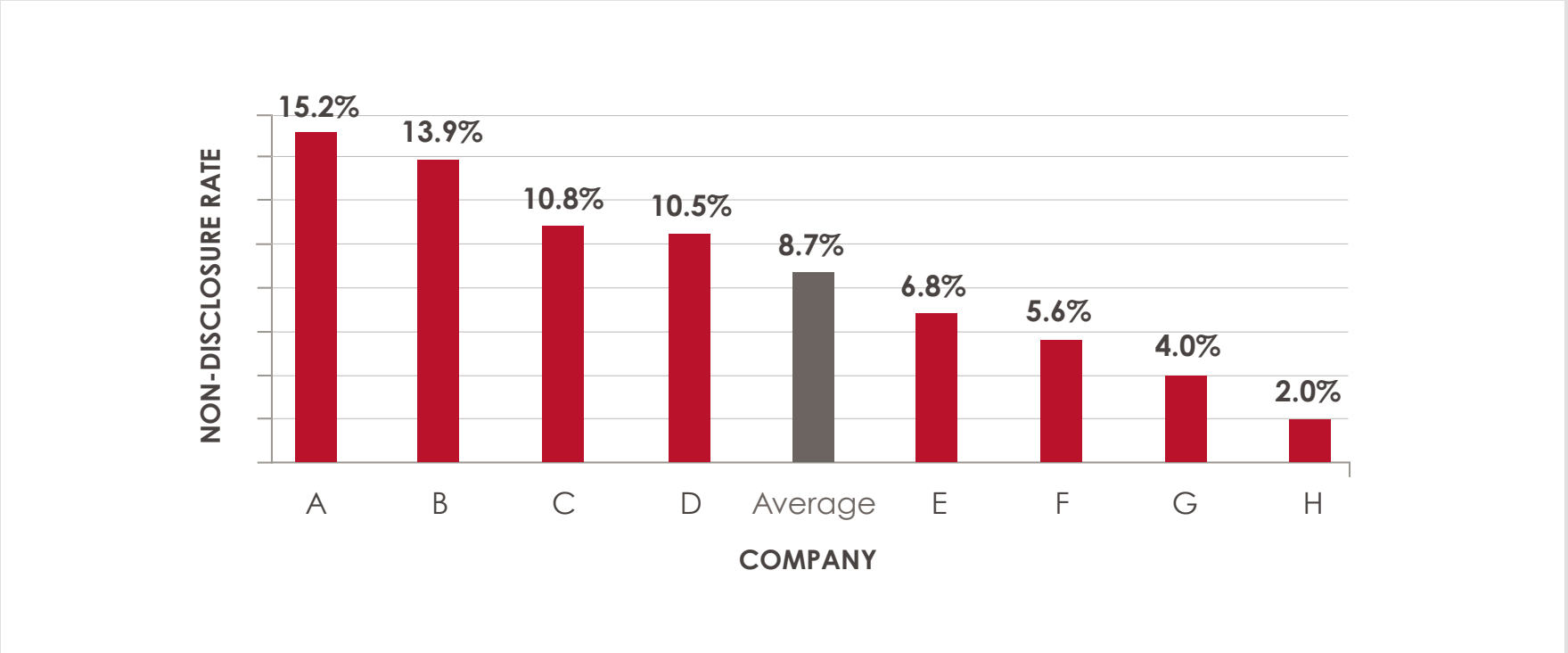
3. Lastly is the impact on the customer if a claim is disputed. We need to remind ourselves that we are dealing with people in their most desperate times and we need to make every effort to fulfil the promise we made to them.

1.5 Lessons from the UK

As mentioned earlier, SCOR in the UK has done a similar survey and, as already concluded, their market is more focused on non-disclosure. In particular, they use more advanced methods and processes to detect and eradicate non-disclosure. Below I highlight a few learnings that we can take from the UK.

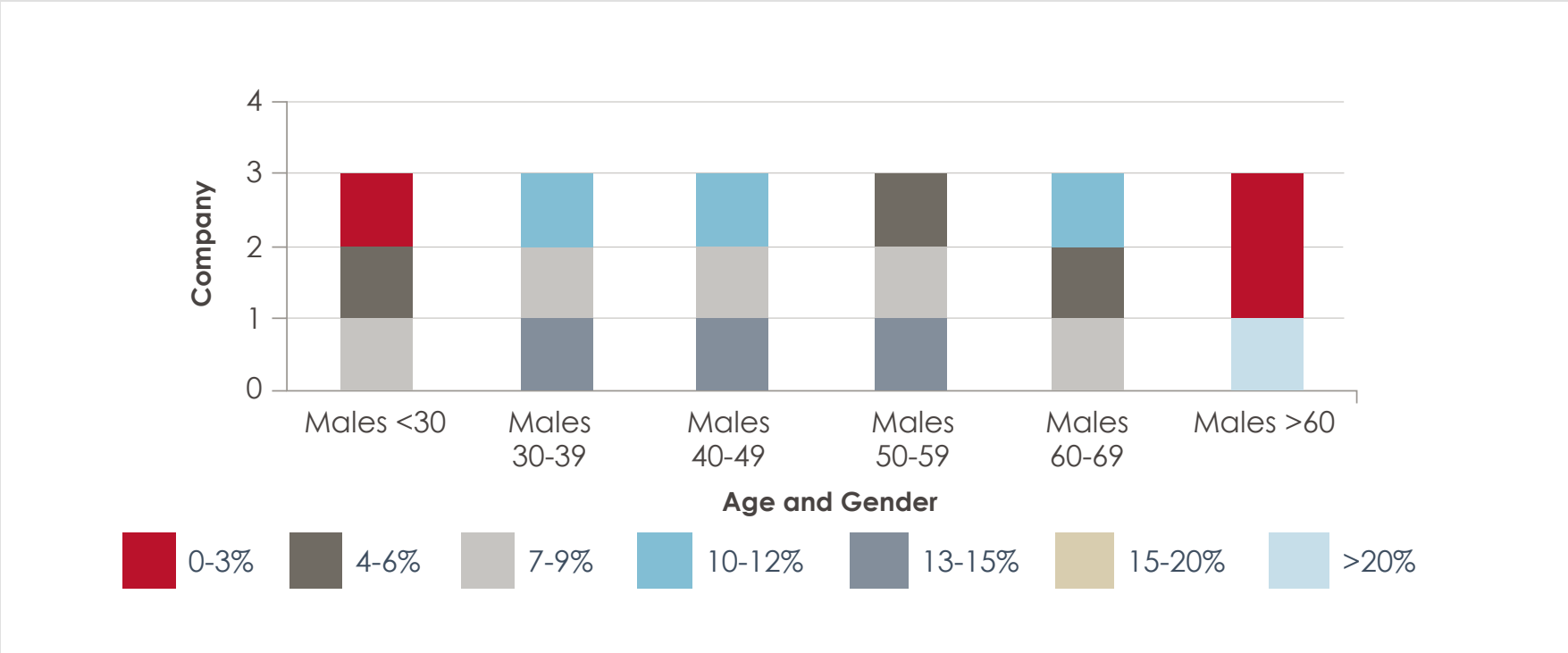
1.5.1 Results through random post issue sampling

The graph below shows the range of reported non-disclosure rates from the insurers that participated in the UK survey. Clearly, they have a good handle on the non-disclosure rates embedded in their portfolios. It is important to note that all the rates below are from a random post issue sampling exercise which will reflect the most accurate estimate of the true non-disclosure rate embedded in an insurer's portfolio. The rates also don't just look credible because it has been quotes with an extra decimal – everything was backed by data from the insurers!!



1.5.2 Granularity of analysis

The above graph is at an insurer level and shows the overall non-disclosure rate reported. There are however a few UK insurers who can split their data into a more granular level. The graph below shows how three of the UK insurers can split the non-disclosure rate by age and gender – the colour represents the non-disclosure rates for each cohort of lives:

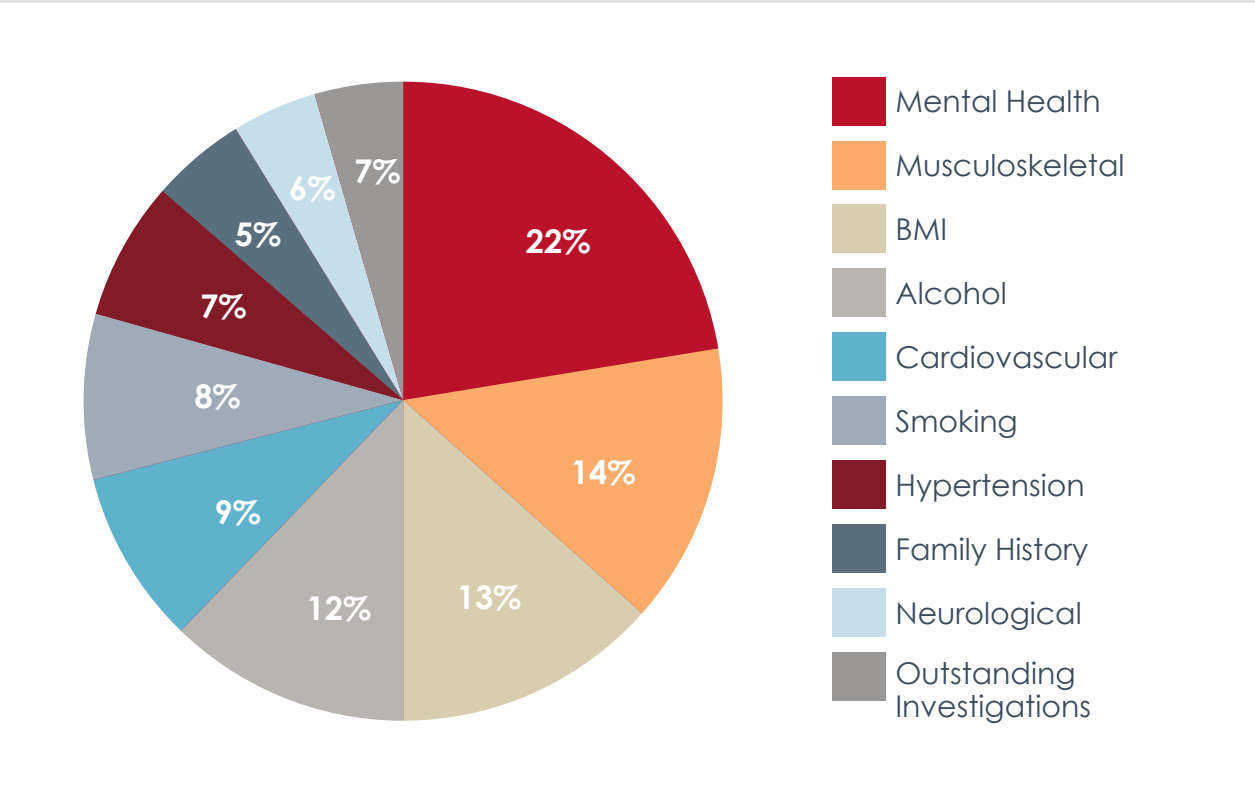


This allows insurers to identify areas of concern and perform a targeted post issue sampling exercise to get underneath the underlying causes of non-disclosure. Once the causes are identified companies can act to reduce non-disclosure, which will ultimately lead to lower premiums and less repudiated claims. It also allows insurers to design tailor-made application forms aimed at different cohorts of lives or revise non-medical limit grids.

All in all, having this type of handle on the underlying non-disclosure rates will improve the customer journey either through the pricing, onboarding process or at claim stage.

1.5.3 Conditions mostly non-disclosed

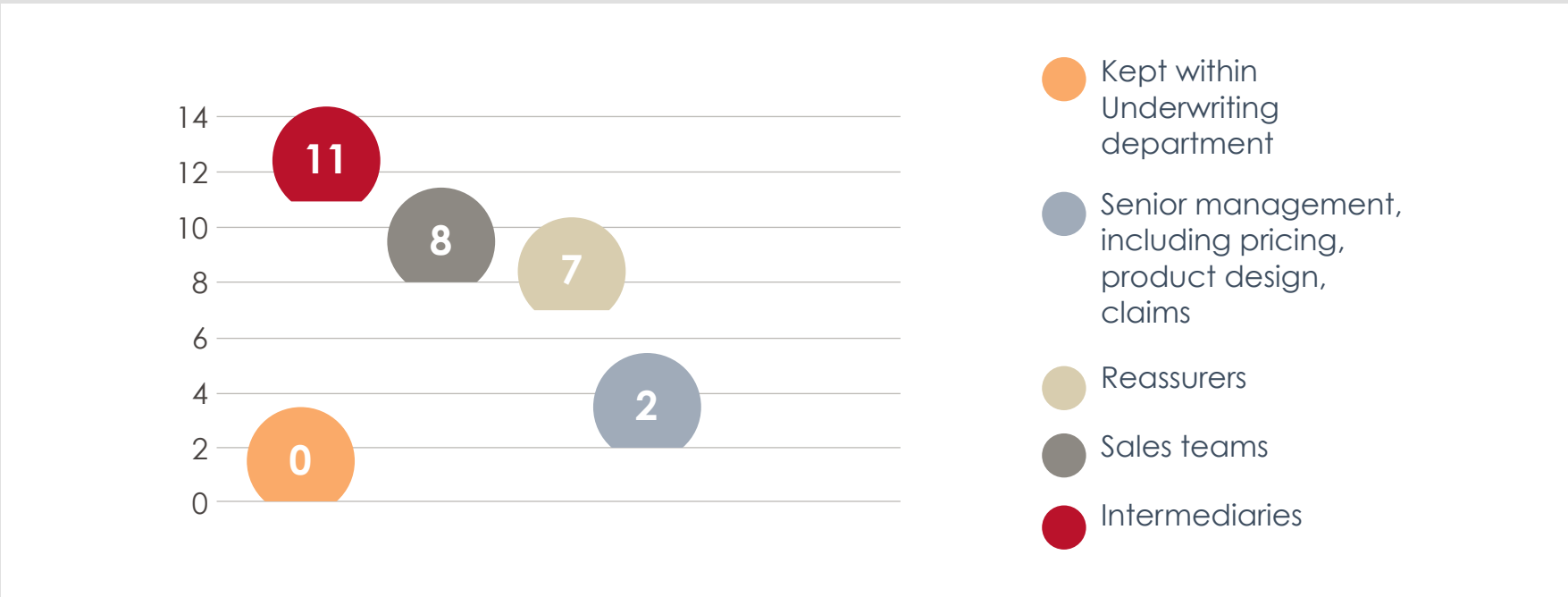
Another key area of focus for UK insurers is to have a decent understanding of the conditions mostly non-disclosed. The graph below shows some insight into this:



The results will allow insurers to identify and improve sections on application form design that may be frequently misunderstood by applicants e.g. questions relating to mental health. The UK market has also introduced “checks and balance” questions into their application forms to check the accuracy of disclosures relating to these identified areas. For example, they will cross check your BMI by not only asking you to disclose your height and weight, but also your pants/dress/waist size.

1.5.4 Reporting of MI analysis

The graph below shows the results to the question in the UK survey of who the insurers share the results of their non-disclosure analysis with.



It is encouraging to see that no one will just keep it within the underwriting department and that everyone will share it with seniors, however the interesting take-away here are the two insurers that share the results with their intermediaries did report the lowest non-disclosure rates. It does show, albeit on a small sample, that making intermediaries aware that insurers have a good handle on their non-disclosure rates and more so if they can split their non-disclosure rates at an intermediary level will make intermediaries encourage their customers to make better disclosures.

1.5.5 Application form design features

UK insurers do make use of some interesting techniques to reduce non-disclosure. I list a few below:

- A common feature is for applicants to sign the application form before they complete it. This is believed to encourage better disclosures.
- There are repeated caveats about the potential consequences of non-disclosure. This makes the applicants aware that there may

be a potential issue at claim stage and does encourage better disclosures.

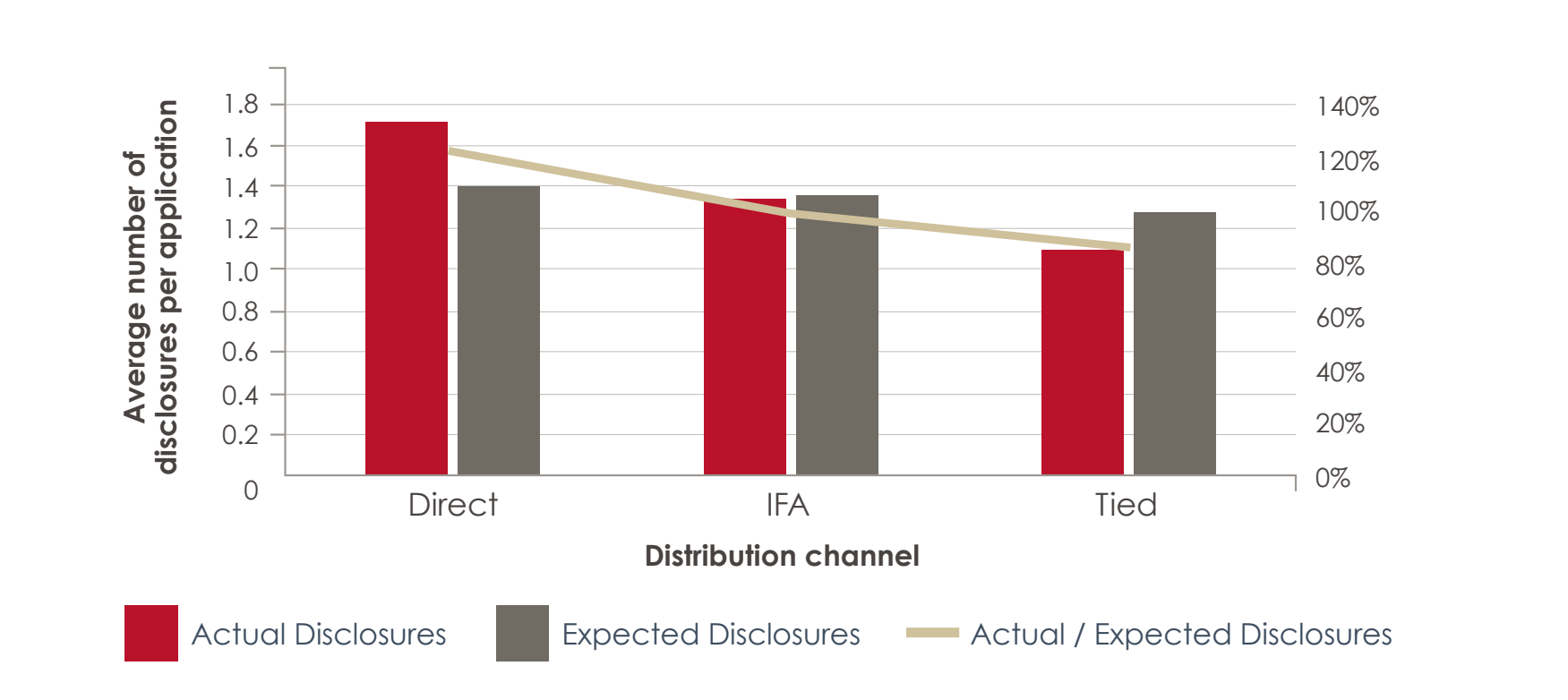
- On a lighter note, one company even did some testing of introducing a “3rd eye” at the top of the application form that will be “watching” every disclosure made. This was never formally introduced, however it does highlight that UK companies will try everything to eradicate non-disclosure.

1.5.6 Additional risk selection reports

Some insurers also designed additional risk selection reports for the applicant's doctor to fill out targeting cohorts that are more likely to non-disclose. These reports are targeted at customers who are not subject to any medicals, but who have made certain disclosures on the initial application form. These are designed to be quick and easy for the doctor to complete and hence shouldn't burden them. The questions can address both lifestyle or health-related issues.

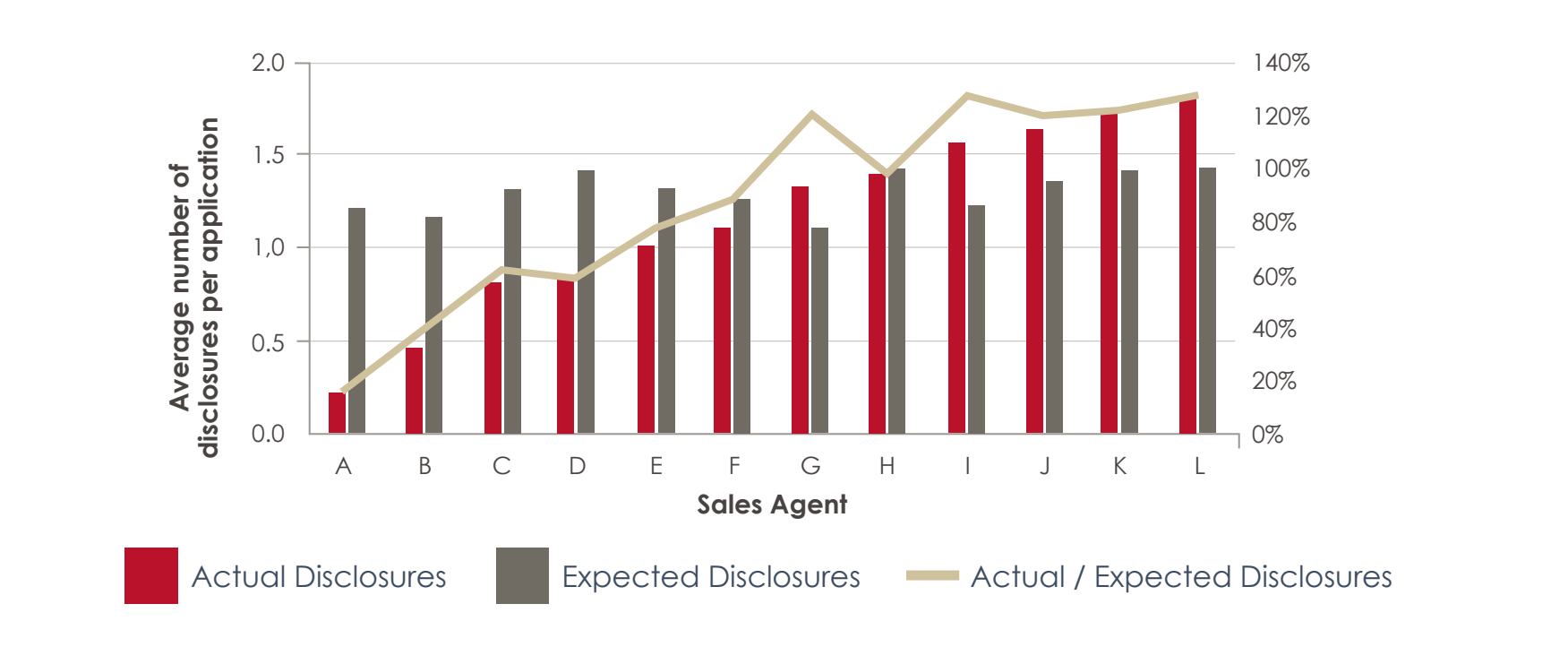
1.5.7 Data analysis through generalised linear modelling

As mentioned, one of the areas that UK insurers target is the quality of business that comes through certain distribution channels. They have done significant work to understand the disclosures that come through the various distribution channels by building generalised linear models that will predict the number of disclosures expected for certain cohorts of lives. This can then be compared to the actual disclosures observed to see whether there are under or over disclosures coming through certain distribution channels. The graph below shows some high-level results:



We see more disclosures than we expected through the direct channel – a possible explanation for this may be that people are more comfortable to disclose information when they are not in the presence of an intermediary. For IFA’s the actual disclosure and those expected from the model are very close, whereas for tied agents we get less disclosures than what we would expect from the model.

This, in turn, prompted a deep dive into each sales agent in the tied agent network and a more granular split was obtained outlined in the graph below:



Sales agents A to D may have potential issues to investigate further as their actual disclosures are quite a bit less than that expected from the model. This may be valid and a genuine reason may exist, however it is worth exploring this further. At the other end of the graph agents I to L disclose more than we expect, which although a positive could highlight certain process issues.

1.6 Conclusion

Non-disclosure is costing the South African life insurance industry money and significantly impacts the customer journey. Although companies are monitoring non-disclosure it's been largely done on a reactive basis and we believe that not enough is being done to proactively pick up the non-disclosure embedded in an insurer's portfolio.

This can be achieved through:

- Insurers doing more post issue sampling exercises on policies accepted at standard rates or on policies where a specific issue has been identified and further investigation is required.

- ML analysis and sharing the results with appropriate parties within the business
- Alternative methods of obtaining risk assessment data

This will allow insurers to get a better handle on their non-disclosure rates and, more importantly, reduce the non-disclosure inherent in their portfolios. This has benefits for everyone. Insurers will be able to charge more appropriately or gain a competitive advantage by using the gains to reduce customer's premiums. Insurers will also be less exposed to Ombudsman and legal disputes which will reduce the reputational risk.

Most importantly though with more focus than ever on the TCF framework it will not only lead to saving the customer money in economically testing times, but also significantly improve the customer journey at onboarding and claims stage. Should this be achieved insurers can go a long way in regaining their customer's trust believed to have been broken for some time now.

How Machine Learning is the Death of the Conventional Actuary

by PW Janse van Rensburg

The year is 2034. Artificial Intelligence is running rampant. Not in the sense of judgement day in The Terminator, more in that it has embedded itself into every aspect of our lives. Imagine waking up every morning, because your home is attuned to give you your optimal rest every night. All electronic devices automatically switch off at certain times to ensure Melatonin kicks in and your curtains draw close to cut out any light pollution from the outside world. Once you have woken, your kitchen has prepared a smoothie for you that contain all the right vitamins and minerals catered to your specific state of health. To get to work a car pulls up outside your home. A self-driving car. You get to work in less than 10 minutes because traffic is also a thing of the past. Well, at least those of us that have not lost our job to a robot. I write this in jest, because I am not here to be a doomsayer. I am here to lay down some facts, mostly. I will be using some statistics as well.



You might be wondering what this has to do with machine learning being the death of the actuary. To answer that, let us start off with what machine learning is not.

It is not magic, even though according to some regulators a black-box implementation of a neural net could be dark magic. It is not the answer to life, the universe and everything, we all know that is 42.

It is a sub field of computer science (and statistics) that concerns itself with the study and construction of algorithms that can learn from and make predictions on data. It is also the key tool of a “Data Scientist”. Notice the quotations there? That is because there is currently a lot of hype around it. So yes, we are currently at the peak of inflated expectations and yes, we are about to move into the trough of disillusionment, but once all is said and done, landscapes will have shifted.

Shifted in the form of first and second order consequences. Now because we are people of science, we shall start with the second order consequences first. Second order consequences deal with the general public and by inference the products actuaries make available to them. These usually come in the shape or form of personal lines insurance.

In a recent study done by Dr Jean Twenge on generational differences, she found that teenagers have less of a desire to go out with their friends and that they see a driver’s license as something their parents have to nag them into. It was all thanks to the cellphone.

Now, I said I was not going to be a doomsayer, but Dr Twenge referred to the destruction of a generation. Her words, not mine. This device is connected with so many machine learning instances it’s quite astounding. From your Facebook newsfeed, your personal assistant, your



Google searches to probably the most relevant one of all, Uber. In a couple of years, your teens will see a driver’s licence as a floppy disk. Not in that it died to become the icon of saving, but just something that predated the new norm.

What does that have to do with actuaries? Well, fewer teenagers getting their driver’s licence imply a decline of new personal vehicle insurance policies being written. Combine this with what I mentioned earlier of self-driving cars that shift the burden of responsibility from the person in the car to the person building the car, good-bye personal vehicle insurance. This is not doom-saying as it’s not a question of if, just a question of when.

In another study by Danforth and Reese, they analysed Instagram photos to attempt to diagnose depression. They found that the results were 70% accurate, 28% more reliable than a GP’s diagnoses, at 42%. Analogues to this, there is a device developed by Sensi that fits into your hand that can detect heart murmurs with a 97% accuracy, better than even the best cardiologist out there can. If the advancement of the smartphone is anything to go on, your cellphone will soon be

your GP and you will only go to a specialist if it tells you to, shifting the medical insurance industry to an entire different landscape.

As for first order consequences, it has to do with how an actuary does his/her job and where he/she fits into the company. Machine learning has the biggest impact on one of the core functions an actuary provides, modelling. My favourite example of where machine learning topples the traditional modelling techniques is where a specific Kaggle participant attempts to predict survivors of the Titanic disaster. Through 38 iterations of logistic regression, wrangling the data and tweaking his approach, he arrives at a Kaggle score of 0.794. With his first attempt with an out of the box random forest with no tweaking and no feature engineering, he manages to beat his best logistic regression Kaggle score with a final 0.799. A marginal gain to be sure, but taking into account it was straight out of the box, it is impressive none the less.

For a more actuary specific example, STATCORE, a statistical consulting company in the UK, was kind enough to allow me to use their example.

Company	Policy Count	Earned Exposure	Quoted Premium	Sold Premium	Total No. Claims	Assumed Average Claim Size	Gross Earned Premium	Total Claims	Loss Ratio	Contribution
Algorithmic	16,025	7,472	£469,71	£483	1,207	£3,000	£3,605,918	£3,621,000	100,4%	-£15,082
Traditional	17,903	8,416	£469,86	£438	1,238	£3,000	£3,685,595	£3,712,800	100,8%	-£15,082
Difference	1,878	944	£0,16	-£45	31	£0	£79,677	£91,800	0,4%	-12,123

Two different pricing methods based on the respective claims frequency model and using the actual claims in the test data they arrived at the above results. Algorithmic wrote less policies, but achieved an average sold premium of 50 GBP higher than the traditional. They had a loss ratio improvement of 0.4%, which was also proven to be significant. The difference in performance was due to the accuracy of the claim frequency model as actual average claim size was assumed to be equal across the board.

Earlier I promised I would deal mostly in facts, so to honour my promise, in the below picture there is a gemsbok.



For another relevant example, Dr Paul Beinart conducted an experiment on a US Auto book. He looked at claim severity and fit a GLM and a neural net and for a more in detail look you are welcome to peruse his blog on exactly how he tackled the problem. I will only summarise it shortly here.

To model severity he used the gamma backpropagation algorithm in the neural net and the log link and gamma error structure for the GLM (so as to not favour either approach in any way). As metric for the severity data he used gamma deviance and looked at the deviance improvement for the GLM and Neural Net over the null model.

The result was that the neural net modelled the distribution of the actual data more closely than the GLM and the neural net had a 1.9% greater deviance improvement than the GLM.

So where does this leave us? Well, the insurance industry has always been slow to react and by inference the actuarial profession as a whole. There is no better example than the banking industry, which was ripe for disruption by actuaries with their unique in-depth understanding of risk. Unfortunately, they were too slow to penetrate the industry and machine learning specialists did so on their behalf. Nowhere is this more prevalent than at the best retail bank in the world (as rated independently by Lafferty in their second annual Bank Quality Rankings). There is not a single actuary employed in an actuarial role.

To ensure the actuary stays relevant I would like to paraphrase one of the greats.

Come with me on a machine learning journey if you want to stay relevant. At the very least, employ programming in the undergrad actuarial course. Teach the actuaries of the future to use the tools of the future to solve the problems of the future. I am honestly surprised that SQL does not form part of the undergrad courses seeing that it is one of the most widely used database querying tools in the world. Make the students familiar with some of the free modelling languages such as Python or R. Let them take up at least one other "pure" programming language. Teach them how to learn a programming language so they can adapt to any environment and use the best tool for the job. As I said, not all modelling problems can be solved with machine learning, but if all they have is a hammer, everything will look like a nail. 🛠️

Big Data, Big Insights or Big Problems? Are you sure you're ready for this?

Dimitri Anagnostopoulos

One of the phrases on the buzz these days is big data, which claims to transform banking and insurance industries. Before embarking on such a journey, large organisations need to first understand that big data isn't a plug-and-play initiative that would automatically make them "insight rich" (or super rich, come to that).

From my experience, financial institutions are still insight poor, but this isn't because of a lack of data. Rather, it stems from an inability to utilise existing data sets efficiently for various reasons: multiple data sources, disconnected platforms, lack of capacity and/or expertise on data analytics, etc. If you're not already in a position to handle existing data sets efficiently, are you aware of the problems that big data can impose on your organisation?

According to the Joint Committee of the European Supervisory Authorities, big data is defined by the three "Vs" (volume, velocity and variety). When it comes to variety, I would add a "U" (for unstructured). Still, trying to capture the sense of big data with one definition might be difficult. Looking at other descriptions, one may also add to the three Vs and one U, that big data require non-traditional database systems and business intelligence to analyse them.

The above definition should already be pointing to the direction of why big data isn't a solution by itself (or at least not an easy solution) and why

big data shouldn't be viewed as a plug-and-play initiative.

At the risk of being accused of sounding completely unoriginal, I will advocate that the biggest obstacle for utilising big data effectively is organisational culture, not legacy systems. On the other hand, even if we manage to sort out organisational inefficiencies, the emerging regulatory landscape on data security, data privacy and customer protection is already complicating things even further.

Let's get practical and see some examples.

I'm still taken by surprise when clients ask me, "Can we make money out of big data?". To which the answer is always, no you cannot. You can make money out of servicing your clients. Big data is like a toolset, it can help you or break you. The elements to look at for achieving the former are many, hence the referral to the organisational culture.

Internal inefficiencies

I'm still taken by surprise when clients ask me, "Can we make money out of big data?". To which the answer is always, no you cannot. You can make money out of servicing your clients. Big data is like a toolset, it can help you or break you. The elements to look at for achieving the former are many, hence the referral to the organisational culture.

Look, for example, at the internal communication gap between the central analytics team and retail business units (whether you're operating in a centralised or decentralised data ownership model). Business Units are still taking decisions on "existing client segmentation", which is static and provides no insights to clients' lifestyles, life events or everyday moments. On the other hand, big data initiatives from the central analytics teams have yet to influence, or find out how to influence, the way business is taking decisions.

One reason for the above is the frequency of analysis – it's still slow and can't keep up with the real-time characteristic of big data. Another reason is the way BUs are operating, largely influenced by wrong-KPIs mentality. Take a look at existing KPIs – sales teams are typically measured by "new accounts", which could be very far from becoming new customers, let alone profitable customers. Departments are measured by next quarter's revenue, not by customer attrition. So sales representatives are still promoting products that would meet their bonus, instead of meeting clients' needs.

As much as performance indicators can be a good management tool, wrong KPIs may incentivise the wrong behaviour. For such misalignments, lack of data (big or not) is not the issue. Management mentality and internal processes are the way decisions are driven (sometimes by habits), resistance to change, fear of becoming irrelevant and so on. This should come as no surprise, though – people manage their careers, not their jobs, meaning they will pursue whatever target you give them. How certain are you that current KPIs reflect your strategic goals? If big data analytics require change of KPIs and relevant bonus schemes, how prepared is your organisation to make such big changes?

Let's not forget the usual suspects

Big Data is here and is real. We are living in a digital world and everything we do is recorded ... and probably for ever. We are moving towards becoming a data permission-based economy, which means that we will be asked as individuals to allow and consent to sharing data on everything we do (whether for insurance, credit or other services).

Lack of data is not an issue anymore. However, we must not forget what we already know about the "traps" and "risks" that are lying in wait when we try to analyse the world through data. For example, "causation" is very important as well as data interpretation. Unless you are operating in a stable environment, you want to know what causes the correlation, otherwise you won't know when it is likely to break. You are probably aware of the Google Flu Trend example and its failure.

Another example is "sample bias" and "sample error", which is still relevant with the use of big data. Companies are increasingly trying to understand risk patterns from our social media interactions. However, no matter how large the number of data points, social interactions are not consistent across users, in the sense that not everybody is interacting on-line (even if they have a social media account). There is no doubt that you can derive value from such analysis, but we need to be careful on how we extrapolate our learnings (e.g. people who have very limited social media activity, are you scoring their financial credit rating as "good" or "bad" and why?).

Applicability is another important dimension. Insights from big data might not be 'fit for purpose' across every aspect of your business. For example, the micro-segmentation insights that big data can provide may be very useful on the retail side, product development, product offering, etc. But you will likely need to define different risk buckets if you are building an IFRS9 model for impairment losses – as micro-segment buckets are more likely to 'break' these models.

The above is a very small sample of potential problems, just to demonstrate that the challenges data scientists face are not only relating to lack of data – so let's be careful around the misconception that because we have more data things are getting easier. Remember to start with

the question first – "what are we trying to achieve" – and then look what data you might need to answer that question.

Emerging regulatory landscape

As the volume, velocity and variety of data increase exponentially, so does the need for improving our capabilities to store and analyse them. Capabilities for analysing data do not only refer to technical skills. Data silos, insufficient data dictionaries and libraries, manual processes, lack of visualisation tools, data governance, misaligned terminologies across departments, disconnected KPIs with the strategic goals, etc. are all important dimensions that need to be addressed (pointing back to the concept of organisational culture).

When referring to technical skills, however, Artificial Intelligence and Machine Learning algorithms are at the top of the list. The concepts are not new, but the use of such techniques in the financial industry is increasing. This is also an area that requires particular attention, as more data and faster and more efficient algorithms should also not be misconceived as "easy solutions". The emerging regulatory environment is amplifying organisations' challenges across a number of dimensions.

Information security (e.g. storage, cyber security, encryption, identification and background checks, IOT security, etc.) is prominent on the regulatory focus and a fast ascending topic in CROs priority list.

Customer protection and financial inclusion is an important dimension that can challenge AI and Machine Learning techniques (at least in the credit and pricing space). For example, regulations such as the General Data Protection Regulation (GDPR) are mandating institutions to be able to explain to customers the factors that derived the decision. Customers will be entitled (at least under the GDPR) to be given sufficient information in order to be able to make an informed decision as to whether to opt out from such data processing. Decision-tree-based machine-learning methods allow, in theory, for determining the learning path. However, if the learning process consists of billions of steps and is difficult to trace backwards, then it might not be possible to tell exactly why a sample was labelled good or bad.

"Customer Consent", imposed by the regulator, is another big game changer when it comes to using personal information for rating and pricing clients. Both the GDPR and the POPI act refer to "consent" and the "purpose of using data". Data exchanges between the organisation and third parties are also described in the new regulations, which of course increase the challenges for compliance.

The emerging regulatory environment is a dimension that cannot be neglected in the effort to improve capabilities for gathering, understanding and analysing big data.

Conclusion

Operational inefficiencies, management mentality, internal KPIs and your overall "organisational culture" are an integral part of your journey to improving your capabilities around big data (processing, analysing, driving actions, etc.).

Developing technical capabilities to analyse big data effectively across the organisation is one challenge. To create meaningful messages is another. Analysing quintillion bytes every day across different dimensions doesn't make the understanding (the causality) of correlations any easier - let's be careful of the misconception that $n = \text{all}$ and let's not forget the lessons data scientists have learned to date.

Advanced analytics techniques (AI & ML) are also not an "easy solution" to the above challenges. The emerging regulatory environment is amplifying complexities and raises the compliance bar for financial institutions even higher.

The topics of Big Data and Advanced Analytics appear in every financial institution's strategy these days. Before embarking on large and expensive projects and expect unrealistic "solutions", it is important to decompose the buzzwords and understand the long and difficult journey ahead.





Managing the Risks of the Blockchain

Periklis Thivaaios- True North Partners

Introduction

The potential benefits of blockchain are widely discussed and advertised! Yet, because there is no return without risk, this article will provide an analytical framework for evaluating the risks inherent in the use of blockchain in financial services institutions.

Just like with all new technologies, we don't know what we don't know. Similarly, we are often not aware of things we know (the unknown knows). It is our opinion that blockchain is yet another new technology, in the same way that computers, mainframes and the internet were potentially disruptive – yet similarly poorly understood – in their early days.

Our objective is not to ruin the party but rather to assist with setting up the appropriate foundations for a more sustainable use of blockchain technologies. All risks are manageable and, just like with any process of experimentation, critical thinking and an analysis of historical technological developments can assist with the better management of the inherent risks.

Good judgement is the result of experience and experience the result of bad judgement ”

Mark Twain

We put forward two simple, yet significant, propositions. First, make sure that business problems are your main driver and technology is the supporting tool, rather than the other way around. For example, several commentators expect blockchain technologies to materially reduce costs in banking institutions. At the risk of stating the obvious, the cost cutting potential of blockchain (and any other technological solution for that matter) is only possible where the technology has been applied to the right problems.

Second, we highlight the need to thoroughly analyse and understand the associated risks upfront in order to minimise the costs and potential downsides of implementation. The ultimate decision is not a question of finding the perfect solution, but rather one where the benefits outweigh the drawbacks. Even where that balance has been achieved, the drawbacks will always be present and we still need to accept them and deal with them.

The following background discussion will only focus on the elements of blockchain that are most pertinent to this article and most often misunderstood. Subsequently, we will decompose the analysis of blockchain risks along the stages of pre-implementation, implementation and post-implementation. Lastly, we will also discuss the risks that are beyond the control of direct participants. Naturally, and given the early stage of blockchain adoption, the pre-implementation risks will form the majority of the discussion.

Background

In this article, we assume a basic understanding of Distributed Ledger Technologies (DLT) which incorporate the sequencing of blocks (blockchains). We will therefore not delve deeply into describing what a DLT is and how it works.¹

Blockchain is a *component* of a distributed ledger architecture, and the only reason why the term blockchain is used instead (also in this article) is for ease of reference. We will therefore follow common practice and use the terms blockchain and DLT interchangeably, even though this is not 100% accurate.

In brief, we follow the definition by the FCA (2017) whereby a DLT “can be described as a set of technological solutions that enables a single, sequenced, standardised and cryptographically-secured record of activity to be safely distributed

“ Bitcoin is not blockchain, just like email is not the internet ”

to, and acted upon by, a network of varied participants.”

The main characteristics to focus on are primarily the following two, as they are often the ones most often misunderstood:

- **A record of activity:** blockchains are designed (and therefore are most efficient) to hold a record of activity. In other words, blockchain architectures should not be understood as databases holding information, but rather as a cryptographically secured *proof* of the information itself.

Identity is a useful illustration. Currently, if I want to open a bank account, I need to submit a copy of my ID document and a few proofs of address. These are photocopied (or scanned, one would hope) and stored ‘somewhere’, safely or not. An insurance contract would also involve doing the same, and so would starting a phone contract. Before one realises, copies of our identity documents are held by

several parties with all the risks that this entails. With identity on blockchain, I do not anymore need to submit copies of the actual identity documents; the DLT itself provides the proof of identity without the actual documents being copied and held in several locations. The blockchain is a distributed proof of identity, and not necessarily a database holding the information itself.

- **A network of participants:** blockchains are based on the assumption that several parties participate in the network. Following the principles of network economics, the value of the network increases alongside the number of participants. Reversing this argument, a blockchain used by a single banking institution is an endeavour whose value needs to be evaluated critically.

Practically, distributed architectures are a lot more expensive than centralised ones. Setting up a distributed ledger architecture for your organisation alone is like building a 6 lane highway to connect your office with the one across the hallway. We will revisit this point several times in this article.

One of the most interesting implications of blockchain technology is that it can support digital asset scarcity. This is something relatively groundbreaking as, generally, digital assets can by definition be reproduced several times without loss of quality or additional costs (the marginal cost of information is null, and one of the primary reasons why digital information can be distributed at no cost – whether that is achieved legally or not). Music and image files are prime examples, where digitalisation has resulted in the (often illegal) reproduction of digital assets. Digital asset scarcity means that a record (or proof) sitting on a distributed ledger cannot be replicated and each reference identify can remain unique. This property is already used by crypto-currencies and could be a trait that can be of immense value, to financial institutions and others (e.g. in the application of identity).

However, and in order to reduce confusion, we would like to make clear that blockchain and cryptocurrencies (such as Bitcoin) are not the same thing. Bitcoin is based on a distributed ledger technology, but one can have a blockchain that does not involve any cryptocurrencies at all.

¹ For an overview, please refer to FCA (2017) or any other reliable online resource.

“ When is blockchain the right solution? ”

In other words, Bitcoin is not blockchain, just like email is not the internet.

Analysing the risks

Based on the aforementioned points, we will provide a framework for analysing blockchain-related risks, focusing on pre-implementation, implementation and post-implementation.

At the conceptual level, three elements stand out:

1. Blockchain timestamps data in a sequential chain

Does the problem you are looking to solve require that the data is primarily structured in a time chain? In other words, is the sequencing of activities the most important dimension of what you are trying to capture?

2. The blockchain is about the proof of the data, not necessarily the data itself

We have already touched on this point in the background discussion. Do you need to hold a copy of every single customer's passport or does a verification of identity suffice? The difference is significant and becomes even more important when one considers the technical aspects of data volume, distributed verification, computer processing power and associated processing costs (such as hardware and electricity). If you need a database, develop exactly that, a database. If, on the other hand, you are interested in a distributed proof of records (which themselves may be captured in a separate database), then blockchain may be the way forward.

3. The proof of the data is distributed across a network of participants

Lastly, does the information need to be distributed across actors? A bank would never share proprietary data with its competitors. The cryptographic encryption of blockchain records can naturally protect such data, but that is dependent on the design. Regardless, blockchain applications are founded on the sharing of data, and therefore the deployment of such technologies needs to be chosen for business problems where sharing is a benefit more than it is a risk.

The settlement of counterparty transactions is a relevant use case, which is currently being pursued by several financial institutions. This use case ticks all three boxes. First, the sequencing of activities is the primary dimension and it is also clear: agreement -> monitoring -> trigger event (whatever that may be for different types of options) -> settlement. Second, the blockchain is used to manage the settlement process itself, but does not need to carry KYC records, MSA documents and other related data which can be stored separately and individually by each institution. Lastly, derivative settlement naturally occurs between a network of parties. An additional benefit of this use case is that, even though there may be several parties to the network, the final settlement occurs between only two.

Once the conceptual criteria have been satisfied, the next step is to evaluate the benefits and risks of different operational designs. These are the following:

Permissions and sharing

As we have already discussed, blockchains involve networks of participants. As such, the nature of sharing, the participants and the contents to be shared need to be thoroughly analysed in order to prevent inadvertent risks from arising.

The nature of sharing depends on the nature of the distributed architecture itself. Generally speaking, blockchains can be public, permissioned or private.

- **Public** (or unrestricted) blockchains are potentially accessible by everyone. They constitute the better understood 'version' of blockchain, due to the awareness surrounding Bitcoin, a prime example of a public blockchain.
- **Permissioned** blockchains are restricted to a number of approved participants. In other words, even though they are not open to everyone, they can be made available to the members of a specific group of participants. The R3 consortium is a good example.
- **Private** blockchains are used by a single party. They constitute the most extreme version of permissioned blockchains. As we have already discussed, their usefulness is –theoretically at least– limited.

Assuming some sort of permissioned architecture, economic theory can assist us with understanding the benefits and risks associated with it. To start with, network economics indicate that the more the participants, the more valuable the network. Therefore, institutions have an incentive to create larger blockchain networks. Classical economics, however, indicate two associated risks. The first one is the larger potential for cheating by actors, due to rational decision making which prefers self-serving behaviour. Additionally, diseconomies of scale may arise with the increase in participants, something that we have already observed with the R3 initiative and the departure of Santander and Goldman Sachs from the consortium. Lastly, behavioural economics predict that, the more the participants, the higher the risk of herd behaviour and the potential to adopt less optimal options.

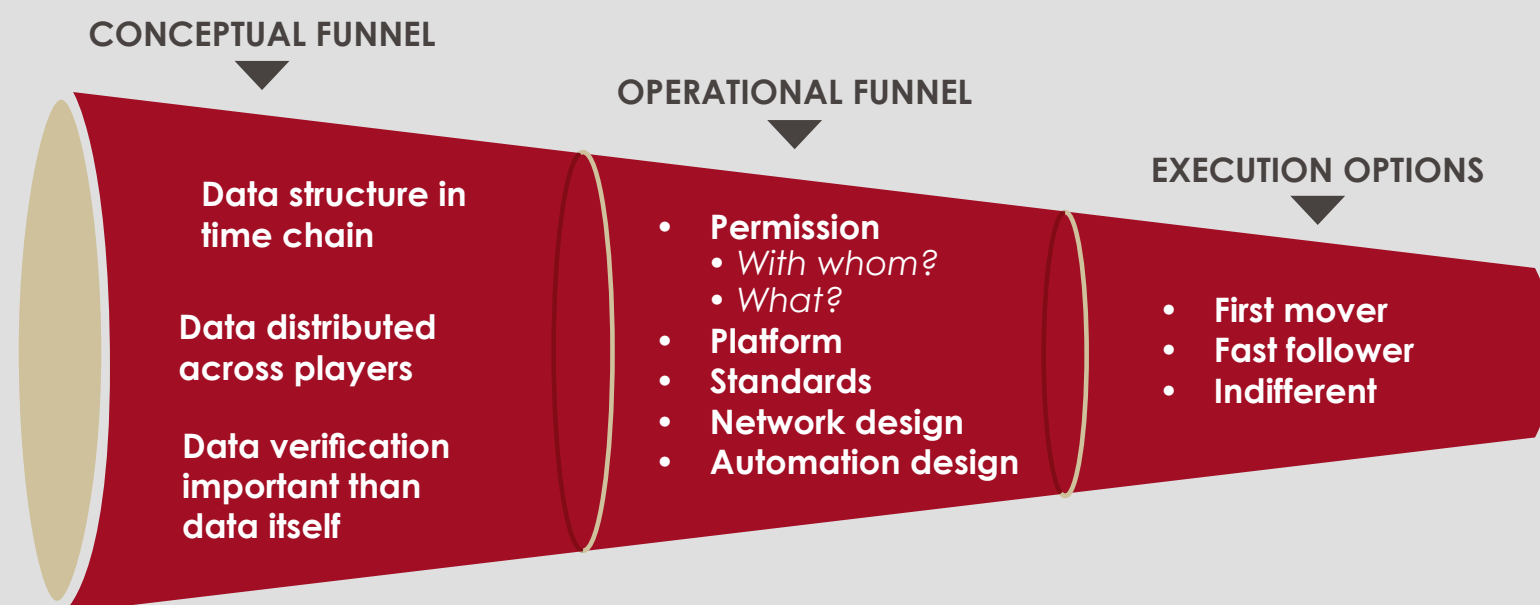


Figure 1 - The blockchain decision funnel

Pre-implementation risks

Given the early days of blockchain technology, an analysis of pre-implementation risks is the most important first step and the largest section in our discussion.

Hype is never a good guide for human behaviour and, at the moment, blockchain is often portrayed as the silver bullet for more problems than it is designed to solve. Therefore, the first step in pre-implementation risk analysis is to understand the cases where blockchain could be the right solution to our problem.

Practically, blockchain has the potential to address several problems, but there are also applications where blockchain is either not effective, or a rather inefficient solution. The following decision funnel can provide the analytical structure for evaluating the applicability of blockchain as a solution to the business problems we are trying to solve.

Blockchain applications for diamonds are a prime example: when it comes to this precious stone, one would like to capture where the diamond was extracted, where and by whom it was processed, who evaluated it and who have been the owners from extraction until now.

On the other hand, this process orientation may work against a different objective: client centricity. If the primary dimension of the data you want to capture is your client, then a client database is a lot more useful and agile.

Note here that the sequencing of data is different from the timing of data. If all you need is a time stamp, a simple SQL-like database with a 'Date' field may be a better, simpler and definitely cheaper solution. And if you are concerned about immutability, simply back up in two separate and geographically remote servers.

The latter is observed almost on a daily basis when one monitors the blockchain discourse and associated 'hype'.

Even when we have established with 'whom to share', a pertinent question is 'what to share'. The term 'cryptocurrencies' has created confusion which needs to be dispelled: Bitcoin transactions and pretty much all of their related metadata are public and visible by all participants. Naturally, more recent implementations of blockchain technologies (and cryptocurrencies) have increased the number and nature of information to be encrypted. Having said that, there is still enough metadata that is fully visible and a crucial design decision is which information needs to be shared on the blockchain and which not. Once again, a good guide is the ability of blockchain to act as the proof of a record, rather than the underlying information itself.

Platform

Related to the discussion above is the choice of platform. For a public blockchain, there is no need to re-invent the wheel. At the moment, Ethereum is the most prominent and immediately available platform to be deployed, supported by a well-

developed programming language (Solidity).

However, given the nature of banking activities, public blockchains are less likely to be implemented, at least for use cases pertaining to inter-bank activities. For such uses, the R3 consortium has been developing a blockchain platform while simultaneously defining some of the standards that could, at some point, become universal. Having said that, the R3 Corda comes with its own benefits and drawbacks, which need to be thoroughly understood and analysed. No easy task at all!

In either case, one should also evaluate the risk of reliance on the chosen platform. Unlike public architectures that are – or were originally – supported by governments (the internet being a primary example), blockchain platform longevity is not guaranteed. The systemic significance (not strictly in a financial sense) of Ethereum, Corda and Hyperledger (amongst others) cannot be overestimated at this moment.

The table below, by Philipp Sandner of the Frankfurt School Blockchain Centre provides an excellent summary between the three most commonly referenced blockchain architectures.

Characteristic	Ethereum	Hyperledger Fabric	R3 Corda
Description of platform	Generic blockchain platform	Modular blockchain platform	Specialised distributed ledger platform for financial industry
Governance	Ethereum developers	Linux foundation	R3
Mode of operation	Permissionless, public or private	Permissioned, private	Permissioned, private
Consensus	Mining based on proof-of-work (PoW)	Broad understanding of consensus that allows multiple approaches	Specific understanding of consensus (i.e. notary nodes) Transaction level
Smart contracts	Smart contract code	Smart contract code	Smart contract code
Currency	Ether Tokens via smart contract	None Currency and tokens via chaincode	None

The decision on the platform, therefore, needs to evaluate the need for permissions, the data to be shared, the way that it will be shared, as well as all the parameters identified in the table above.

Standards and integration / interoperability

Given the early stages of blockchain development, it is only natural that there are no concrete blockchain standards (something like a Blockchain ISO). While the standards are being developed (often by a trial and error approach) within each platform, the interoperability between platforms is extremely limited, if non-existent.

This highlights the significance (and associated risks) of the appropriate platform choice and dampens one of the most often brandished benefits of blockchain: automatic reconciliation. It is true that in a universe of a single blockchain, reconciliation is easy. Fast forward a few years and the existence of several blockchain platforms will result in the same 'mess' we find ourselves in the pre-blockchain world today: several systems which do not talk to each other and require all sorts of links and reconciliations. If you are looking for business opportunities, consider investing in ETLs (Extract, Transform, Load) for blockchains ...

Network design

Regardless of the platform, the network design needs careful attention. Are all the nodes equal or can some of them carry greater significance than others? Are forks (competing versions of the ledger) permissible? And so on ... Each design decision comes with its own promised benefits and associated risks (known and unknown). Ethereum, as an example, does not allow much flexibility on the network design and this may be a constraint for its application in interbank activities. But as the flexibility of blockchain technologies increases, legacy designs can act as straitjackets to future development which we need to consider upfront.

Automation design

Last but not least, DLTs are equipped with a powerful automation technology known as smart contracts. Smart contracts represent a condition-based, self executable layer of code sitting on a blockchain infrastructure. When a specific trigger is met (which could be anything that can be codified digitally in a so-called oracle, from time to



weather conditions), the smart contract executes itself and, in a payment configuration, disburses the payment to the appropriate recipient.

The potential benefits are numerous. Having intelligence built in blockchain-based payment methods (which are not necessarily cryptocurrencies, but as we said that's another discussion) is a great advance from existing 'dumb' currencies: payments can be linked to trigger events, bilateral agreements can be incorporated in the payout code and so on. A great (albeit misunderstood) example are Initial Coin Offering (ICO) tokens, where the payout of an ICO investment can be codified on an immutable platform, removing the uncertainty pertaining to the execution of the investment payment (but not necessarily the value or the timing of the payment itself).

Such automation does not come without its risks. Imagine the implementation of insurance claim payouts on smart contracts. That's pretty feasible to different degrees (on blockchain or not) and definitely appealing. The process is streamlined, payment speed is increased with customer satisfaction alike, and transaction costs potentially minimised.

Now imagine a catastrophe that results in the automatic payout of the insurer's available funds. In our humble opinion, the risk of insolvency is

Smart contracts: sometimes it is better to be dumb ...

greater than the risk of customer frustration. The ability to delay the payout and protect the insurer's capital position is at least as valuable as the ability to be considered a leading blockchain implementer.

Similarly, the automatic execution of an agreement (whether a derivative or reinsurance contract) requires the availability of reserves for the payment. Ringfencing such funds (in an electronic wallet or old school escrow account) may not be the best use of a firm's capital. The smart contract will execute, but if the bank account is empty the outcome will be nix nonetheless.

Indeed, sometimes the lack of automation is not the consequence of available technology (or lack thereof) but the result of conscious design. Indeed, sometimes it is better to be 'dumb'.

It is obvious from the above that the design risks are numerous, and the likelihood of getting things wrong high, simply because of lack of experience. Our risk assessment of blockchain technologies should not take either of the above lightly.

This leads us to the final section of the pre-implementation decision funnel, which are the execution options. Do you want your firm to be a **first mover** and accept the risks associated with the learning curve for a set of uncertain benefits? Or is it wiser to be a **fast follower**? Under this strategy, you can learn from leaders' mistakes, but also may end up being left out of a valuable network.

Most importantly, keep in mind that these two strategies (first mover, fast follower) are not decisions pertaining to an individual firm. As we explained above, blockchain implementation is a task that makes sense across a network of participants. Therefore, there are a few parameters that can assist with choosing the 'optimal' one.

Interestingly, the primary consideration is reputational, and we are sure this is one of the reasons why you are reading about this topic. Does your institution's reputational standing allow you to not 'pretend' (at least) that you are a leader in blockchain technologies? Or, conversely, can you afford the risk of being part of the first losers? Forget not that the market, whether rational or irrational, is always out there. You need to have a good story to tell regardless of the option you choose.

A serious downside of not jumping on a 'restricted

access' bandwagon is the potential cost of entering later. Imagine a scenario where your firm is part of the first mover consortium. After mistakes, budget overruns and a lot of organisational strain, you manage to develop a blockchain-based competitive weapon. Subsequently, 'Aesop's rabbit' wakes up, starts running and requests to join your consortium. Will you let them in and at what price? Let's change the subject of the sentence: will you be let in and at what price? Similarly, what is the risk of your firm being the only remaining follower in your peer group? Wasting an earmarked 'investment budget' could have been a better choice.

Implementation risks

Having gone through the pre-implementation funnel, we can be more confident that blockchain is indeed the right solution for the business problems we are trying to address. Once that has taken place, the actual implementation comes with its own risks.

To avoid repeating points that can be deduced from the discussion above, we will focus on a handful of additional ones.

Implementation risks

- Speed of delivery by a consortium of firms
- Interfaces with legacy systems of each participant
- Scalability of the solution
- Cost of maintenance (internal and across the consortium)

First, in any environment with several parties involved, implementation can only be as fast as the slowest member. Consensus is required at every step of the way and delays due to the competing priorities of participants inevitable; it is needless to mention the delays due to sheer participant incompetence. The risks that you have already encountered in previous in-house technological implementations are only going to be amplified in a multi-party development.

A second risk are the interfaces with legacy systems. Despite our enthusiasm and the evangelical scripts encountered in mainstream blockchain discourse, blockchains have to integrate with existing systems.

No easy task, we are sure you agree.

Scalability of the solution is another risk. This parameter depends both on the original design as well as the agility of the technology itself. Either point is an unknown at this moment and, as a rule, the more agile the solution the more expensive it is.

Associated with the above is the overall cost of maintenance. By definition, distributed = more expensive. Bitcoin is a prime example, whereby the computing power and electricity costs of the infrastructure are rising dramatically day by day. Whilst, usually, technology is a means of reducing costs, blockchain scalability may not always benefit from economies of scale. Once again, the more we understand and improve the technology, the more this risk will be mitigated. At this moment, however, it is still early days.

Post implementation risks

The most obvious post implementation risk is cyber risk. It is a lot easier to manage cyber risk on private technological infrastructures, and even there examples of cyber risk abound. Blockchain is by definition a shared infrastructure and the extent of exposure to cyber crime is largely an unknown.

We would like to make an important statement here: do not be fooled by the 'immutability' argument surrounding blockchain. In a properly functioning infrastructure, immutability is indeed achieved by majority node consensus. Having said that, we already have examples of Bitcoin (and other crypto-currency) hacks and infrastructure failures. The likelihood of such events not repeating is arguably low.

“ Most cyber risks arise from within, whether due to malice or sheer ignorance ”

Most importantly, most cyber risks arise from within, whether due to malice or sheer ignorance. Even if the architecture is robust to attacks from the outside, it may not be to internally generated mistakes. What happens if consensus is achieved on an erroneous entry? Can this error be reversed? What if a mistake in the code has been distributed



across the network and rendered 'immutable'? Life was never simple before and it is somewhat naïve to expect that it will become so with the introduction of blockchain.

Change management post implementation is another obvious risk. In an environment where several participants need to agree on the change, motivating and implementing it can be a lot more challenging than one would have hoped for. Any business process that is tied to an externally dependent technology will also be a lot less agile, with all the implications that this may entail.

Associated with the discussion above is the process for managing changes. Are maintenance and updates managed by a third-party vendor? Or by the consortium? I am sure you have already been in this situation several times, where vendor availability and skills management are in short supply. Blockchain infrastructures for constantly changing business problems can be one of the biggest challenges you have experienced to date.

Risks beyond our control

It goes without saying that several of the risks that blockchain implementations are likely to face are beyond the control of infrastructure participants.

Regulation is the most obvious example. Regulators are already concerned about the potential impact and associated risks of blockchain and regulatory intervention is not something not to be expected for.

Similarly, what happens in the case where the infrastructure provider folds? In the case of Bitcoin, we have experienced the collapse of Mt. Gox, an

exchange which at some point handled around 70% of all Bitcoin transactions worldwide. And, even though Ethereum appears quite stable at this stage, it remains a private company with all the risks that relying on one entails.

Other risks external to our control include the cost of electricity, the cost of technology updates and the potential emergence of competing disrupting technologies, in an environment where technological progress advances in leaps and bounds.

We will not expand on this list as we want to avoid sounding like unlovable Cassandras. Our objective is not to provide an endless catalogue of caveats, but rather the appropriate logical foundations which often seem absent from the surrounding hype. We believe you got our point!

Conclusion

Blockchain architectures have the potential to increase the efficiency and effectiveness of participant operations in financial services. At the same time, these benefits come with several risks, many of which are unknown. Before jumping on the bandwagon, we recommend that a thorough analysis is undertaken, taking into account the framework that we have outlined above.

Bibliography

Basel Committee on Banking Supervision (2017) - Implications of fintech developments for banks and bank supervisors - consultative document (<https://www.bis.org/bcbs/publ/d415.pdf>)

Basel Committee on Banking Supervision (2017) - Distributed ledger technology in payment, clearing and settlement - an analytical framework (<https://www.bis.org/cpmi/publ/d157.pdf>)

Financial Conduct Authority (2017) - Distributed ledger technologies (<https://www.fca.org.uk/publication/discussion/dp17-03.pdf>)

Iansiti, Marco and Karim R. Lakhani (2017) - "The truth about blockchain", Harvard Business Review (<https://hbr.org/2017/01/the-truth-about-blockchain>)

Sandner, Philipp (2017) - "Comparison of Ethereum, Hyperledger Fabric and Corda" (<https://medium.com/@philippsandner/comparison-of-ethereum-hyperledger-fabric-and-corda-21c1bb9442f6>)

Thivaos, Periklis (2016) - "When is blockchain the right solution?", BankNXT (<https://banknxt.com/59140/blockchain-right-solution/>)

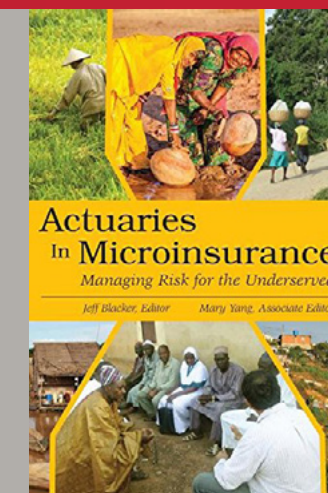
Thivaos, Periklis (2017) - "Smart contracts: sometimes it is better to be dumb?", BankNXT (<https://banknxt.com/61924/smart-contracts/>) 



Peru Govindasamy

Book Review: Actuaries in Microinsurance – Managing Risk for the Underserved

by Jeff Blacker and Mary Yang, published by ACTEX Publications, Inc. Review by Peru Govindasamy, Milliman Africa



The challenge: create low cost protection for low income people.

The solution: microinsurance.

With transformation and financial inclusion top of mind for many insurers, interest in microinsurance is fast gaining traction. *Actuaries in Microinsurance* relates the personal journeys of microinsurers in developing markets, providing its readers with a framework to further their own microinsurance endeavours.

By combining a light-hearted account of these microinsurer's client interactions with the technical principles and techniques underlying microinsurance pricing, it is a useful read for actuarial and non-actuarial microinsurance specialists alike. On a more personal and inspirational level, it also narrates how microinsurance products have assisted individuals, communities and families in escaping poverty and overcoming their everyday obstacles.

The book is divided into three parts, with the latter two containing the stories of actuaries in microinsurance roles and the typical product-specific hindrances faced by actuaries respectively. By being organised into short, mono-themed chapters, it is easy for the reader to select the most relevant ones resulting in an efficient read. The book also contains lists of data sources and real-life survey forms to guide practical implementation.

Microinsurance's two key attributes are simplicity and client-centricity.

Product solutions with complex payout designs and exclusion clauses may be attractive from an insurer's perspective to reduce anti-selection, however these will struggle to remain relevant in the microinsurance market. The need for simplicity has driven the adoption of innovative pricing systems and data usage techniques which can readily be retrofitted to conventional insurance products.

Emphasis:

Incumbent insurers can thus leverage their microinsurance efforts through so-called popular *insurance offerings* – these are low sum assured products designed for mass markets as opposed to only low income markets (e.g. on demand products, "quid cover").

Perhaps surprisingly, customer interaction, as opposed to pricing complications or data sparsity, will likely be the stumbling block in an insurer's entry into the microinsurance space – "soft skills are 80% of the battle". Without creating a personalised, enabling environment that fosters trust and transparency, a microinsurance offering will not be sustainable. Microinsurers must spend one-on-one time with clients to build more than just a contractual relationship – this means gaining an informed understanding of clients' typical living conditions, transport arrangements and risk perceptions.

Given the need for this personal relationship, it is often up to actuaries within these developing markets to design and implement microinsurance solutions. A scarcity of actuarial knowledge in these markets means that this is not always an easy feat though. Actuarial societies have thus started introducing simpler qualification routes (e.g. the CAA qualification) and specialised microinsurance

modules tailored to these individuals' needs. Consultancies have also created a variety of standardised pricing tools and capital models to support these locals.

From a pricing perspective, we are reminded of the old adage of *doing more with less*. *Actuaries in Microinsurance* relates a case study (including a reusable healthcare and incidence rate questionnaire) in which health microinsurance products were priced using mainly market research data. The project held two key learnings for its participants:

- There is a *natural limit* of disaggregation beyond which relationships cannot be statistically motivated and disaggregation should stop; and
- There exists a so-called *willingness to pay* premiums, representing the markets' upper bound on premiums.

The book also contains further pricing case studies on credit life insurance, homeowner's microinsurance, crop microinsurance and microtakaful products.

Actuaries in Microinsurance provides a framework for introducing successful microinsurance offerings – first understanding and appreciating your markets' risk perceptions and then translating this into a well-customised product. It is an easy read with plenty of actionable learnings and reusable resources, making it a welcome addition to the modern microinsurance specialist's reading list.

The book is available online from ACTEX Learning's webstore. Click here to log onto the website.



The Life Esidimeni Arbitration: Calculation of Damages

- Greg Whittaker, Algorithm Consultants & Actuaries

The death of at least 144 psychiatric patients after being transferred from Life Esidimeni to 27 unlicensed non-governmental organisations has been described as one of the greatest causes of human rights violations since the dawn of South Africa's democracy.

The Life Esidimeni arbitration hearings, chaired by former Deputy Chief Justice Dikgang Moseneke, concluded on Friday, 9th February 2018, after hearing testimony for in excess of 40 days from various family members, government officials and expert witnesses. I gave evidence before the hearings on 30 November 2017. One of the purposes of the arbitration hearings was to establish if families of the deceased were entitled to equitable redress and, if so, how much should be paid in compensation.

Under South African law, there are four categories under which damages can be claimed in the event of an unlawful death, namely, a claim for funeral expenses; a claim for loss of support as a result of a deceased breadwinner; a claim for general damages due to emotional shock; and,

lastly, constitutional damages. Constitutional damages may be awarded as appropriate relief in compensation for loss suffered as a consequence of unlawful infringement of a constitutional right. In this regard, a court may fashion a new remedy and make an award in the form of constitutional damages as appropriate relief to compensate for an infringement of a constitutional right.

The Life Esidimeni arbitration is the first time in South African history that constitutional damages have been sought for the violation of mental health care patients' rights.

With respect to loss of support claims, none of the psychiatric patients were breadwinners and hence under South African common law, the dependants

would have no claim under that head of damages. Loss of support claims are essentially class based – for example, the dependants of an actuary would receive far higher compensation than the dependants of a gardener, even if they died under exactly the same circumstances. This is since the common law is aimed at placing the dependants

The calculations were fashioned so as to provide an equal amount to each family, thereby treating each deceased life as equal.

in the same position as they would have been but for the unlawful death. This is in contrast to Sharia law, where for example in the United Arab Emirates, if one causes the death or injury of another person accidentally or intentionally, he or she has to pay blood money or diya of up to 200,000 Dirhams. In the case of the latter, each life is essentially treated the same monetarily.

There is no guidance or previous case law in setting a monetary amount for constitutional damages in circumstances of gross human rights violations in South Africa. Section 27 sought actuarial input on this aspect and instead of the common law approach

of placing the dependants in the same position as they would have been but for the death of the breadwinner, I decided to perform a calculation from the point of view of the perpetrator as opposed to the deceased. Paying out the unlawful saving to the dependants places the perpetrator of the unlawful deaths in the same position had the deaths not occurred. The reason why I believe you need to look at the calculation from the position of the negligent party is precisely because our law does not create a vehicle to compensate a victim in this situation (because there is no loss of support claim). The fact that there is no loss of support claim is in itself perhaps discrimination against the disabled. The calculations were fashioned so as to provide an equal amount to each family, thereby treating each deceased life as equal.

As Justice Edwin Cameron says, the Constitution will not be self-enacting. Actuaries are well placed to promote constitutional values, social justice, equality, accountability and the rule of law. It is for these reasons that I have been involved in a series of pro bono matters, two of which received significant media coverage over the last year – namely the Life Esidimeni tragedy and the Michael Komape pit toilet drowning incident in Limpopo. As noted by Mark Heywood of Section 27: "Not caring is not an option in a society where the only chance at a sound business investment is ensuring that the economic and political climate is sustainable." 

HEALTH WARNING: Education can be a poverty trap!

Help us help more children to escape the poverty trap.

Contact Paper Video (Chris Mills, 072 347 6154, chris@papervideo.co.za) or the Actuarial Society Educational Trust (Mike McDougall, 021 504 4651, mmcdougall@actuarialsociety.org.za) and make education a powerful catalyst for change in more children's lives.



SOCIETY NEWS

ALL YOUR SOCIETY NEWS TODAY AND MORE



Catch 'em while they're Young

The Society introduced induction sessions for newly employed student members in 2016. These sessions have grown in terms of attendance and quality, and were attended by 42 students in Johannesburg and 36 in Cape Town this year. The programme included discussions on business etiquette, personal branding, diversity in the workplace, making the switch from full-time student to full-time employee and a variety of examination-related topics. Feedback has been overwhelmingly positive, and we would like to thank all members who took time out of their diaries to assist their new colleagues.

Actuaries and Maintenance Claims

The first sessional meeting of the year, on 24 January, was conducted by videoconference, with Robert Koch and Walter Scheffler sharing their experience and leading a discussion on the involvement of actuaries in the assessment of maintenance claims

against deceased estates.

The programme of sessional meetings for the remainder of the year is taking shape nicely. Keep an eye out for those notices!

We welcomed Noluvuyo ...

Jenilee Blignaudt has been employed as events coordinator in the Society Office since 2014. Towards the end of 2017, an opportunity with better prospects came her way. We wish her well in the new position at MMI, where she will continue working with actuarial students.

We shall be welcoming Noluvuyo Mafani later in February. Noluvuyo brings a wealth of events management experience to the team, and we look forward to her contribution.

Vuyo Sambu has also resigned with effect from 31 March. She is leaving to start a full-time career in mission work.

Seeing the Light

Bona Lesedi ("see the light") is a project involving orphans from Mamelodi. The Actuarial Society provides sponsorship, mainly for travel and refreshments. The Catholic Women's League is responsible for administration and limited social services. Teachers and learners from Pretoria Boys' High do the teaching, mainly in mathematics. The programme won a bronze Stevie Award in 2012 as an excellent educational programme in Africa.

In 2017, 17 matrics from the programme sat mathematics. Seven achieved 80% or more; one obtained 90%. Two more obtained between 70% and 79%. The trustees of the Actuarial Society Educational Trust agreed to provide this year's learners in the programme, 6 in Gr 12 and 17 in Gr 11, with PaperVideo material to enhance the

In 2017, 17 matrics from the programme sat mathematics. Seven achieved 80% or more; one obtained 90%. Two more obtained between 70% and 79%.

support given to them.

(This, of course, is a very subtle reminder that the Educational Trust, a registered PBO with authorisation to issue S18A certificates, can really do a lot with your donation ...)

In Case You Missed it ...

Council for 2018 are:

Peter Withey, *President and delegate to the IAA Council*

Lusani Mulaudzi, *President-elect and alternate delegate to the IAA Council*

Learoy Alcock, *Student representative*

John Anderson

Tjaart Esterhuyse, *Chair: Stakeholders Board*

Anne Livingstone

Kenosi Magosha

Viresh Maharaj

Gielie Matthee, *Chair: Operations and Member Services Board*

Motlatsi Mutlanyane, *Chair: Professional Matters Board*

Andy Rayner

Jeanine Wilson

Paul Zondagh

Fhatuwani Nemakhavani represents ASABA on Council. Council agreed in 2016 that operational boards need not be chaired by Council members, provided there is adequate Council representation on the relevant board. Prof Roseanne

Harris will be chairing the Education Board, although she does not serve on Council anymore.

Council has scheduled its first meeting, including a review of the strategic plan, for 14 February.



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@ASSASLC

In Case You Missed it ... (continued)

Academy Advisory Panel

The ASSA Academy has been established for 2 years now and has moved from being a start-up initiative to an established structure within the Society. Lusani Mulaudzi is the principal of the Academy and Wim Els the operational director of Academy activities. An advisory panel has been established to help guide the activities of the Academy and to provide a stronger succession network.

The panel comprises:

Mr Lusani Mulaudzi, *Principal and Chair of the Panel*;
Mr Learoy Alcock (*Student representative on Council, 2018*);
Mr Melusi Baloyi;
Ms Billy Enderstein (*former SAADP representative at UCT and co-presenter of Academy A302 programme*);
Ms Dakalo Mbuva;
Ms Thandi Mcizana;
Mr Nalen Naidoo;
Mr Dunny Semwayo;
Office representatives: Messrs Mike McDougall and Conrad Backeberg.
Wim Els continues in the position of "Grumpy Old Man: ASSA Academy".

**2018
CONVENTION**
25-26 October,
Cape Town International
Convention Centre.

**Need we
say more?**



Photo from: www.dla.co.za

A new man at the top and a new first for ASSA



Honorary membership of the Actuarial Society may be awarded to individuals who have rendered particularly valuable services to the Society in the pursuit of its objectives. Transformation has featured in every strategic plan of the Society. The establishment of the South African Actuaries Development Programme provided much needed support for students from previously disadvantaged communities, and in 2004, honorary membership of the Society was awarded to the founder of the programme, Mr Cyril Ramaphosa. Mr Ramaphosa's inauguration as President of the Republic of South African saw the Society become the first actuarial organisation in the world that can count a national President among its members. Until then, the most senior political position held by a member of the Society was Member of the Provincial Council of the Cape, held by Mr Jan Dommise in 1958. ⚠️

Actuaries (and other members) in the news



Photo from: http://www.coww.co.za

Nicolaas Stepping Down

Nicolaas Krüger stepped down as Chief Executive Officer of MMI Holdings on 15 February this year.

Nicolaas started working for Momentum in 1991. A particular highlight of his tenure as CEO was the merger between Metropolitan and Momentum to create MMI Holdings in December 2010. At the time of the merger, MMI Holdings was the third largest insurance

company listed on the Johannesburg Stock Exchange.

Nicolaas served on the Society's Life Assurance Committee for many years and is a trustee of the Actuarial Society Development Trust. While we respect his wish to spend more time with his family and pursuing personal interests in the immediate future, we hope the Society will continue to benefit from his experience and expertise. ⚠️



Photo from: http://www.sasa.co.za

Magda Taking on State Capture

In a Fin24 article published on 7 December 2017, Magda Wierzycka mentioned in passing that she is "a vocal critic of many things" (Magda Wierzycka asks hard questions about Steinhoff and asset managers). Earlier in 2017, she condemned the business practices and financial dealings of Net1 UEPS Technologies, whose subsidiary, Cash Paymaster Services (CPS), provided the technology for the administration of social grants (Money Magda kicks N1 Butt, M&G, 24 March 2017).

More recently, she joined the debate on the water crisis in Cape Town, tweeting about proposals she had received that could have avoided the crisis, and stating that she wanted answers about the mismanagement. When invited to a public debate by the Premier of the Western Cape, Magda responded, inter alia, that she was happy to help in any way and participate in a constructive debate. In a subsequent tweet, she made it clear that she was interested in constructive discussions on solving the

problem, not in public performances. (No thanks, Wierzycka tells Zille to public debate on water, Times Live, 26 January 2018).

The Sunday Times devoted a full page to "Magda's Mission" on 21 January 2018.

"What was unusual, apart from her surname," the article stated, "... was a business executive being vocal in the political and private sector arenas." It went on to quote from her tweet –

We have thieves running Eskom (no one is actually running Eskom) who steal and plunder via many avenues. This has emboldened others to do the same. If the ANC claims it can control JZ, prove it by forcing him to fire the characters who enable this.

Magda joined forces with the Helen Suzman Foundation to take everyone linked to irregularities at Eskom to court. This is expected to be a precedent-setting case for tackling mismanagement at state-owned enterprises.

She admits that her efforts have made her "hugely unpopular". Her condemnation of state capture led, for example, to her receiving death threats, to Mzwanele Manyi calling her a racist and to allegations that she had started her working life as a stripper. A court ordered Manyi to remove defamatory posts about her.

Her post about ten steps that business can take to make South Africa work again went viral (Magda Wierzycka's 10-point plan to get SA back on track, Fin24, 30 October 2017) and crashed the Daily Maverick's servers.

"It made me realise the impact of social media for information exchange, and what a powerful source for dissemination it is. The very next thing that happened was Gupta leaks. Once you know, you can't undo the knowledge."

She seems thrilled that Cyril Ramaphosa is now calling the shots. "There is a very clear indication

that Cyril is in charge. I've been told now Cyril is running the country, which is great."

Magda's political consciousness seems to have started developing during the time she worked with former Robben Island prisoner Mzi Khumalo, who recruited her to fix his African Harvest Fund Managers.

It is at this company that her reputation as a turnaround expert was solidified. At Coronation, she established herself as an industry disrupter. Sygnia came about after the sale of African Harvest. Promising transparent and minimal investment fees, it now manages assets to the value of some R200 billion.

Admitting that she could easily leave South Africa and buy a nice property outside London, Magda says she is not one to walk away. "After living in South Africa, you become an adrenaline junkie. You know you can make a difference. That is what motivates me more than anything else ... we need to fix South Africa, urgently. We have a lot to repair."

For full article, see <https://www.pressreader.com/south-africa/sunday-times/20180121/281496456701910>.

Magda has shown her commitment by joining Forensics for Justice in offering R1.4m reward for Ajay Gupta and Duduzane Zuma.

The Daily Sun Gauteng and Daily Sun Cape published the article, using Kenosi as the main role model for readers. The Daily Sun newspaper is the biggest daily newspaper in South Africa with readers in excess of 5 million. Part of the Media24 stable, the Daily Sun targets predominantly black working-class earners in all major urban centres.

The article also grabbed the attention of Thati Segoatle who writes a blog "The Disruptors" with a focus on educating women about personal finance and investing. ^(A)



Greg and Life Esidimeni Arbitration

Greg Whittaker provided actuarial input for Section 27, a public interest law centre, during the Life Esidimeni arbitration hearings. He was quoted

extensively in the media. Greg discusses the actuarial aspects in more detail elsewhere in this edition. ^(A)



NEWS FROM AROUND THE WORLD-

Casualty Actuarial Society (CAS)

CAS Initiates Technology-Based Examination

The CAS is transitioning its exams to a computer-based environment called Technology-Based Examination (TBE). Beginning with Exam 5 in spring 2018, CAS exam candidates will use Excel to take their exams on personal computers that will be overseen by remote proctors. With this transformation of examinations, the CAS continues to evolve its basic education system. TBE will more

closely imitate on-the-job assignments in which actuaries use computers for work, thus making CAS exams more relevant to real-life actuarial practice.

To learn more about TBE, visit the TBE section of the CAS website, which includes a link to the most frequently asked questions and other resources.

The CAS Institute Extends Deadline to Apply for Certified Specialist in Predictive Analytics (CSPA) Credential via Experienced Practitioner Pathway

The CAS Institute has extended the deadline to apply for the Certified Specialist in Predictive Analytics (CSPA) credential via the Experienced Practitioner Pathway (EPP) through June 30, 2018. The decision was due to increasing demand from applicants, as well as expanding international interest in the CSPA credential, including in South Africa.

Applicants first join The CAS Institute and then complete an application detailing their experience in the four areas covered by the exams.

The CSPA credential provides evidence of practical knowledge in applied predictive analytics and data science as used in data-intensive industry sectors. The Experienced Practitioner Pathway was designed for those who have been practising in the area of predictive analytics and data science in property/casualty insurance for five or

more years. Applicants first join The CAS Institute and then complete an application detailing their experience in the four areas covered by the exams: P-C Insurance, Data Concepts and Visualisation, Predictive Modeling, and Projects. They also have to have taken a relevant professionalism course. For additional information, visit The CAS Institute website.

Actuarial Organisations Explore Ways to Support Inclusion and Diversity Within the Profession

The CAS, in collaboration with three other actuarial organisations in North America, recently announced research findings in supporting diversity and inclusion within the actuarial profession.

The four actuarial organisations worked with an outside market research firm to understand the barriers for individuals pursuing the actuarial career. The research project involved a combination of online surveys and in-person focus group meetings, including with high school students, college students, actuarial candidates, and members of the actuarial organisations.

The findings emphasised the importance of promoting early awareness of the actuarial profession among minority high school students, their parents and teachers. Read the executive summary of the research findings for additional information. ^(A)

Actuaries Institute



Australia

The 2018 President of the Actuaries Institute Australia is John Evans. He is joined by Nicolette Rubinsztein as Senior Vice President and Hoa Bui as Vice President. John replaces Jenny Lyon, who was President in 2017. The Presidential Committee exercises the powers of the Council between Council meetings and is directly accountable to Council.

As 2018 President John is committed to ensuring actuaries meet the next wave of globalisation of the profession by ensuring the Institute's members can engage in new areas of work, meet the demands of new roles and manage conduct risk across global professions.

John is passionate about continuing education and recognising the broadening opportunities actuaries face as their careers evolve.

During his presidency, he will be working towards ensuring the Institute continues to grow a strong actuarial profession that is in high demand across regulatory and non-regulatory roles in financial services and the broader economy.

John's 2018 Presidential Address is available [here](#).



DAV – Germany

New education and training regime and the International Congress of Actuaries in Berlin

2018 will be a special year for the German Association of Actuaries (DAV). DAV's new education and training programme, conferring on successful candidates the professional qualification of DAV Actuary, was launched on 1 January 2018 following more than four years of preparation. The responsible project group was chaired by past president and former member

of the IAA Education Committee Prof. Dr. Ulrich Orbanz. The objective of the new education and training programme is to prepare the actuaries of the future for the changes in their working environments that have been and will be brought about by Solvency II, increasing digitalisation and the enhanced demands and requirements being made of risk management. The new programme will also mean that the content requirements of the new IAA syllabus will be met in their entirety.

The new system comprises two sections, each containing six examinations, testing fundamentals as well as four examinations testing specialist knowledge. It provides candidates with a wider range of topics as well as the opportunity for greater specialisation in one specialist area – without requiring them to sit any more examinations than was previously the case. In addition to the six compulsory foundation courses Economic and Legal Environment; Applied Stochastics; Financial Mathematics and Risk Assessment; Actuarial Mathematics; Modelling and ERM as well as Enterprise Steering and Management candidates have to complete two further seminars in Professionalism and Communication, though they do not have to sit an examination in these two subjects. The subject Communication is a new addition to the DAV education and training programme. Following on from the foundation courses, candidates can choose to specialise in one of the following fields: Life Insurance; Health Insurance; Pensions; Property/Casualty Insurance; Financial Mathematics; Savings and Loan and Mortgage Lending Business or Enterprise Risk Management (ERM), ultimately sitting two examinations to test their specialist knowledge. Finally, candidates have to sit two examinations in two further elective subjects chosen from the aforementioned specialist fields as well as the future-oriented subject of Actuarial Data Science.

One further highlight in 2018 will be the 31st International Congress of Actuaries (ICA), which is being hosted by the DAV from 4 to 8 June 2018, together with the International Actuarial Association, in Berlin. As part of the programme strand Education, the DAV's new education and training programme is to be presented to the international actuarial community. Throughout the week a total of 11 slots will be dedicated to the subject area Education.

The ICA is held every four years in a varying

metropolitan city. Following the ICA 2010 in Cape Town and the ICA 2014 in Washington this year's International Congress is coming to Germany. The last International Congress to be held in Germany – exactly 50 years ago – took place in Munich. More than 2,000 delegates from all over the world are expected to travel to Berlin to discuss the topics, opportunities and challenges currently facing the actuarial profession.

The scientific programme of the ICA, with its various formats, offers a broad-based selection of fascinating actuarial international talks and presentations from the world of actuarial science and finance. Daily plenary sessions will see renowned international experts from business, regulatory affairs and academia, including Gabriel Bernardino, Chair of the European Insurance and Occupational Pensions Authority (EIOPA), Peter Praet, Member of the Executive Board of the European Central Bank and John Haley, CEO of Willis Towers Watson, speak about strategic issues of the future and the most pressing challenges facing the insurance and financial industries. Moreover, over 30 invited speaker sessions will give delegates the opportunity to hear fascinating talks from renowned experts from insurance and finance. A large part of the scientific programme will be made up of the contributed talks: 280 abstracts from a total of around 600 submissions from more than 57 countries have been selected and these will certainly ensure fascinating actuarial talks for both practitioners and academics alike. Finally, the scientific programme of the congress also includes further special format events such as limited attendance experiences or award sessions. In addition to the high-calibre scientific programme, featuring speakers from over 40 countries, delegates will be invited to take part in an exciting social programme as well as being given countless opportunities to meet and network with their peers from the actuarial community from around the world.

Since registration opened at the beginning of December 2017 more than 1,000 actuaries from 41 countries have already registered for the ICA. The Early Bird Tariff 2 is available until the end of March 2018 – take advantage of this very favourable rate and register via the website www.ica2018.org. You will also find the complete scientific programme, information about the social programme as well as all important news about the ICA 2018 on the ICA 2018 website.

Another highlight of this ICA will be the very first Virtual ICA. Due to the support of a number of institutional partners from the actuarial community, many sessions from the stages in Berlin will be broadcasted live online and provided as recorded sessions afterwards. This allows a much broader audience from all over the world to follow the high value content presented during the ICA and helps to secure this knowledge in a sustainable manner. Furthermore, due to the successful Call for Papers the VICA will also feature many online presentations of qualified authors that ICA could not offer a presentation slot in Berlin.

DAV is very proud that ASSA has already decided in 2016 to be the very first National Partner of the VICA. This partnership allows the members of the South African association to access more than 120 hours of live streams and videos without any further cost.

Therefore, DAV is not only looking forward to welcome many colleagues in Berlin, but invites all other ASSA members to join the ICA online. All information how to participate in the Virtual ICA will be provided in April 2018. For regular information, please register for the monthly ICA 2018 newsletter on www.ica2018.org.



Institute and Faculty of Actuaries – United Kingdom

In January, the Institute and Faculty of Actuaries (IFoA) launched an initiative to explore how the actuarial profession can contribute to the achievement of UN's Sustainable Development Goals (SDGs). We are asking our members and all actuaries around the globe to submit proposals with their ideas. This is a crucial opportunity to better understand how the work of actuaries is relevant to the SDGs and what actuaries can do to help meet those goals.

The 17 Global Goals were adopted by the United Nations General Assembly in 2015 with the aim of

eradicating all forms of poverty in all countries, both developed and developing, by 2030. The financial services industry has a vital role to play in helping to tackle these challenges and the vast majority of actuarial jobs are based within this industry.

Our President Marjorie Ngwenya said "Actuaries are experts in providing answers to complex questions around long-term global risk. We hope submissions will help to shape ideas and provide structure on how to channel that expertise. The aim is to contribute towards solutions which eradicate poverty and hunger, tackle climate change and ensure access to education and work for all."

The IFoA is delighted this year to once again sponsor the Global Conference of Actuaries on 30th/31st January in the Indian city of Mumbai. It's on the margins of this conference that we are holding our first IFoA Council meeting in India. We are grateful to our friends at the Institute of Actuaries in India for accommodating us, and we look forward to working with them in the future. Whilst we are out

there, we will engage directly with many of our Indian members and have the opportunity to draw their attention to the membership consultation on the Chartered Actuary proposal and the changes to the curriculum in 2019. We are encouraging all our members, wherever they are based, to give us their thoughts on the Chartered Actuary and also, to ensure they are aware of any changes to the curriculum.

The IFoA is sending its usual contingent of volunteers to the AAE Spring Meetings in Lisbon and Warsaw, and to the IAA Conference in Berlin. We are looking forward to getting our teeth into the issues currently facing actuaries and actuarial science, and of course meeting with our sibling associations from across the globe, to swap news and establish how we might work better together for the good of the profession. Conferences such as these represent an unparalleled opportunity to foster relations and compare notes with other actuarial organisations, and for this reason the IFoA values its relationships with the IAA and AAE.

SAVE THE DATE

Inaugural IFoA Africa Roadshow (April 2018)

The Institute and Faculty of Actuaries are holding an inaugural series of events across three African countries from 23-27 April. The three separate one-day events in Mauritius, Kenya and Nigeria will focus on current and future topics affecting the actuarial community across a range of sectors including health, insurance and risk amongst others.

Registration will open shortly, so please visit our website regularly to be notified. 

Mauritius, 23 April 2018
Kenya, 25 April 2018
Nigeria, 27 April 2018

FIND OUT MORE. CLICK HERE
www.actuaries.org.uk

STUDENT'S PAGE

Welcome to 2018 from the SLC, or as we like to call it "20-GREAT-teen"!

Firstly, we'd like to make a special welcome to all the new student joiners of ASSA and give a massive shout-out to all the new FASSAs! All the best to both groups on this exciting new phase of your careers.

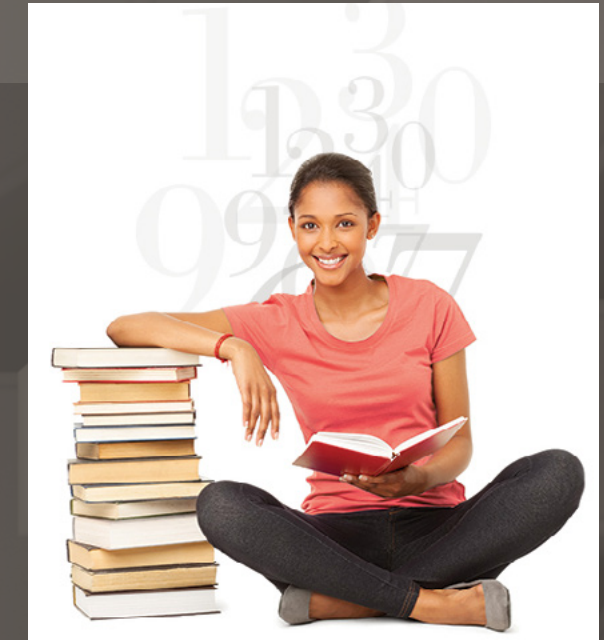
We would also like to introduce you to our new vice chair of the SLC – Learoy Alcock. We had a quick interview with him which you can find at the bottom of this communication.

At the beginning of every year it is common to set some NEW YEAR RESOLUTIONS – things that one wants to start or stop doing to make the year a successful one.

While at the SLC we aren't against setting new year resolutions, we decided that we'd prefer to formalise them by setting some goals and intentions that we wish to achieve. We have started off early on this list and we are looking to make it a great year! Of course, a lot of what we achieve depends on your input, so we'd like to share just a little taster of some of the things that we are looking to get you all involved with this year. We hope to have your support, your presence and your input throughout this year.

So here's the 2018 SLC to-do list:

- Build a closer relationship with the Actuarial Training Offices
- Visit the students at various companies and universities throughout the year
- Have a focused effort on working with the Society to drive transformation
- Improve our communication line to students



- Create awareness of what the SLC do and how we can help you
- Ensure that the students' voices are heard
- Ensure that all programmes that are available to students are being utilised
- Take awareness of actuarial science at schools to the next level
- Organise another successful Quiz Night
- Organise a new very special event for students (details to follow)

This most certainly isn't everything and we look forward to sharing it all in good time!

We wish you all a very successful 2018 – especially to the students writing exams.

We hope those new year's resolutions included some study specific ones too and that they are as achieved as successfully as the others!



Introducing **Learoy Alcock**, our new Vice Chair:

What is your new year's resolution?

To be more of an active citizen. The idea is that this translates into being more aware of opportunities and taking up these opportunities to assist in my different communities – whether this is at work, my neighbourhood, my social spaces and certainly within ASSA.

Do you have any studying resolutions?

As an actuarial student, there is ALWAYS a studying resolution. Mine normally revolves around trying to do something new with the way I study. Whether you passed or failed in the previous sitting, there's always that one thing that you believe would've made your studies better than it was.

What do you plan to do in your new role in the SLC and on Council?

To create awareness of how students can assist ASSA in driving some of its strategic goals. As a student member I've always had this idea that I don't know enough to add any value to this Society filled with super smart people. I think a lot of us students struggle with this incorrect mindset. Through the SLC, we need to create more student-

based opportunities that align with ASSA's strategies and awareness of these.

What is the biggest challenge facing the Society in your opinion?

Transformation. We're at a point where this cannot be avoided anymore, and the responsibility lies with all of us to be active in this regard.

What are you disappointed they haven't invented yet (by 2018)?

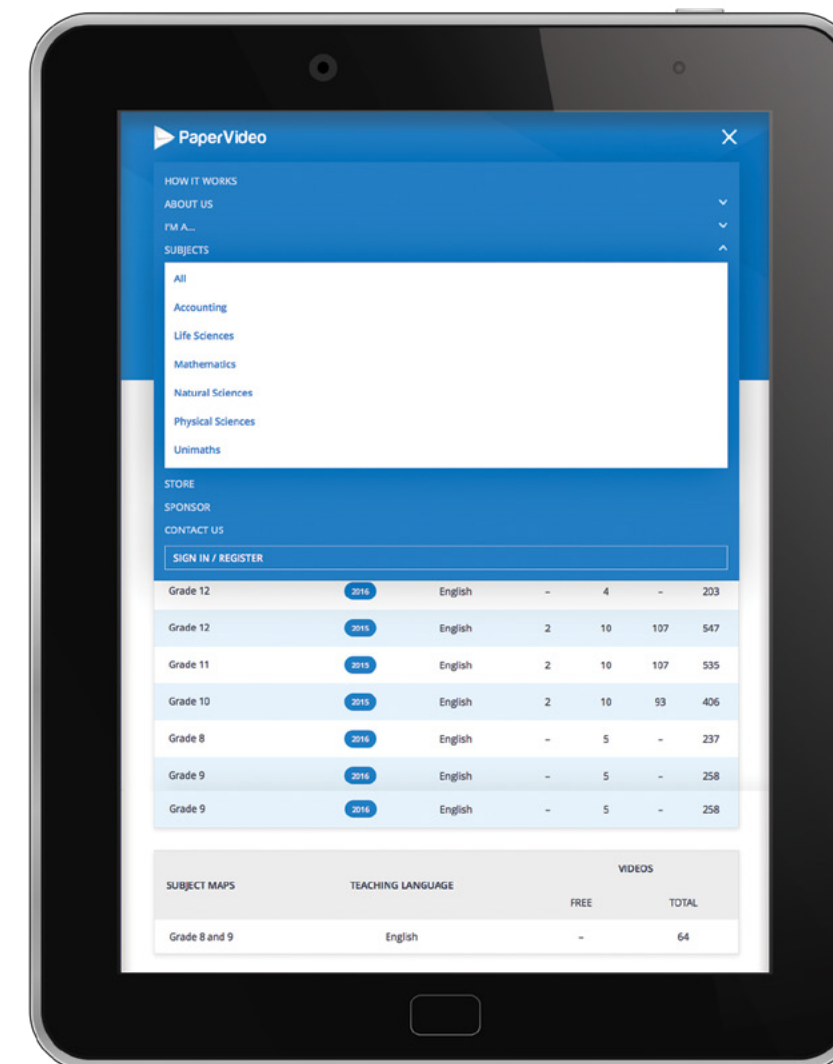
The sleep learning machine from Dexter's Lab – without the glitch of course.

Who from the past would you bring back now?

Rather selfish – but definitely my grandmother.

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