Occupational Profiling of the Top 10 Sector Priority Occupations in the Insurance Sector

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1. BACKGROUND AND CONTEXT

The Durban University of Technology Insurance Chair conducted a study titled *Measuring Occupational Change in the Insurance Sector: approaches, methods and processes.* The study gave a theoretical perspective of occupational change. It discussed work and occupational analysis, implications of occupational change in insurance, the occupational information network (O*NET), occupational qualifications development, occupational profiling, and change drivers' impact on insurance occupations.

The study revealed **four** ways in which jobs and occupations are changing. Firstly, a person requires **more** knowledge and skills to perform the same job or occupation (upskilling). Secondly, a person requires **less** knowledge and skills to perform the same job or occupation (deskilling). Thirdly, skilled parts of the job or occupation require **more** knowledge and skills, and unskilled parts require **less** knowledge and skills (apart). Fourthly, outsourcing and automation will compete **for more work** and bigger portions of jobs.

Exhibit 1: Occupational change

UPSKILLING

A person requires **more** knowledge and skills to perform the same job or occupation.

OUT

Outsourcing and automation will compete successfully **for more work** and bigger portions of jobs.

Occupational change

APART

Skilled parts of the job or occupation require **more** knowledge and skills, and unskilled parts require **less** knowledge and skills.

DESKILLING

A person requires **less** knowledge and skills to perform the same job or occupation.

Source: Friedman (2016)

It concluded that it is necessary for the insurance sector to regularly conduct occupational analysis of key insurance occupations to ensure that training and development respond to employer demand.[1]

This study is a sequel to the previous study. It uses the toolkit devised for human resource practitioners in the 2021 study to profile occupational changes in several key insurance occupations.

2. FACTORS DRIVING OCCUPATIONAL CHANGE

Occupations are in a state of constant change, driven mainly by technological advancements.[2] These advancements in the last decade have compelled organisations to rethink what is work, how it is done, where it is done, and what should be done to increase employee productivity. It applies equally to the insurance sector.

Technological disruption has reshaped the way insurance companies and employees work. Technology has replaced some job tasks and increased the skills intensity of others. Many employees were assigned job tasks in the past. Today, these job tasks are automated.[3]

Exhibit 2: Change drivers

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[1] Thakur, S et al (2021) *Measuring Occupational Change in the Insurance Sector: approaches, methods and processes.* INSETA.

[2] McGowan., H & Shipley., C. March (2020 *The Adaptation Advantage.*

[3] Molly., L & Ronnie., L. (2019) *Mindset shifts for the Fourth Industrial Revolution: Insights from the life insurance sector.* AOSIS

New jobs and occupations are emerging, and existing jobs and occupations are changing in the insurance sector. Old skills are becoming obsolete, and new skills gaps are emerging. New training programmes are required to equip employees for the insurance sector. In his book '*Work Analysis in the Knowledge Economy: documenting what people do in the workplace for human resource development*', Jacobs found that students starting a four-year degree will find that half of what is learnt in the first year will be outdated by their third year of study.[4]

An Oxford University White Paper forecasts that 47% of jobs or occupations could be eliminated by smart technology during the next two decades, and a McKinsey Report predicts that 49% of the time spent working could be eliminated by technology. In PwC's *Workforce of the Future*, 37% of respondents were concerned that automation was putting jobs at risk.[5]

However, technology is not the only factor disrupting jobs and occupations. The other factors include employee heterogeneity, gender, age, consumer preferences, and what they deem important in life.

Many insurance employees worked from home during the pandemic. With the easing of the COVID-19 pandemic, employees continued to work remotely.[6]

Another major factor driving occupational change is the deterioration of the ozone layer, leading to global warming.[7] It is an issue that cannot be put on hold. Hence, many companies are looking are reducing their carbon footprints and going "green".[8] The recent excessive flooding in KwaZulu-Natal is an extreme example of climate change. It has significant implications for the insurance sector.

There is also greater access to different learning modalities tailored for different personality types. It enables employees to acquire knowledge on the run.[9] Swift reskilling and upskilling allow employees to gravitate to the in-demand occupations and follow the trajectory of the digital economy.[10]

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[4] Jacobs, RL (2019) *Work Analysis in the Knowledge Economy: documenting what people do in the workplace for human resource development.* Palgrave Macmillan: Illinois.

[5] PWC (2021) The fourth industrial revolution (4IR) brings new data, insights and risks to insurance. *PWC.* *https://www.pwc.com/us/en/library/4ir-ready/fourth-industrial-revolution-insurance-risk.html*

[6] Ibid.

[7] McGowan., H & Shipley., C. March., 2020. *The Adaptation Advantage.*

[8] Guyana Chronicles (2022) Technology use critical to achieving net-zero carbon emission target.*https://guyanachronicle.com/2022/02/18/technology-use-critical-to-achieving-net-zero-carbon-emission-target/*

[9] Ibid.

[10] Allen., J. 2022. 11 New elearning Trends & Predictions for 2022. *Finances Online.* *https://financesonline.com/elearning-trends/*

3. DEFINITION OF INDUSTRY 4.0

The insurance sector is a hotbed for technological innovation. These innovations are driven by Industry 4.0:

Artificial Intelligence (AI)

Computers or machines are able to "think" or portray abilities such as cognition, planning, and the ability to conclude and recommend. AI is defining future technology. Some examples include virtual assistants, chatbots, search engine intelligence and speech and facial recognition.

Internet of Things (IoT)

A network of advanced sensors and smart devices connected through the internet to exchange data with other platforms in the network. Enables real-time decision-making via machine-to-machine (M2M) communication.

Cybersecurity

Technologies, practices and processes for preventing cyberattacks, data protection, information technology (IT) and operational technology (OT) from unauthorised access, manipulation, damage and disruption. Some types of risks include malware, spyware, viruses, ransomware, and dedicated denial-of-service attacks.

Automation and Robotics

Using robots that comprise electro-mechanical, hybrid and biological machines with the ability to automate, enhance or assist human activities according to instructions. These technologies are interrelated as they allow for actions to be carried out repetitively.

Analytics and Big Data

Big data is concerned with high-speed processing of enormous amounts of data. It creates systems that are predictive, prescriptive, and able to anticipate incidents and responses.

Blockchain

A security mechanism using cryptographic software algorithms for the safe recording and exchange of information. It is facilitated via data encryption and distributed storage which ensures there exists no single point of failure and that there is no fraudulent data tampering.

There are no third-party intermediaries or central authorities involved. The most popular blockchain application is the digital currency (cryptocurrency) Bitcoin.

Exhibit 3: Industry 4.0 dimensions
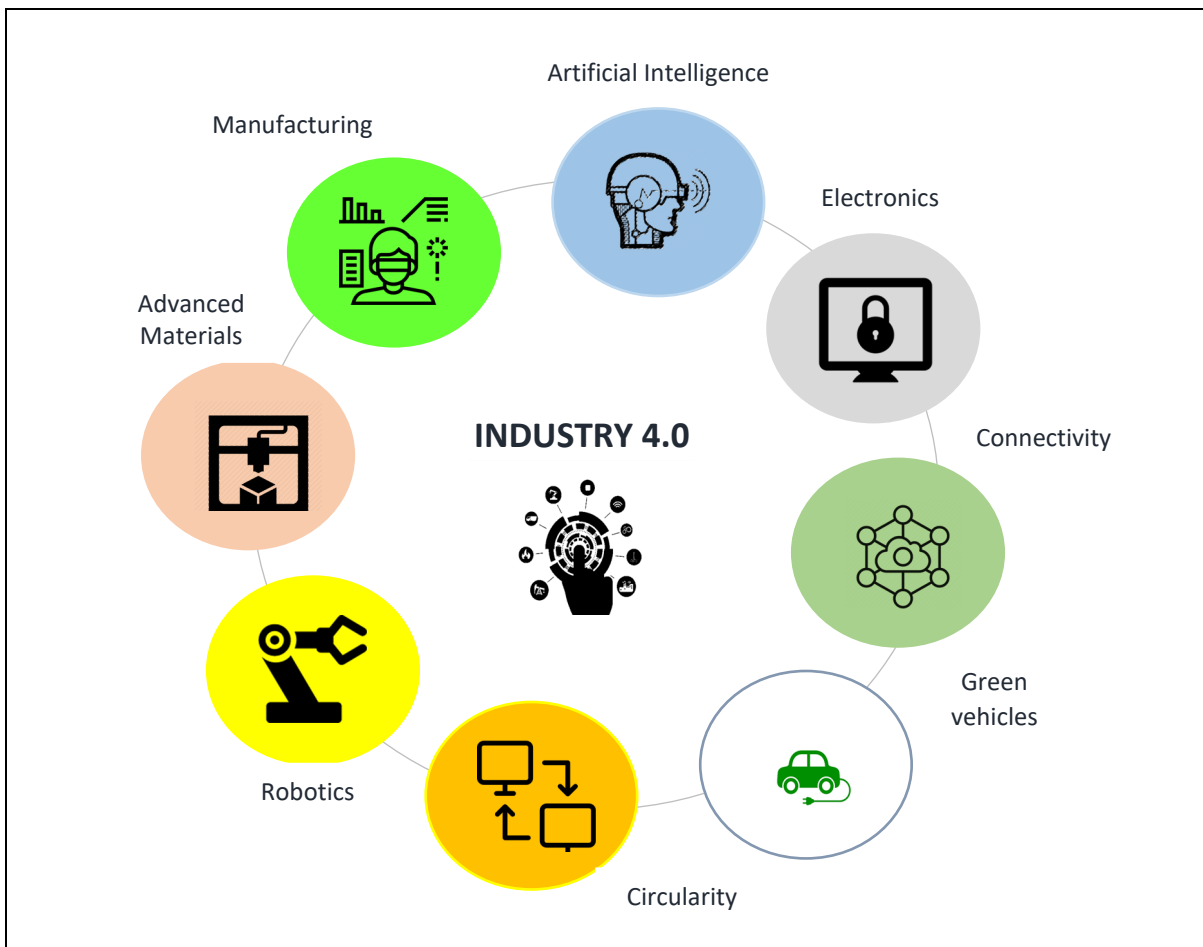
Source: Rasool (2020)

4. TERMS USED IN THE STUDY

The following terms are used in the study:

Job Shift

A job shift in labour economics refers to the mobility of workers. There are two types of job shifts. An external job shift is a worker's mobility to a different type of organisation or industry. Internal job shift is the worker's mobility to a different job in the same organisation. The former is a good indicator of the growth or decline of occupations in the industry. The latter indicates an individual's efforts to relocate to workplaces due to personal preferences.

Occupation

The term "occupation" is broader than a "job". An "occupation" represents related jobs in work settings. A job and an occupation are often viewed as the same and used interchangeably. Strictly speaking, it should not be the case.

Occupational Analysis

It is necessary to conduct an occupational analysis to measure occupational change. The subject matter expert (SME), or occupational analyst, selected for the analysis should have a diverse background, representing all aspects of the occupation. An occupational analysis typically requires more information than a job analysis, such as forecasts of future hiring outlooks, career pathways, education, and credentialing requirements. An occupational analysis typically offers a complete picture of the work involved compared to job analysis. An occupational analysis can be used for a wider range of purposes than a job analysis.

Occupational Design

Occupational design is the process of determining the elements of occupation.

Occupational Change

The definition of "occupational change" in the literature is varied, depending on the field of study, authors, and purpose of the study.

Labour economists generally refer to "occupational change" when a person changes their occupation, such as a teacher to a marketing manager or a welder to a carpenter. The measurement unit for occupational change is called 'occupational turnover'. It suggests some labour-market "turbulence" caused by people being caught in poor jobs and unsuitable work. They are forced to try another type of work, not just another job. The labour economics definition is not relevant to our study. In other words, the movement from one type of job to another is not the focus of this study.

Occupational change may also refer to occupational movements. In this definition, occupational change refers to changing the number of people in an occupation over time. For example, the number of plumbers may have increased or decreased by 20% over five years.

Occupational change may also be measured geographically. For example, the number of plumbers may have increased or decreased in a specific region. This study has defined "occupational change" from a human resource management perspective.

Occupational Cluster

An occupational cluster represents a broader perspective than a single occupation. Some occupational clusters are information management and computing, sales, marketing, human resources, applied sciences, transportation, and logistics. Each occupational cluster could have many similar occupations. Occupational clusters enable movement between occupations in a cluster.

Occupational Structure

An occupational structure is an occupational category system that organises occupations into categories. In South Africa, the occupational structure is Manager; Professional; Technician; Clerk; Sales and Services; Skilled Agriculture; Craft and Related Trades; Plant and Machine Operator; Elementary; and Domestic Worker.

Occupational Classification System

Occupational classification systems are taxonomies for naming and grouping occupations into ever-larger subsets. The DHET uses the *Organising Framework of Occupations (OFO)*, a coded occupational classification system. It is the department's key tool for identifying, reporting, and monitoring skills demand and supply in the South African labour market.

Occupational Analysis and Job Analysis

The occupational analysis is essentially the same technique as job analysis. But an occupational analysis differs from a job analysis in at least three related ways.

First, the frame of reference for occupational analysis is based on an occupation, not on a job. Occupation has a broader scope than a job since it refers to a group of related jobs across different work settings. A job is a defined role that only occurs in a specific work setting.

Second, an occupational analysis typically requires more information than a job analysis, such as forecasts of future hiring outlooks, the career pathways from this occupation to other occupations, and the educational and credentialing requirements of the occupation, among other information. An occupational analysis typically offers a complete picture of the work involved than a job analysis.

Finally, due to its broader focus, occupational analysis can be used for a wider range of purposes than a job analysis.

Profession

A profession refers to a specialised qualification, skills, knowledge, and appropriate work experience. Professions often require education, certification, or licensing. Professions are broader than job titles but not as broad as an occupation. For example, your job title may be a prosecutor, but your profession is a lawyer.

Career
A career refers to the sequence of related jobs or occupations that a person may hold over their working life. A career expresses an individual's commitment to the general type of work represented by various jobs or occupations, such as a career in information technology.
A career denotes the progression of jobs or occupations that the individual has done in the past, the individual is currently doing, or the individual plans to do in the future. Regardless of the time reference, a career has a relatively long-term meaning.

5. PROBLEM STATEMENT

Industry 4.0 is the major disruptor of the insurance value chain. Technological advancements such as mobile connectivity, artificial intelligence, Big Data, the Internet of Things (IoT), robotics, blockchain, cryptocurrencies, next-generation software, drone technology, wearable devices and machine learning are breaking down the century-old edifice on which the traditional insurance model was built.

It is compelling the sector, which consists of reinsurers, insurers, financial service providers, intermediaries, regulators, employees, training providers and clients, to revisit how business is done and what business models are best. The COVID-19 pandemic has sped up disruption in the insurance sector.

Technology is not the only factor that is disrupting jobs and occupations. Workforce diversity, changing work processes, and workplaces impact jobs and occupations. The workforce is diverse in gender, race, religious beliefs, culture, class, education, and immigrant status. Second, the boundaries between who performs what jobs and the employment outcomes and experiences of individuals working in different occupations are fluid. Insurance companies employ people from a wider range of occupations, especially information technology (IT) occupations. There is growing recruitment of IT and engineering professionals in the sector.

Changing work processes are demanding that employees spend less time in the office. Social media enables employees to work across boundaries, locations, and time zones.

The confluence of changing markets, demographics, technologies and human behaviour impacts occupations and jobs. It requires an integrated and systematic approach to understanding how the context of work is changing and its implications.

6. AIMS AND OBJECTIVES

The aim is to measure occupational changes in selected core insurance occupations.

The objectives are the following:

- Identifying insurance occupations that are changing significantly.
- Investigating what occupation changes are taking place.
- Describing how these occupations are changing.
- Determining new skills needs for these occupations.
- Outlining implications for training and qualifications development.

7. RESEARCH METHODS

The following methods were employed:

Literature Review

A literature review of occupational change in the insurance sector was conducted. The following issues were examined: technology changes – models of measuring occupational change, change drivers, and tools to measure occupational change. The literature comprised international and local reports, conference papers, and other research publications. The focus of the literature is to provide an analysis of the insurance occupation landscape in South Africa, identify key occupations and skillsets, address old and determine new qualifications and skills programmes, and identify current and future occupations in the industry.

Case Study

Case studies allow the researcher to conduct intensive field research to ascertain the key components of processes and relationships. The case study gives insight into occupational change, and the skill sets that can be incorporated into the selected occupations.

Interviews

Interviews enable the researcher to understand the topic under study. Interviews were conducted with people in executive positions in three insurance companies, namely, Inclusivity Solutions, Robson Savage, and Matseke Investment. The interviews were based on a semi-structured interview schedule.

Data Analysis

The information was coded and categorised. Coding makes it easier to compare findings and identify patterns that may require further research and investigation. The qualitative data were analysed in the following steps:

Open coding: breaking down, comparing, categorising, examining and conceptualising data from the case studies and interviews with insurance companies.

Axial coding: Procedures that entail establishing appropriate connections with categories

Selective coding: Identifying the core category, relating them to other categories, filling in categories that need more information, and validating those relationships allowing for patterns to reveal themselves.

Integration: Review discontinuities and corroborate the evidence.

*Inductive thematic analysis:* data categorisation to specific set themes.

8. LITERATURE REVIEW

8.1 Industrial Revolutions

The world has gone through three industrial revolutions, and it is said that we are in the throes of the fourth industrial revolution. These revolutions redefine work, workplace, work activities and learning. Individuals and organisations are forced to adapt to technological and other changes.[11]

The first industrial revolution introduced the steam engine; the second introduced electrification of systems; the third witnessed the advent of computerisation; the fourth is digitalisation and artificial intelligence. Technology and innovation are changing business operations, jobs, organisational structures, communication, and management practices. [12]

Exhibit 4: Industrial revolutions
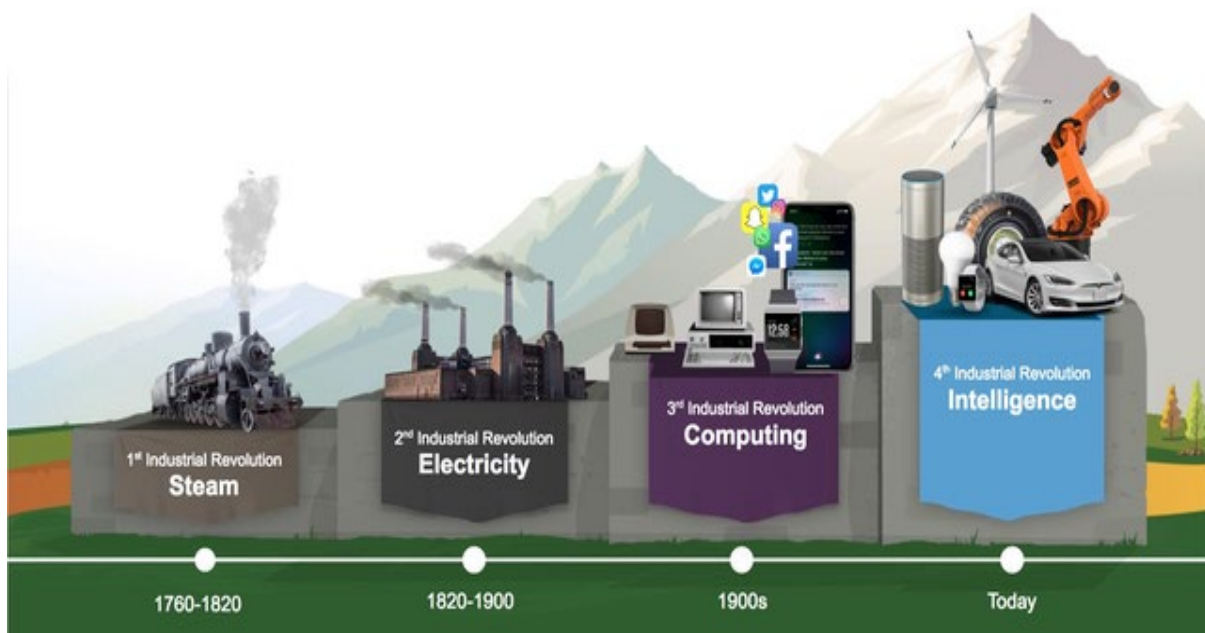
The insurance sector has traditionally interacted on a face-to-face basis. Today, the transaction can take place virtually.[13] Even property viewing and assessing can be conducted via satellite footage. It allows a quicker response time and no call out. It reduces operators, call centres, receptionists, filling systems, conventional bankers and banking systems. Data

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[11] McGowan., H & Shipley., C. March., 2020. *The Adaptation Advantage.*
[12] IBID
[13] Molly., L & Ronnie., L. Mindset shifts for the Fourth Industrial Revolution: Insights from the life insurance sector. *AOSIS.*

can be recorded and analysed in real-time with no effort. Software and algorithms can do the work for analysts and forecasters.[14]

Big Data and blockchain bypass conventional banking systems and allow for monetary transactions through non-conventional means. Cryptocurrencies such as Bitcoin, Non-Fungible Tokens (NFTs), and timeshares are rising. Therefore, it will be no surprise if transactions occur through intangible options.

8.2 Technological Change

Some jobs can be done through artificial intelligence and machine learning, thus leading to disruption among occupations and mechanical means. Repetitive occupations (quotations, frequently asked questions (FAQs), analytics, etc.) are done through software applications. As occupations are replaced, new ones are created.

There is a demand for occupations such as blockchain analysts, computer engineers, coders, and web designers. The change has pushed the boundaries of insurers and the workforce.[15]

Automation and robotics are driving forces behind occupational change in insurance. Algorithms work more precisely than humans with less resource wastage (e.g., time and materials).

Most insurance processes will be transformed from traditional transactions to hands-free, instant transactions using blockchains, Big Data, and cyber programming.[16] It will reduce interactions between clients and brokers, underwriters, insurers, reinsurers, and claims providers. The concept of multiple systems and platforms will disappear, replaced by seamless workflow integration - like access to a range of television content through a single app.

Therefore, people skilled in cyber-security, programming, coding, blockchain analytics and Big Data management will be in great demand. Therefore, receptionists, brokers, call centre agents and claims providers should be reskilled. The need for these occupations will dwindle, and instead of requiring a team, one or two people will run a small operation. [17]

Technology cannot do everything unmanned, and people need to identify what it cannot do to counteract the upcoming technological wave and possible unemployment.[18]

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[14] n.a. The fourth industrial revolution (4IR) brings new data, insights and risks to insurance. *PWC.*
https://www.pwc.com/us/en/library/4ir-ready/fourth-industrial-revolution-insurance-risk.html
[15] McGowan., H & Shipley., C. March., 2020. *The Adaptation Advantage.*
[16] Molly., L & Ronnie., L. Mindset shifts for the Fourth Industrial Revolution: Insights from the life insurance sector. *AOSIS.*
[17] n. .a. The fourth industrial revolution (4IR) brings new data, insights and risks to insurance. *PWC.*
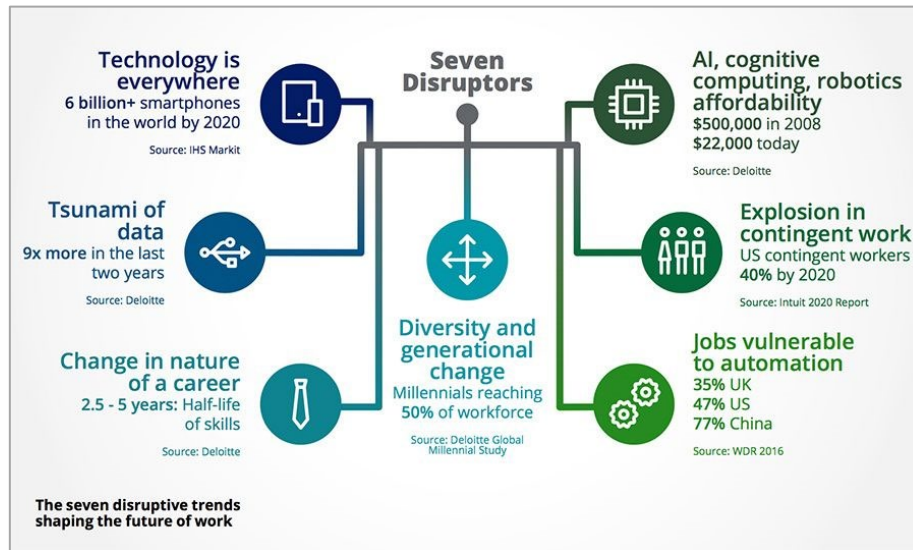*https://www.pwc.com/us/en/library/4ir-ready/fourth-industrial-revolution-insurance-risk.html*
[18] IBID

Exhibit 5: Seven disruptors

Source: www.consultancy.eu

8.3 Green Awareness

Environmental degradation is impacting companies and clients. The world is prone to extreme weather events that take lives, injure people, and destroy insured assets.[19] Insurance costs are increasing, and risks need to be constantly re-evaluated. Climate change cannot be ignored. [20]

Insurance companies are working to reduce their carbon footprint. All companies should reform processes to reduce carbon dioxide (CO_2) emissions, seek alternative business methods, and source alternative (green) energy. The use of drones to inspect sites is efficient and reduces CO_2 emissions.

8.4 Digital Citizenship

Countries like Estonia have been at the forefront of a declining population. Therefore, they started selling digital citizenship to foreigners. These people can be paid in euros, acquire jobs in Estonia, and belong to the European Union from their homes elsewhere.[21] It creates opportunities to develop and sell innovative financial and insurance products and services.

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[19] McGowan., H & Shipley., C. March., 2020. *The Adaptation Advantage.*
[20] Ibid.
[21] Ibid.

Insurers may reduce their workspace, revoke it, and operate in a virtual space. They may run many computer programmes created to conduct the tasks of several analysts and brokers to reduce their staff count. Receptionists and call centres are omitted by incorporating applications and online application forms. It allows companies to embrace the green movement and be more conservative towards their environment, naturally drawing in more clientele.[22]

8.5 New learning Trends

E-learning was introduced in the 1990s to challenge and augment face-to-face learning. Today, e-learning has transformed the learning experience and taken the distance out of learning. Recently the concept has gained traction with the COVID-19 pandemic by providing a means to keep training on the course.[23]

Options such as mobile learning, social learning, video-based learning, microlearning, artificial intelligence, big data, and the internet make the learning process more accessible. Mobile learning gives people that do not have a personal computer or access to an internet café or library an option to conduct their learning uninterrupted.[24]

Video-based learning is useful for busy people. It can be accessed through any device and allows people to function in their free time.[25]

eLearning is an opportunity for the insurance sector to upskill and reskill employees *en masse*.[26]

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[22] n.a. February 2022. Technology use critical to achieving net-zero carbon emission target. *Guyana Chronicles.* *https://guyanachronicle.com/2022/02/18/technology-use-critical-to-achieving-net-zero-carbon-emission-target/*
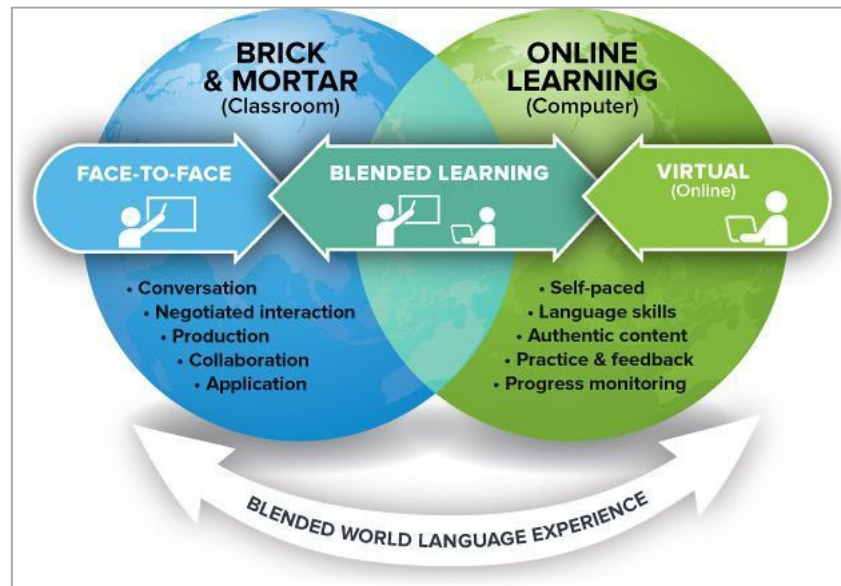[23] Allen., J. 2022. 11 New Elearning Trends & Predictions for 2022. *Finances Online. https://financesonline.com/elearning-trends/*
[24] Ibid.
[25] Ibid.
[26] McGowan., H & Shipley., C. March., 2020. *The Adaptation Advantage.*

Exhibit 6: eLearning

Source: imgs.search.brave.com

9. OCCUPATIONAL PROFILES

This section develops occupational profiles for the insurance sector's top 10 sector priority occupations. These occupations are insurance agent, sales and marketing manager, broker, insurance loss adjuster, financial investment advisor, insurance claims administrator, actuary, ICT systems analyst, compliance officer, and software developer. Their occupational roles are described, and qualifications and job tasks are researched. Technological changes impacting the occupations are explored, and the associated skills implications are discussed.

9.1 Insurance Agent

Insurance agents, also known as 'insurance sales agents', are tasked with making insurance plans sales as per client needs. They service clients. Insurance agents identify risks, sell and renew policies, and track claims. [27]

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[27] Betterteam (n.d.) *Insurance agent job description.* California: Betterteam. https://www.betterteam.com/insurance-agent-job-description

OCCUPATION: INSURANCE AGENT	
Traditional Job Tasks	**New/Additional Job Tasks**
- Assist with tailoring policies for clients - Obtain and process policy documents - Advise clients on general insurance-related matters and answer their queries - Aid clients with claims settlements	- Communicate with clients using multiple channels - Be active on social media to serve clients - Apply new technologies such as AI - Offer clients more empathetic service - Communicate more effectively - Make the customer service experience personal
QUALIFICATIONS	
Any person who receives the required insurance training can become an agent. However, a Bachelor of Commerce (BCom) degree is preferred.	
OCCUPATIONAL CHANGES	

Social Media: There is a need for insurance agents to connect with clients through social media. Communication vehicles such as Instagram, LinkedIn and Facebook are popular. These media provide platforms for free advertising. Some agents use video applications (apps) to produce stylised, attractive videos. These videos attract prospective clients while offering better service to present ones.[28]

New Service Models: Insurance providers are often held back by their existing processes and technologies. New (digital) service models can be established to overcome this obstacle. A prompt way to achieve this is for insurance providers to partner with technology providers and 'insurtechs'.[29]

'Insurtechs' (a combination of "insurance" and "technology") are companies that leverage technologies to innovate, and enhance operations, product development and customer experience.

Insurance agencies and agents are driven to digital service models due to customer expectations, agency costs and competition. Digital capabilities are integrated into website optimisation operations, advice, sales (e.g., provision of omnichannel advice); after-sales and service (e.g., customer feedback and recommendations using data analytics); and network support.[30]

Insurance Gamification: Gamification is a powerful tool for insurance agents. It offers a rich digital experience. It is a useful method to create entertaining client experiences; improve brand awareness, affinity and penetration, and drive sales by educating and guiding prospective clients.[31] Gamification incorporates game-type elements into activities and services in non-game situations to enhance user engagement.

[28] Barinskiy, L (2020) *Five technology trends in the insurance industry.* US: Forbes Media LLC. https://www.forbes.com/sites/forbesbusinessdevelopmentcouncil/2020/04/10/five-technology-trends-in-the-insurance-industry/?sh=684f47e70c52

[29] Krishnakanthan, K., Münstermann, B. & Purushothaman, K. (2019) *The insurance switch: technology will reshape operations.* New York, US: McKinsey & Company. https://www.mckinsey.com/industries/financial-services/our-insights/the-insurance-switch-technology-will-reshape-operations

[30] Bueno, J., Holland-Cunz, M., Kotanko, B., Patiath, P., Schiff, D. & Varney, S (2018) *The insurance agency of the future: building a digital service model.* New Yor, US: McKinsey & Company. https://www.mckinsey.com/industries/financial-services/our-insights/the-insurance-agency-of-the-future-building-a-digital-service-model

[31] Chattopadhyay, T (2020) *5 revolutionary AI-driven marketing trends in insurance for 2020.* India: Mantra Labs Pvt Ltd. https://www.mantralabsglobal.com/blog/marketing-trends-in-insurance/

OCCUPATION: INSURANCE AGENT
Developing an Omnichannel Sales Process: Insurance agents want to communicate better with clients. Relationships should be constructed to maximise agents' effectiveness in customer engagement. Agents should consider several ways to communicate with clients. Omnichannel sales to offer clients a more customised and consistent experience.[32] **Virtual Interactions:** Digital communication methods between insurance agents and clients are becoming the norm following the COVID-19 pandemic. In a study based in China, it was found that there has been a "pandemic-induced shift" in interactions, which are now both more frequent and efficient. The research revealed that 83% of clients wanted their insurance agents to be empathetic and view issues from clients' perspectives. 73% of clients wanted their insurance agents to offer them customised products and services based on needs. Virtual interactions between agents and clients such as instant messaging, video calls, phone calls and emails drastically increased following the onset of the pandemic.[33]
SKILLS IMPLICATIONS
▪ Agents should become more familiar with leveraging social media for promotional and networking purposes. They should have a greater presence on social media as this is becoming a preferred communication medium. Agents require upskilling in using social media. ▪ Insurance agents require training in psychosocial skills to understand the clients' needs. ▪ Gamification technology is rapidly establishing itself in the insurance industry. Skills on how to use gamification are valuable for insurance agents. ▪ Effective communication and negotiation are vital skills for agents. Research shows that clients want more frequent, tailored and empathetic communication.

9.2 Insurance Sales and Marketing Manager

An insurance sales and marketing manager is responsible for establishing insurance policy sales targets. They oversee a team of salespersons and must ensure that the team meets its targets. They support the team with sales strategies and feedback and develop marketing and advertising campaigns. [34]

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[32] Rana, J (2022) *How to improve customer experience in insurance industry.* Singapore: REVE Chat. https://www.revechat.com/blog/insurance-customer-experience/

[33] Kotanko, B. & Chan, E (2020) *The future of insurance agent-customer interaction*. New York, US: McKinsey & Company. https://www.mckinsey.com/industries/financial-services/our-insights/insurance-blog/2022-outlook-setting-a-course-for-the-coming-decade

[34] Betterteam (n.d.) *Insurance sales manager job description.* California: Betterteam. https://www.betterteam.com/insurance-sales-manager-job-description

OCCUPATION: INSURANCE SALES AND MARKETING MANAGER	
Traditional	**New/Additional**
- Attend to client queries and resolve disputes - Devise marketing and advertising campaigns - Guide sales and marketing teams and provide feedback - Keep abreast with market trends - Set sales targets	- Analyse data - Communication with clients via social media and online (IoT-driven) platforms - Monitor websites for traffic, data analytics and customer service - Engage in corporate/group sales
QUALIFICATIONS	
BCom Degree in marketing and an equivalent NQF 7 qualification; or a Higher Certificate / Diploma in the insurance industry.	
OCCUPATIONAL CHANGES	

AI and Insurtech: Insurtech has many advantages for insurance sales and marketing. It can aid conventional insurance providers in modernising their businesses. It offers insurance clientele savings and efficiency in service delivery. Insurtech companies can provide improved pricing models. They use AI to tailor packages and complete the coverage process without the services of a broker.[35]

An example of an AI application in insurance sales and marketing is the use of Chatbots. They can communicate with clients and answer questions through several channels. Chatbots gather customer data, assess risks, and assist agents with prioritising workflow. It frees up time.[36]

Short Software Development Cycle Times: Previously, new software took around six months to release, with the release cycle lasting between 18 and 24 months. Today, technology market leaders have created a new paradigm of perpetually changing software. Software features constantly evolve and increase the speed to market. The current insurance industry's success is predominantly on the agility to ensure competitiveness. Insurance providers must focus on reducing the development cycles of applications/software and their speed of implementation. This can be facilitated through 'low code' platforms. These platforms allow for quick and dynamic changes since they do not require significant amounts of coding, deployment and testing.[37]

Data Analytics: Data drives sales and meet customer expectations. It also assists insurers in managing and enhancing marketing using key performance indicators (KPIs). The integration of the customer relationship management (CRM) and enterprise resource planning (ERP) systems is a good starting point for data integration. CRM offers a firm new business while ERP allows for the management and steering around obstacles. System integration offers marketers and salespeople critical information for sales.[38]

Internet of Things: Online customer service is growing in popularity. A report by The Direct Marketing Association revealed that over 50% of respondents prefer the mobile app over a phone call or email for customer service. Research conducted by Oracle demonstrated that 71% of clients preferred to communicate with customer service representatives via messaging apps/services. These communication methods rely on the internet of things. The potential of omnichannel sales is evident. First Insight revealed that shoppers exposed to omnichannel sales retailing are twice as likely to confirm a purchase.[39]

SKILLS IMPLICATIONS
▪ Insurance sales and marketing managers require skills in using AI-powered applications and tools to customise products and services. They should operate software to aid and guide their teams. ▪ Managers should be upskilled or reskilled to use the software. ▪ They should be able to adapt and drive their teams. ▪ Data analytics is the key to any marketing and sales strategy. Managers should conduct data analysis and maximise the data captured. Data can boost a firm's revenue by mapping success areas and those needing improvement. ▪ Sales and marketing teams must be well-equipped with the skills required to leverage alternative and preferred methods of communication with clients for sales and services. ▪ Messaging and mobile apps, and online services are popular avenues that should be exploited to drive marketing and sales. Skills development to use these channels is required.

9.3 Insurance Broker

Insurance brokers represent clients seeking the best insurance policies to meet their specific needs. These professionals examine the terms and conditions of a range of policy options and make recommendations to their clients based on the clients' needs and affordability. They do not represent insurance providers as agents do. Their main role is to serve the client. To complete the insurance coverage process, brokers hand over the accounts to insurers or insurance agents.[40]

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[35] Barinskiy, L (2020) *Five technology trends in the insurance industry.* US: Forbes Media LLC. https://www.forbes.com/sites/forbesbusinessdevelopmentcouncil/2020/04/10/five-technology-trends-in-the-insurance-industry/?sh=684f47e70c52

[36] Rana, J (2022) *How to improve customer experience in insurance industry.* Singapore: REVE Chat. https://www.revechat.com/blog/insurance-customer-experience/

[37] Earnix (2022) *10 insurance technology trends reshaping the industry in 2022.* Israel: Earnix. https://earnix.com/blog/10-insurance-technology-trends-reshaping-the-industry-in-2022/

[38] Chattopadhyay, T (2020) *5 revolutionary AI-driven marketing trends in insurance for 2020.* India: Mantra Labs Pvt Ltd. https://www.mantralabsglobal.com/blog/marketing-trends-in-insurance/

[39] Rana, J (2022) *How to improve customer experience in insurance industry.* Singapore: REVE Chat. https://www.revechat.com/blog/insurance-customer-experience/

[40] Insureon (n.d.) *Insurance agents and brokers*. Chicago, US: Insureon. https://www.insureon.com/insurance-glossary/insurance-agent-broker

OCCUPATION: INSURANCE BROKER	
Traditional Job Tasks	**New/Additional Job Tasks**
- Address client's insurance needs - Compare policies of different brands to secure the best client benefits - Maintain client records - Foster long-term client relationships - Promote insurance products and services - Service clients regularly	- Communication with clients through multiple channels - Protect client data with cyber security measures - Increase social media presence - Analyse data - Keep abreast of market trends, products and services - Communicate effectively to improve the client experience.
QUALIFICATIONS	
BCom Degree and a professional body registration are required.	
OCCUPATIONAL CHANGES	

IoT and Digitisation: Brokers serve diverse clients of all ages. Brokers should engage clients according to their preferences. Communication methods are websites, email, social media, video calling and contact. Most communication methods require IoT. Providing services digitally saves brokers the hassle of travel time. It is more productive for the broker and brokerage.[41]

Cyber Security: Cybercrime has escalated with e-commerce. David Cook, Victor Canada Company President, explained that the pandemic created opportunities for cyberattacks such as ransomware. He further noticed a growing interest by brokers for "cyber-related educational resources".[42]

Extended Office Hours: Following the pandemic, CEO of Atlanta Group, Ian Donaldson, explains that consumers have increased expectations of brokers being "more flexible and more available". It translates to broker availability per the client's schedule, including extended regular business/office hours. Donaldson's focus has thus been shifted to ensuring his team offers correct and transparent advice, across telephony and digital channels, at all times. [43]

Social Media: Social media is important for a marketing and communication strategy. Chief marketing officer of Hub International, Sarah Thompson, explains that Facebook should be mandatory for any brand. She discusses that as brokers' roles evolve, correct advice and education should be given to existing and potential clients via these media. She also questions whether firms have social media policies and staff training.[44]

Collaboration: Brokers require effective and impactful tools (i.e., modern software) for collaboration. It facilitates their work with colleagues and clients. These tools are useful for complex insurance policies and contracts. Communication software with advanced features such as video chat facilitates the collaboration process.[45]

Data Analytics: Digitalisation brokerages are incorporating automation into processes. It omits intermediaries. Predictive analytics, for example, are used to collect a host of data accurately. It aids insurance providers (and brokers) with client behaviour analysis and

prediction. Brokers transform their roles as "trusted advisors" and risk minimisers to secure clients' optimum coverage through these technologies. [46]

SKILLS IMPLICATIONS
▪ Clients have different communication preferences. Brokers should be flexible with communication. Soft skills will add the human touch to services and make them personal.
▪ The increase in cyber-attacks calls for upskilling/reskilling of brokers in cyber-security. It ensures secure transactions, client trust and asset security.
▪ Digital skills are needed to keep abreast with technology.

9.4 Insurance Loss Adjuster

A loss adjuster (also known as a claims adjuster) acts on behalf of the insurer to review insurance claims. They are tasked with adjusting claims values and deciding what the insurer will and will not cover. Loss adjusters act in the insurer's best interests and are responsible for investigating claims.[47]

OCCUPATION: INSURANCE LOSS ADJUSTER	
Traditional Job Tasks	**New/Additional Job Tasks**
▪ Determine and report on the actual client loss against insurance policy terms ▪ Investigate damages to/loss of insured assets ▪ Estimate the costs for the insurer for repairment/replacement	▪ Facilitate the claims process ▪ Summon more specialised loss adjustment services, if necessary ▪ Analyse data ▪ Use AI, cloud computing and online platforms

[41] Geldenhuys, J (2021) *Broker of the future – it is not so much about what you do, but how*. SA: Moonstone. https://www.moonstone.co.za/broker-of-the-future-it-is-not-so-much-about-what-you-do-but-how/

[42] Grzadkowska, A (2020) *Five key components of the successful 'broker of the future'*. Canada: Key Media. https://www.insurancebusinessmag.com/ca/news/digital-age/five-key-components-of-the-successful-broker-of-the-future-241993.aspx

[43] Wallace, M (2021*) Chief executives discuss the future of insurance broking*. Canada: Key Media. https://www.insurancebusinessmag.com/uk/news/breaking-news/chief-executives-discuss-the-future-of-insurance-broking-255487.aspx

[44] McCaffery, K (2021) *The insurance broker's shifting role in the future.* Canada: Insurance Portal https://insurance-portal.ca/society/the-insurance-brokers-shifting-role-in-the-future/

[45] Trninic, D (2021) *Insurance brokers: how to address digitalization, regulation, and customer expectation challenges with modern software.* Slovenia: Adacta. https://blog.adacta-fintech.com/insurance-brokers-how-to-address-digitalization-with-modern-software#broker-today

[46] Goswami, U (2021) *Latest Technology trends to overhaul the insurance brokerage industry.* New York: Research Dive. https://www.researchdive.com/blog/latest-technology-trends-to-overhaul-the-insurance-brokerage-industry

[47] Flood Guidance (2022) *Insurance information: loss adjusters and loss assessors.* UK: Flood Guidance. https://www.floodguidance.co.uk/flood-guidance/loss-adjusters-loss-assessors/

OCCUPATION: INSURANCE LOSS ADJUSTER	

QUALIFICATIONS

The status of 'Professional Loss Adjuster' or 'Fellow' by the Institute of Loss Adjusters of Southern Africa (ILASA) will be awarded if the following is met:[48]

- Completion of the Higher Certificate/National Certificate in short-term insurance.
- Completion of five or more years of practical work as a loss adjuster.
- Applicants must comply with Continuous Professional Development requirements and are required to complete a renewal application.

According to SAQA, the following requirements for the different ILASA membership types hold.[49]

To be registered as an 'Accredited Member', the requirements are:

- A School Leaving Certificate (or National Technical Certificate 3 equivalent)
- Further Education and Training Certificate in Short Term Risk Management: Loss Adjusting, or 120 credits in some insurance qualifications.

To be registered with 'Associate Membership', the requirements are:

- Further Education and Training Certificate: Short Term Risk Management or a qualification appropriate to the applicant's field of operation as a Loss Adjuster at NQF Level 5 or above
- One hundred and twenty credits in an insurance qualification at NQF Level 5.

OCCUPATIONAL CHANGES

Big Data and Analytics: The claims process is becoming automated and standardised. Roles should transform with technological changes. It requires data analysis skills to present data-driven insights to clients.[50] Predictive analytics enables insurers to make sense of the data. It helps the claims department to make informed decisions, commencing with the first notice of loss (FNOL). Predictive analytics assists with fraud identification and proactive recovery.[51]

AI: Field visits can now be automated using AI, much like other claims management processes. Drones and digital software can be used for this purpose. Remote imaging is used to record data and facilitate virtual walkthroughs. There is an increase in robotic process automation (RPA) during the claims sorting process. Low-level claims can now be processed using platforms that handle high claim volumes with little to no intervention by employees. [52]

The IoT: Claims are resolved more quickly using mobile platforms. They also facilitate direct communication between claims adjusters and policy-holders. It enhances engagement and the client experience. These platforms/software are created to anticipate correspondence

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[48] ILASA (2022) *Member qualifications.* SA: ILASA. https://ilasa.org.za/member-qualifications/

[49] SAQA (2018) *National Certificate: Loss Adjusting.* SA: SAQA. https://qspe.saqa.org.za/showQualification.php?id=61529

[50] Burke, B (2021) *The loss adjuster of the future.* Georgia, US: Crawford & Company. https://www.crawco.com/blog/the-loss-adjuster-of-the-future

[51] Deloitte (2020) *Future of claims*. USA: Deloitte Development LL. https://www2.deloitte.com/content/dam/Deloitte/us/Documents/human-capital/us-future-of-claims-pov.pdf

[52] Jamie, R (2021) Loss adjusters must reassess role as technology transforms sector. United Kingdom: InsuranceDay. https://www.sedgwick.com/assets/uploads/documents/Loss-adjusters-must-reassess-role-as-technology-transforms-sector.PDF

OCCUPATION: INSURANCE LOSS ADJUSTER
from clients and proactively communicate. It eases the burden on call centres and is a more efficient method of tending to queries. [53] **Cloud Computing:** The future of claims is data-driven. Platforms and applications powered by AI and advanced analytics are cloud-based. It allows for scalability and collaboration. The cloud increases reliability. [54]
SKILLS IMPLICATIONS
▪ The role of loss adjusters is centred on data analytics. Data science skills development is critical to maximising the benefits of data analytics. ▪ Claims adjusters require AI skills for claims processing solutions. They should learn to operate drones and AI-driven software to conduct virtual assessments and facilitate remote work. ▪ Business skills and communication skills (soft skills) should be honed. ▪ Interpersonal skills are vital for communication. ▪ Digital skills must be acquired/enhanced to deal with progressive digitalisation adequately.

9.5 Financial Investment Advisor

Financial investment advisors offer guidance to clients and manage their investment portfolios. They advise clients with investments, purchase investments for clients with client authorisation, advise securities to invest in (e.g., stocks), and advise on risks and rates of return associated with investments. Financial investment advisors require a holistic understanding of their client's financial situations and goals. They can also advise on taxable income generated by investments and ways to derive revenue tax-efficiently.[55]

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[53] Gulati, S (2020*) How insurer innovation is supporting adjusters during the pandemic*. Georgia, US: ALM Global, LLC.
https://www.propertycasualty360.com/2020/05/18/how-insurer-innovation-is-supporting-adjusters-during-the-pandemic/
[54] Deloitte (2020) *Future of claims*. USA: Deloitte Development LLC.
https://www2.deloitte.com/content/dam/Deloitte/us/Documents/human-capital/us-future-of-claims-pov.pdf
[55] Klimashousky, D (2019) *What is an investment advisor?* New York, US: SmartAsset.
https://smartasset.com/investing/what-is-an-investment-advisor

OCCUPATION: FINANCIAL INVESTMENT ADVISOR	
Traditional Job Tasks	**New/Additional Job Tasks**
- Advise clients with financial goals - Purchase and manage stocks, investments, bonds and other assets for clients - Conduct market research - Keep abreast of financial market trends - Advise clients on financial risks, savings/spending and other transactions	- Use new technologies for safer transactions - Analyse data - Perform services remotely - Be conversant with ESG regulations and company ratings

QUALIFICATIONS
A BCom degree in Finance, Marketing or Business.

OCCUPATIONAL CHANGES
DeFi: Decentralised Finance, or DeFi, describes a system which offers "secure, programmable, near real-time transactions". It uses blockchain to allow digital asset holders to transact directly. DeFi is also known as "bankless finance", as no central regulatory entity oversees these transactions. It allows for greater control and reduced fees. [56]
Big Data and Analytics: Data is used to create products/services to meet customer demands. Companies implement predictive analytics for creating value propositions. Investor preferences and investment history is used to predict client behaviour. Such forecasts can offer insights for upselling/cross-selling new investors' products/services. [57]
ESG Investing: Environmental, social and governance (ESG) investing has emerged as a new strategy to improve our world. It relies on independent company ratings, which aid clients with investment choices. It reduces risks and highlights opportunities. ESG encompasses the environment, social and governance issues and considers how firms serve stakeholders. [58]
AI: It can replace the routine tasks performed by bankers and advisors. Investment banks are implementing the technology for research, due diligence and marketing. AI can call many files and reports in seconds for analysis. It facilitates speedy projections and valuations, which usually take humans a long time to complete. [59]
Online fraud is high. Experian found a 33% increase during the lockdown as companies migrated online. AI-powered security systems are smart, adaptive, and can block security threats. They can react in real-time to specific situations. [60]
Globalisation and the IoT: The world is globalised. It presents opportunities for advisors to reach a global audience. There is a growing trend in the use of mobile phones. The number of people with mobile phones will double and reach five billion. [61]

SKILLS IMPLICATIONS

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[56] SourceScrub (2022) 2022 trends: the impact of technology on investment banking. San Francisco, US: SourceScrub.
https://www.sourcescrub.com/post/2022-trends-the-impact-of-technology-on-investment-banking
[57] Desmarais, J (2021) *Top 9 trends in wealth management.* New York, US: Nasdaq, Inc.
https://www.nasdaq.com/articles/top-9-trends-in-wealth-management-2021-04-16
[58] Napoletano, E. & Curry, B (2022) *Environmental, social and governance: what is ESG investing?* US: Forbes Media LLC.
https://www.forbes.com/advisor/investing/esg-investing/

- Advisors should develop digital skills in line with DeFi. Learning to leverage technology will aid advisors in evolving their roles and remain significant.
- Data science skills should be developed to help advisors benefit from data analytics.
- Advisors should familiarise themselves with ESG regulations.
- Cyber-security skills must be developed.
- Communication skills will enable advisors to reach clients across the globe.
- Learning new languages can also be an extremely useful tool in successfully communicating with foreigners. This will expand advisors' client pools/portfolios.

9.6 Insurance Claims Administrator

Insurance claims administrators (or assessors) are responsible for handling insurance claims. They work with insurers to establish the extent of liability. They assess documents to process claims. They manage and maintain compensation files for work-related injuries.[62]

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[59] Patel, K (2021) *Technology trends in investment banking for 2021-2022.* Illinois, US: DealRoom Inc. https://dealroom.net/blog/how-technology-is-changing-investment-banking

[60] DataArt (2020) *Tech trends that will disrupt finance industry in 2021.* New York, US: DataArt. https://www.dataart.com/blog/tech-trends-that-will-disrupt-finance-industry-in-2021

[61] Cussen, M. P. (2019) *What the future holds for financial advisors.* New York: Dotdash Meredith. https://www.investopedia.com/articles/financial-advisors/021216/what-next-decade-holds-financial-advisors.asp

[62] Zippia (2020) *What does a claims administrator do?* US: Zippia, Inc. https://www.zippia.com/claims-administrator-jobs/what-does-a-claims-administrator-do/

OCCUPATION: INSURANCE CLAIMS ADMINISTRATOR	
Traditional Job Tasks	**New/Additional Job Tasks**
- Claims administration, filing, data capturing and storing data - Adherence to regulations set out in policies and laws - Tracking claims and providing data insights to departments - Advising policy-holders of claims and insurance coverage - Assessing claims to establish validity and coverage	- Supporting other departments via virtual and remote working - use of technologies such as IoT and AI - Use of networks and platforms that are blockchain-embedded - Data analysis

QUALIFICATIONS
An NQF Level 4 Qualification in finance and three years of work experience in insurance.

OCCUPATIONAL CHANGES

IoT: Insurance claims can be processed online. Enhanced communication networks allow quicker payment processing. Most insurers have websites incorporating advanced technologies such as chatbots. [63]

Blockchain: Blockchain is useful for processing claims. "Closed or private blockchain" only permits selected users to participate in a claim, view and use the uploaded information. Only necessary information is uploaded or shared. Blockchain facilitates automated and streamlined claims payments. It verifies coverage between insurers and reinsurers. Claims payment automation reduces administrative costs.[64]

Big Data Analytics: Predictive analytics is used to predict fraud during claims processes. It is mentioned that one in ten insurance claims is fraudulent. Solutions to reduce fraud are rules-based and easy for fraudsters to manipulate. Predictive analytics employ modelling, rules, database searches, text mining and exception reporting. It identifies fraud in the early stages of the claims cycle. Data analytics are used to predict future claims. When an insurance claim is updated, analytics uses the inputs to reassess loss reserves. [65]

AI and RPA: The implementation of RPA and AI in insurance is growing. This is due to the alternative data channels, enhanced data-processing capabilities, and AI algorithms. It is anticipated that 'bots' (robots) will be increasingly employed in front-office and back-office operations. It will automate the policy servicing process and claims management for a tailored customer experience.[66]

Peer-to-Peer Insurance: The Peer-to-Peer (P2P) insurance model involves a network of people who agree to cover similar risks using one finance pool (per network). P2P is described as "one of the most disruptive business models" and grows steadily. It does not require insurance providers. After each coverage period, the remaining funds are refunded. Customers reduce costs of coverage and avoid claims discrepancies. One such insurance provider is an insurtech called Teambrella. It is a P2P network driven by blockchain. Smart contracts are used for claims and policy management, allowing for transparency and self-regulation of the process. [67]

SKILLS IMPLICATIONS
▪ Claims administrators should be trained to leverage AI-based cyber security. Since IoT and big data are used extensively to fast-track claims pay-outs and reduce fraud, skills aligned with these technologies are required.
▪ Knowledge and skills of new insurance types should be expanded. It includes P2P and blockchain. Companies should adapt to meet the emerging market needs and provide relevant employee training.
▪ Administrators should acquire digital skills. Many of their tasks include time-consuming, repetitive work which is being automated. To remain relevant, they should be trained to use new technologies.
▪ Predictive analytics detects anomalies and fraud at the early stages of the claims cycle. Administrators should be able to analyse data and apply new technologies.

9.7 Actuary

Actuaries calculate the financial costs of uncertainties and risks. They use statistics, mathematics and financial theory to assess potential risks. Actuaries assist clients with policy development to mitigate risks.[68]

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[63] Cline, M. & Kamalapurkar, K (2021) *Preserving the human touch in insurance claims transformations*. US: Deloitte. https://www2.deloitte.com/us/en/insights/industry/financial-services/insurance-claims-transformation.html

[64] Lounds, M (2020) *Blockchain and its implications for the insurance industry.* US: Munich American Reinsurance Company. https://www.munichre.com/us-life/en/perspectives/underwriting/blockchain-implications-insurance-industry.html

[65] SAS (2022) *6 ways big data analytics can improve insurance claims data processing*. North Carolina, US: SAS Institute Inc. https://www.sas.com/en_za/insights/articles/risk-fraud/big-data-analytics-improves-claims-processing.html

[66] WNS (2017) *Top 5 trends in the insurance industry.* Mumbai, India: WNS (Holdings) Ltd. https://www.wns.com/perspectives/articles/articledetail/595/top-5-trends-in-the-insurance-industry

[67] AltexSoft (2020) *Insurance technologies: 13 disruptive ideas to change insurance companies with telematics, blockchain, machine learning, and APIs.* California, US: AltexSoft. https://www.altexsoft.com/blog/insurance-technologies/

[68] Singh, D. P (2022) *Concept of 'actuary' and 'actuarial risk'.* India: TaxGuru. https://taxguru.in/corporate-law/concept-actuary-actuarial-risk.html

OCCUPATION: ACTUARY	
Traditional Tasks	**New/Additional Tasks**
- Determining the chance of insurance risks occurring such as death, illness, injury or accidents and the associated costs - Designing and testing insurance policies, plans and strategies to establish a trade-off between risk and profitability - Deliver financial reports and communicate findings	- Applying data analytics and working with Big Data - Using AI-driven applications to speed up work - Developing financial models and theorising - Forecasting - Pricing products

QUALIFICATIONS
BSc Actuarial Science or Business Science

OCCUPATIONAL CHANGES

Big Data and Analytics: Data analytics enable policy pricing and risk assessment with greater accuracy. It is due to data lakes leveraged by actuaries.[69]

Data Science: Data Science has helped actuaries apply their expertise in emerging fields like ride-sharing apps and climate change. Actuaries reveal the value of data through data science).[70]

For example, leveraging data on climate change assists insurers in offering adequate cover in a region. It can determine whether to provide cover against weather risks.

AI: AI fast-tracks transactional processes, manages Big Data and detects trends.[71]

Evolving Role: Actuaries are involved with life, general insurance and risk analysis. They work in product development, pricing and marketing. They also work in financial management, broking operations and reinsurance.[72] Their roles are changing. Companies now employ actuaries in claims and product management.[73]

RPA: RPA is helping to automate tasks. Routine tasks such as data reconciliation can be automated. It frees actuaries to focus on value-adding activities.[74]

Cloud Computing (CC) and Storage: Cloud-based technologies offer actuaries the benefits of moving individual records to the cloud, accessing virtual machines, implementing modelling; and leveraging internal data storage.[75]

SKILLS IMPLICATIONS

- Improving data science skills is critical. Continuous upskilling by actuaries is required.
- Learning to work with AI is vital for actuaries. AI is used to sort, analyse and manipulate data for financial reports.
- Actuaries require good communication skills. Actuaries should be able to communicate findings, solutions and recommendations.

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[69] Brown, J. J (2017) *Big data and opportunities*. Illinois: SoA. https://theactuarymagazine.org/big-data-opportunities/
[70] Institute and Faculty of Actuaries (2020) *Actuaries: skills for the future.* UK: IFoA.
http://blog.actuaries.org.uk/blog/actuaries-skills-future

9.8 ICT Systems Analyst

ICT Systems Analysts develop specifications for ICT systems. They review and assess systems. They are responsible for system design and modifications as per user requirements.[76]

[71] Abigail, S (2018) *Artificial intelligence for actuaries.* Illinois: SOA. https://www.soa.org/news-and-publications/newsletters/innovators-and-entrepreneurs/2018/august/ie-2018-iss64/artificial-intelligence-for-actuaries/

[72] Actuarial Careers (n.d.) *What do actuaries do in insurance?* UK: Cambridge Market Intelligence Ltd. https://www.actuarialcareers.co.uk/profession-overview/what-do-actuaries-do-in-insurance/

[73] Nyce, C (2018) *Actuaries of the future*. US: KPMG. https://home.kpmg/xx/en/home/insights/2018/12/actuaries-of-the-future-fs.html

[74] Nyce, C (2018) *Actuaries of the future*. US: KPMG. https://home.kpmg/xx/en/home/insights/2018/12/actuaries-of-the-future-fs.html

[75] Atlas Magazine (2019) *Technologies used by actuaries*. Tunisia: Groupe Atlas. https://www.atlas-mag.net/en/article/technologies-used-by-actuaries

[76] Job Outlook (n.d.) *ICT business and systems analysts.* Australia: Creative Commons (cc). https://joboutlook.gov.au/occupations/ict-business-and-systems-analysts?occupationCode=2611

ICT SYSTEMS ANALYST	
Traditional Job Tasks	**New/Additional Job Tasks**
▪ Maintenance and examination of software systems ▪ Modify operating systems ▪ Assist with the design of processes and solutions ▪ System problem-solving ▪ Supervisory role over less-qualified/-experienced staff ▪ System workflow management ▪ Project management and team-leading ▪ Perform malfunction diagnosis and detection, and system troubleshooting ▪ Liaison with clients to establish business needs	▪ Design new ICT solutions using computers and related systems ▪ Improve/adapt current systems ▪ Integrate updated features and enhancements to existing systems to improve the efficiency and productivity of a business

QUALIFICATIONS
Bachelor of Science (BSc) in computer science, information systems/technology, computer engineering.

OCCUPATIONAL CHANGES

AI and Robotics: AI is used in the ICT sector. Robotics is a branch of AI. Some examples of AI and robotics in ICT include cognitive robots such as chatbots and virtual assistants. AI adoption and implementation are largely driven by CC, data analytics and the IoT. [77]

Big Data: Big Data needs to be handled, stored, managed, and manipulated. Dataset is shared daily across networks in the ICT sector. Scientists are finding new ways to manipulate Big Data and increase ICT applications.[78]

Business Intelligence: Business intelligence (BI) involves data storage, access, analysis, and visualisation to make informed decisions. BI and information technology connect, as both deal with information management.[79]

Information Security: There is a need to secure data systems and networks against data breaches and loss.[80]

CC and the IoT: 4IR requires connectivity. Some advantages of cloud usage include speed, scalability and flexibility[81].

Social Media: Firms are using social media to grow their market share.[82] ICT systems analysts ensure that firms use social media securely and effectively.

SKILLS IMPLICATIONS
▪ Employees in the ICT field should be familiar with NET, C#, C++, Java and VB. Reskilling or upskilling in these languages is needed. ▪ Communication and time management skills are vital. ▪ Cyber security skills are needed. ▪ Working with AI and automated processes is key to the success of ICT systems analysts.

9.9 Compliance Officer

Compliance officers ensure compliance with the law, regulations, and company policies and procedures. Without compliance officers, firms are at risk of violating laws and regulations. This may cause damage to reputations and fines. [83]

OCCUPATION: COMPLIANCE OFFICER	
Traditional Job Tasks	**New/Additional Job Tasks**
▪ Perform risk assessments ▪ Ensuring regulatory compliance ▪ Ensure security measures for data protection/security ▪ Advise management on regulatory issues	▪ Updated with new regulations and laws ▪ Apply cyber security measures ▪ Leverage new technologies ▪ Data analysis.
QUALIFICATIONS	
A Bachelor's degree in law, accounting or finance.	
OCCUPATIONAL CHANGES	
Regulations: The increase in regulations drives the need for greater attention to compliance. There is a fight against money laundering and the financing of terrorists, thus increasing the need for compliance officers. [84] The COVID-19 pandemic has altered the world of work and brought new rules and regulations into play. **AI:** Technology has revolutionised the work of compliance officers. AI offers financial institutions solutions for compliance with tedious regulatory processes. The European	

[77] Schofield, A. & Dwolatzky, B (2021) *2021 JCSE-IITPSA ICT skills survey eleventh edition.* SA: JCSE & IITPSA.

[78] Misra, R., Panda, B. & Tiwary, M. (2016, March 4-5) *Big data and applications: a study* [Paper presentation]. ICTCS '16: Proceedings of the Second International Conference on Information and Communication Technology for Competitive Strategies, Udaipur, India. https://doi.org/10.1145/2905055.2905099

[79] https://www.tableau.com/learn/articles/business-intelligence/role-in-it

[80] Schofield, A. & Dwolatzky, B (2021) *2021 JCSE-IITPSA ICT skills survey eleventh edition.* SA: JCSE & IITPSA.

[81] DeLoitte Centre for Financial Services (2018) *2019 insurance outlook - growing economy bolsters insurers, but longer-term trends may require transformation.* US: Deloitte Development LLC.

[82] Schofield, A. & Dwolatzky, B (2021) *2021 JCSE-IITPSA ICT skills survey eleventh edition.* SA: JCSE & IITPSA.

[83] Homann, M (2022) *Compliance officers – duties, qualifications and remuneration.* Munich, Germany: EQS Group AG. https://www.eqs.com/compliance-blog/compliance-officer/

[84] Fusion Compliance Technologies (2021) *Compliance officer of the future.* Lebanon: FCT. https://www.fusioncompliancetech.com/compliance-officer-of-the-future/

OCCUPATION: COMPLIANCE OFFICER
Union has imposed the Artificial Intelligence Act to impose AI restrictions. It aims to regulate technology. [85]   **Diversity and Inclusion:** Companies have diversity and inclusion (D&I) regulations. It is a new aspect of work for compliance officers. There are several benefits attached to D&I and having a culture of inclusivity for firms. Some include the attraction of new applicants that otherwise would not have applied and diversifying the talent pool.   **Big Data:** Big Data analytics assist compliance officers with handling data and ensuring no breaches occur. Big Data analytics assist compliance officers with data accountability and security.   **Compliance by Objectives:** Like management by objectives, there should be compliance by objectives. It should enhance its performance through objectives passed by senior management and employees. Compliance officers will balance compliance regulations and business objectives.[86]   **Risk and Compliance:** Companies concentrate risk and compliance (R&C) on protection against downside risks. There is a shift toward advising the company on potential business ventures.[87]

SKILLS IMPLICATIONS
- Compliance officers should acquire cyber security skills to ensure data privacy and adherence to data regulations.   - Data analysis is intrinsic to data-related roles. These professionals require skills to leverage Big Data.   - Compliance officers should be well-versed in current and forthcoming regulations.   - A new role of 'Artificial Intelligence Compliance Officer' has emerged.   - Compliance officers should upskill and reskill to broaden the scope of their work.   - Compliance officers rely on technology to work. It is thus necessary to improve their digital skills to keep pace with technology.

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9.10 Software Developer

Software developers design, install and test software systems. They are also responsible for maintenance, troubleshooting and upgrading of software. Their systems may be designed for private clients or the open market. The underlying control system design is not part of their work.[88]

OCCUPATION: SOFTWARE DEVELOPER	
Traditional Job Tasks	**New/Additional Job Tasks**
- Write clean code that runs without issues - Ensure programmes and systems are functioning correctly after installation - Integrate software efficiently with other programmes - Provide technical support for the maintenance of installed software and programmes, including troubleshooting and updating	- Work with new software components and technologies - communicate with colleagues in other departments - Develop low code for automated programmes
QUALIFICATIONS	
BSc in software engineering or computer science, Shorter courses can be done.	
OCCUPATIONAL CHANGES	

AI: AI allows software developers to construct platforms to process real-time data and automate tasks. It entails processing data, detecting fraud, and estimating claims.[89]

Big Data and Data Analytics: Data analytics is used to develop custom software. Software developers use Big Data to collate information on how users use the software. It establishes trends and patterns in software use. The information is used to determine what works, implement software changes, optimise resources and minimise expenses. Overall, it enhances the customer experience.[90]

Blockchain: Blockchain allows for the incorporation of 'smart contracts in the insurance process. The terms are written into the code where smart contracts are developed. Smart contracts are defined as "self-executing contracts via underlying blockchains" to ascertain how agreement terms are met. Blockchain can also collect a host of actionable data using AI and the IoT. It is also used to store data gathered by IoT. This data is then read using AI and can be used to make software improvements.[91]

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OCCUPATION: SOFTWARE DEVELOPER
New software development: Insurance companies develop new software programmes such as *insurance claims management software* and *billing software* to fast-track client interactions and payments.[92] **CC:** There are many benefits of CC for software developers. Software developers can leverage the cloud to support insurance platforms to deploy new services and applications. It can also be used for storing large amounts of data securely. The cloud is also scalable.[93]

SKILLS IMPLICATIONS
- AI is a critical technology in the insurance industry. It has numerous benefits for software developers. Thus, skills to implement and manipulate AI are key to facilitating their work.   - The software relies on data processing for many of its functions. As a result, developers require the skills and knowledge of data analysis to produce more efficient, user-friendly software.   - Blockchain embedded in software has security features and gathers data on software usage. Skills to use blockchain will enable enhanced, secure software.   - Cloud computing plays an important role in new-age software development. The cloud is used for storing data and implementing new software platforms. Skills to use cloud computing is needed.

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10. RECOMMENDATIONS

The following recommendations are made on managing the occupational change process:

Source short courses for enhancing digital skills in data science, cloud computing, artificial intelligence, blockchain, robotics, machine learning, Big Data and data analytics.

The major emerging technologies in the insurance sector were found to include AI- and IoT-driven technologies. These comprised, among others, chatbots for basic consumer queries and advice-giving; automated software programs for tasks such as sorting, fault-finding, and trend detection; and drones for virtual site visits and assessments. These technologies are useful for improving the customer experience and service delivery; fast-tracking routine tasks; and conserving resources.

Data analytics, data science and cloud computing skills of employees should be developed to handle the enormous data volumes.

Companies develop data lakes. Emerging technologies rely on data for optimum efficiency. They collect data on device usage and user preferences. Insurers rely on data to make informed decisions. Cloud computing stores data and offers benefits such as prompter speed-to-market for new apps.

There are skills gaps in the use of blockchain, especially for cyber security. Skills in these technologies should be developed.

With the widespread usage of data, there is an increased risk of cyberattacks and exposure to malware. This is especially risky when funds are transferred. Blockchain is a distributed ledger that collates information on every transaction. It enables transparency and increased security. Blockchain only allows those who are given access to a platform to view information and transact. Cybersecurity is crucial for all activities.

✦	**Skills training should be offered to employees in ESG regulations and laws; technologies such as gamification and new apps; new digital service models; and soft skills development, especially communication skills.**
✦	**Compare the occupational profiles with the relevant insurance NQF qualifications to update curricula.**
✦	**Conduct workshops with companies to share the approach to developing occupational profiles.**
✦	**Share the occupational profiles with universities to review their curricula.**
✦	**Inform companies to consider the above short courses for mandatory grant training investments.**

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